What’s next?

The Humboldt Foundation looks ahead – to the tasks awaiting the Foundation and its research network.
In the photo you can see me with my game The Poll. Really, I’m a journalist. But for a number of years, I’ve been developing games. In The Poll you slip into the role of a politician and learn how the electoral system in India works, how you find political solutions to an issue, negotiate compromises and, finally, win majorities. Another example is the smartphone game Farsi, which is about differentiating between rumours and fake news on the one hand and real news on the other. What really matters to me is the lessons you learn when you’re playing, about how our society functions, for example, or how to eat healthily, which is the point of another game I invented. Whereby, I still think like a journalist: find the truth, talk to people, argue. All my games have news built into them.

As a journalist, when you travel around a country like India, it really exposes you to a lot of problems and you write about them. But articles in a newspaper are unidirectional. You can’t ask a newspaper to give you back answers. But in a game, you can grapple with a topic, communicate with one another.

With our nutrition game and our fake news quiz Farsi, we visit schools and colleges in India. So far, we have reached about 80,000 players. The games are really popular. We sold over 500 copies of the board game The Poll in a matter of six months. But you’re not going to make money with games that train your civic muscle. Like Germany, India is in the hands of large, often American, firms that dominate the market.

At the moment, I’m a German Chancellor Fellow in the Cologne Game Lab at TH Köln. When I play with Germans, I notice how important it is to them to follow the rules of the game and that they talk about them a lot. That’s why games often last much longer than they do in India. The Indian mind appreciates chaos. But a game like The Poll can be exported to Germany, you need little tweaks here and there to accommodate political differences, but democracy is something that has been exported the world over.

Personally, I really like strategy games like the board game Splendor, where you become a gem merchant, or Polytopia, which you play on your smartphone. It’s about building cities and waging war on other tribes. And I love detective stories. My Master’s thesis was on colonial detective fiction. When I came to Bonn, the first thing that hit me was the stillness. What a contradiction to the hecticness of New Delhi. A murder in this quiet town and a police officer from India investigating. That would be a thrilling story.

ABEER KAPOOR has been a German Chancellor Fellow in the Cologne Game Lab at TH Köln since 2022. Trained as a journalist, he previously worked for various Indian newspapers and, most recently, for the SMART Civic Games Lab in South Delhi, India.
Dear readers,

This year, the Humboldt Foundation is celebrating its 70th anniversary. On such occasions people are fond of looking back. We want to grasp the opportunity, above all, to look forward, which is why the title of this edition is “What’s next?” – the question all researchers ask themselves again and again.

What discovery will the next experiment bring? What secret is contained in this new find? What insights are hidden in that apparently unsolvable problem and how does today’s supposedly useless knowledge become tomorrow’s groundbreaking application? We asked members of our worldwide network what they consider to be the most important tasks facing us in the future and what problems they want to solve next.

“What’s next?” is also a question for our new president, the chemist and energy expert Robert Schlögl. In the interview, he talks about his plans for the Foundation’s future.

But we do allow ourselves a bit of retrospection when we seek to explore the formula for success that has evolved during these 70 years of the Humboldt Foundation and to discover what the Foundation has in common with Coca-Cola.

The question “What’s next?” also refers to me personally. After 30 editions of Humboldt Kosmos as editor-in-chief, I should like to take this opportunity to bid farewell to you and the Foundation. I look forward to continuing my association with the Humboldt Network. It has been a pleasure.

GEORG SCHOLL
WHY SHOULD WE INDULGE IN IDLENESS MORE OFTEN, MR MURAYAMA?

Don’t always grab your phone when you’re waiting for a bus. Instead, just sit there and let your thoughts run free. This kind of activity – or inactivity – is completely underrated nowadays, says psychologist Kou Murayama.

In fact, most people are afraid of being bored if they have nothing particular to do, says Murayama, who conducts experiments to study inactivity: for example, he got participants to sit in a dark, empty room for 20 minutes with no way of amusing themselves. They were asked what they expected from the quiet time ahead and then had to evaluate it afterwards. “Most of them feared that it would be unpleasant but were surprised that they didn’t find it so bad after all,” says the researcher. They had had time, for instance, to think about the things they still had to do that day.

In another experiment he gave the participants the choice of spending the quiet time doing nothing or surfing the Internet. Most chose the Internet. But in the subsequent evaluations there were no differences between the two groups. Murayama concludes that we underestimate the joys of inactivity and thus avoid it. But this means we also miss out on its benefits, such as thinking up creative solutions to tasks or really relaxing. “People who let their minds wander now and again often make better decisions in life,” says Murayama.

JAN BERNDORFF

The Japanese psychologist PROFESSOR DR KOU MURAYAMA investigates human motivation. In April 2021, he relocated from the University of Reading, UK, to the University of Tübingen to take up an Alexander von Humboldt Professorship.
You’re banned! With the help of CRISPR/Cas systems, bacteria protect their genome from mutations or destruction caused by pathogens. Biotechnology has adopted the mechanism of the bacterial defence system – also known as genetic scissors – using it to specifically modify the genome by deleting or inserting certain DNA sequences.

The Spanish physicist Julene Madariaga Marcos is searching for ways of making genetic scissors even more reliable. “One of the problems with genetic scissors is off-targeting,” she explains. “They also cut through DNA that is similar, but not identical, to the actual target sequence.” This can have serious side-effects – through to genes losing their functionality. To ensure that tomorrow’s genetic scissors work more precisely, Madariaga Marcos has developed a nano sensor to trace what happens when off-targeting occurs at a molecular level.

“\textcolor[RGB]{162,171,158}{The sensor helps us to investigate the mechanisms CRISPR/Cas systems use to dock onto DNA sequences from a biophysical perspective.}” To this end the researchers purposely expose CRISPR/Cas to DNA sequences to which the genetic scissors are not supposed to respond. “Ideally, our research will help us to understand how we can seriously reduce the side-effects of the technology or even remove them altogether. This would take us a step closer to being able to treat genetic diseases.”

DR JULENE MADARIAGA MARCOS was a Humboldt Research Fellow at the Peter Debye Institute for Soft Matter Physics at Leipzig University until the end of January 2023.

Using computer simulations, researchers can both predict the climate in the coming decades as well as produce short-term weather forecasts for specific regions. But so far, they are not as precise as they might be. In order to calculate the complex processes in the atmosphere and identify local extreme weather events such as heavy rain at an early stage, enormous computing capacity is required. New supercomputers could provide it. The atmospheric physicist Bjorn Stevens is working on it.

In 2022 at his institute in Hamburg, for instance, “Levante” went into operation. The supercomputer can handle 14 quadrillion operations per second. “It will enable us to do long-term simulations with climate models with a grid resolution of three kilometres, for example,” says Stevens. The researcher is modifying Levante’s code so that simulations run at their optimum. Up to now, global simulations based on models with such fine grids could only be achieved for up to a few months. Levante, however, will make them calculable for several years.

But if you want to understand how heavy rainfall will change with global warming, for example, you need computers that are hundreds of times more powerful than Levante. Stevens and some of his colleagues are calling on climate computing centres internationally to join forces in order to gain access to this new generation of supercomputers. In 2024, a machine of this kind is scheduled to go into operation at Forschungszentrum Jülich.

In 1998, PROFESSOR DR BJORN STEVENS was a Humboldt Research Fellow at the Max Planck Institute for Meteorology in Hamburg where he is now the managing director.
Up to now, most of the films made on the continent of Africa have been low-budget filmed entertainment. But now, investors and streaming services are opening up the market in African films to an international audience. The Nigerian film scholar Ezinne Ezepue sees this as a great opportunity. Through her research, she wants to help develop high-quality African stories and more differentiated images of Africa.

“Whether in films, books, in national or international media – so far, Africa has usually been presented as exotic, poor and sick,” says Ezepue. “Presentations like this prevent Africans from dreaming, curb their ambitions.” The researcher is convinced that more ambitious films could help to fight clichés and paint a more differentiated picture of Africa. At the ifs Internationale Film schule Köln, Ezepue is therefore currently working on ways in which African myths, stories and folktales could enhance contemporary African films.

In her quest to achieve her goal, the researcher is evaluating, amongst others, films, literary texts and interviews with historians. She wants to present the results to students of film in Nigeria. Her research aims to generate ideas for telling more ambitious African stories that are able to captivate an international audience. “What I want to do is change the image of Africa whilst contributing to economic growth in the region.”
Focus

FORMULA

Or why the Humboldt Foundation is like Coca-Cola.

Seventy years – between tradition and innovation.

Text GEORG SCHOLL

The Foundation has not fundamentally altered its portfolio since it was established in 1953. It grants fellowships and awards to talented young researchers as well as to top scientists and scholars from all over the world who come to Germany to work and become part of a world-spanning research network on the strength of this sponsorship.

What is it that makes this portfolio so successful to this day? Does the Foundation have a well-kept secret formula allegedly hidden away in a safe?

Just like the soft drink giant, the Foundation is responding by honing its tools to ensure fair cooperation with regard to data protection and intellectual property and to rule out cases of dual use, that is, the military use of research results. But it is not changing its basic formula. It will continue to focus on international exchange and the freedom of science.

The continuing high demand for Humboldt Fellowships, the kudos, the positive effect on academic productivity and cross-border networking evidenced in evaluations and, last but not least, the positive feedback from sponsorship recipients themselves all confirm the effectiveness and attractiveness of the formula. Trust, independence and diverse perspectives fuel academic performance and creativity. Both are urgently required if we are to meet the cross-border challenges inherent in climate change, ageing societies, pandemics and the societal impact of new technologies like artificial intelligence. The Humboldt brand is still needed.

There are not many international brands that have retained their essence for the last 70 years. Market conditions change ever faster and more radically. Disruption reshuffles the deck. Firms that are not quick enough to respond to technological change disappear, which is why former market leaders like the film manufacturer Kodak are history. Or, like the Finnish tech producer Nokia, they become insignificant in what was their specialist field. Even today’s powerful tech giants like Meta (formerly Facebook) or Alphabet (Google) are wondering how long their business model will last given the way AI is transforming the online world.

If you were looking to compare the Alexander von Humboldt Foundation with a brand, you might hit on Coca-Cola. The American concern has been successfully marketing its soft drink around the world for decades. Sometimes with sugar and caffeine, sometimes without, but effectively unchanged according to the same secret formula allegedly hidden away in a safe.

The second part of the Humboldt winning formula, on the other hand, includes ingredients that are unique in their composition and have indeed remained unchanged for the last 70 years. Unlike most research funders, the Foundation does not sponsor projects, but people. And it does so on a permanent basis, usually for the researcher’s entire working life. It extends trust and independence irrespective of discipline or nationality and fosters a network in more than 140 countries. In doing so, it regards research as a means of international understanding and diplomacy.

Recently, however, the concept of (re-)establishing relations through dialogue has come under criticism. Does Russia’s war with Ukraine, do system conflicts with countries like China and the trend towards deglobalisation herald the kind of disruption that could fundamentally alter cross-border research collaboration and thus the Humboldt Foundation’s very formula for success?

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Three distinct and interlinked perspectives fuel academic performance and creativity. Both are urgently required if we are to meet the cross-border challenges inherent in climate change, ageing societies, pandemics and the societal impact of new technologies like artificial intelligence. The Humboldt brand is still needed. ☓

Mission: to build trust
During the first year in operation, 78 fellows come to Germany. The Secretary General welcomes every one of them with a handshake. Germany’s image is still dominated by the Second World War and the Nazi period; the Foundation’s principal task is to build trust. Physicist Werner Heisenberg is the first President of the Foundation, one of several Nobel Laureates to hold this office.

First cracks in the Iron Curtain
In 1959, the Foundation welcomes its first two fellows from the Eastern Block – one from Poland and one from Hungary. A diplomatic coup: freedom of travel is unheard of; and a research stay with the enemy in the West the absolute exception.

BMW’s for the brightest minds
from the United States
Initially only intended for natural scientists from the US, the Humboldt Research Award is introduced in 1972. For the first time, the Foundation is also able to reach experienced researchers. In the early days, the award is valued at DM 6,000 plus special conditions when buying a BMW – a perk enthusiastically embraced by around one in three award winners.

Regulars in the President’s garden
Beginning in 1955 and continuing to the present day, the Federal President hosts a reception every year for current Humboldtians in the grounds of the official presidential residence as part of the Foundation’s annual meeting. By 1981, the originally modest attendance figures grew to over a thousand Humboldtians with kith and kin.

Development policy on the agenda
In 1996, the Georg Forster Fellowship is established specifically to meet the needs of developing countries. It is designed to assist in the reciprocal transfer of methods and knowledge.
For the last 70 years, the members of the worldwide Humboldt Network have been working on solutions to the challenges of our times. We asked six of them which they considered to be their most important future tasks.

“I AFRICA’S YOUNG PEOPLE ARE OUR GREATEST ASSET”

How can Africa feed its growing population when climate change and environmental degradation are making agriculture ever more difficult? African researchers are working on solutions.

Looking to the future, the biomathematician Romain Glèlè Kakaï identifies three particular challenges: how to feed a growing population, how to preserve the environment and how to contain pandemics like COVID-19. These are the questions that also occupy him in his roles as head of both the Laboratoire de Biomathématiques et d’Estimations Forestières at the University of Abomey-Calavi in Benin and the Humboldt Research Hub “Socio-ecological modelling of COVID-19 dynamics in Africa”.

In Benin, as in many African countries, population figures are rising significantly. At the same time, the forests and agricultural land are disappearing – not only because climate change is increasing temperatures and aridity but also because of overexploitation of the soil and forests by humans. It is thus becoming ever more difficult to provide enough food for everyone. To remedy this, researchers in industrialised countries often think in terms of genetic engineering or multilevel vertical greenhouses in cities. But Glèlè Kakaï thinks there is a much simpler solution in Africa: instead of focusing on modern varieties of forced crops that cannot cope with the changing climate, we should be falling back on plants like Syzygium dulcisicum, known as the miracle berry, or the harserradish tree, which are both drought- and heat-resistant and highly nutritious. “They’ve been around for ages. Farmers in the countryside have been growing them for many decades in some cases. With targeted cultivation, we could keep developing these plants and cultivate them on a larger scale.”

FIGHTING FOR THE LAST FORESTS

Another way of meeting the challenges in Africa, Glèlè Kakaï believes, would be to not only give young researchers a good education but also to offer them a future in their own countries, as well. “We have so many talented young people here in Africa. They are our greatest asset. And now we need to utilise it.” He, himself, recently conducted a national forest assessment of Benin forest reserves for the government. He travelled to rural regions of the country with several graduates and postdocs and recorded structural parameters of tree stands in order to be able to better protect the surviving forests in his country. “When we’re working, it is common to meet...."
local people who think we are on their land and we want to take their forest away from them. You need a good deal of tact and cultural knowledge to convince them how important it is to protect the forest both for themselves and everyone else."

Young researchers from the area who know their way around and are trusted by the people there are the best way of convincing them. This is why, according to Glèlè Kakaï, it is essential to prevent university graduates from permanently moving abroad to find more lucrative work. And that, he believes, is also why the Humboldt Foundation’s activities are so important. "They offer incentives to African postdocs to return home at the end of the fellowship and use the knowledge they have gained to drive development in their own country.”

DEFYING THE NEXT PANDEMIC

In his capacity as head of the Humboldt Research Hub, Glèlè Kakaï also works together with young research talents. "By investigating how COVID-19 has spread in Africa, we are learning how to manage future pandemics like that even better.” Admittedly, COVID-19 never acquired the dynamic in Africa that it did in Southeast Asia, Europe and America. “Probably because, among others, we have a long experience with epidemics like Ebola and Lassa,” Glèlè Kakaï suspects. "Apart from this, other continents were hit first, and we had more time for epidemic preparedness.” Even so, he now considers it important to analyse the effects of the various control measures such as vaccinations and social distancing, so as to better equip it to deal with pandemics in the future.

Glèlè Kakaï is certain: “If we are going to overcome the global challenges, science must cooperate internationally. And this also means that young researchers with their knowledge of the local situation should be active in their own regions. This would benefit the international academic community, as well.”

"FOCUS"

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When considering the future of academic freedom worldwide, Katrin Kinzelbach has mixed feelings. "We can see a decline in the freedom of science,” says the professor for the International Politics of Human Rights at FAU Erlangen-Nürnberg, who is one of Germany’s leading advocates of academic freedom. “That said, people are very willing to campaign more for the freedom of research and teaching.” Kinzelbach helped to develop the Academic Freedom Index, a measuring tool produced jointly by researchers at FAU and the V-Dem (Varieties of Democracy) Institute at the University of Gothenburg, Sweden. Based on a range of criteria, the Index compares the development of academic freedom in various countries since 1900; it is considered to be the most comprehensive dataset on the state of academic freedom worldwide. Until a few years ago, the development was positive, says Kinzelbach, but in the 21st century, the trend has been downwards.

“This has to do with the autocratic wave we are witnessing for the last ten years or so. It constitutes a major challenge to science, which is increasingly global.” Currently, Russia is the most prominent example of advancing autocratisation; in political science, India, Turkey and Hungary are no longer considered to be democracies, whilst elected governments in countries like Brazil, Poland and South Africa curtail democratic norms and institutions. “Academic freedom is reliant on democracy and the rule of law,” Kinzelbach warns.

CHINA: STRATEGY URGENTLY NEEDED

Moreover, the scientific community is facing a completely new challenge, she notes: nowadays, top-level research is also being conducted in autocratic systems. “You can’t just lean back anymore and claim the greatest freedom produces the greatest excellence,” says the political scientist. “For the first time, we are now witnessing repressive academic systems, especially China, turning into serious competitors.”

“China is a country where there are still a lot of unanswered questions,” she says. What sort of partnerships can we have with universities where the research is controlled by narrow political requirements? The biggest problem is for the researchers and students on the spot, of course. Kinzelbach emphasises. But, globally speaking, a lack of academic freedom also restricts the self-regulation of research – for instance, when technical progress and ethical issues collide, as in the case of genetic engineering or collecting sensitive data. "Of course, that’s much harder to balance out in a context where not all academic disciplines are free to participate in the knowledge process,” says Kinzelbach.

“I still think the answer lies in continuing to foster networking and exchange between individuals, but I would be a lot more careful when it comes to institutional collaborations with autocracies because then there is a much greater risk of instrumentalisation,” says Kinzelbach. "Apart from which, I would like to see us engaging much more with countries where, according to the relevant rankings, excellence is not yet so well developed,” she says. “This means linking research both with social responsibility and the idea of participation – and recognising excellence amongst those who conduct research under difficult conditions.”

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"FOCUS"
Mr Schlögl, you are assuming office in the Humboldt Foundation’s 70th anniversary year, which falls in troubled times. Politicians are having to cope with a remit that ranges from restructuring power supplies to a new security regime. Science diplomacy and, by association, the Humboldt Foundation are faced with the threat of budgetary cuts in the coming years. What challenges are awaiting you as President of the Foundation? Currently, the most important one is indeed to secure reliable financing. At the moment, the value of the Alexander von Humboldt Foundation is not sufficiently recognised in the political arena. Of course, they all know the name. But if you ask what the Foundation actually does, you are met with silence. And the thinking goes like this: if something has a budget of 150 million euros, it doesn’t matter if you take away the odd five million.

How do you want to persuade the politicians otherwise? I have been advising politicians on the energy transition for a long time and I know my way around the business a bit. One should never

PROFESSOR DR ROBERT SCHLÖGL became the president of the Humboldt Foundation in January 2023. Until the end of 2023, he was the director of the Fritz Haber Institute in Berlin, having previously taught and conducted research on inorganic chemistry as a professor at Goethe University Frankfurt. Until 2022, he was the founding and managing director of the Max Planck Institute for Chemical Energy Conversion in Mülheim an der Ruhr. He is the vice president of the National Academy of Sciences Leopoldina and a member of various other academies, such as a fellow of the Royal Society of Chemistry in London.

suggestion that parliamentarians don’t value science. But when it comes to setting priorities, they pump for things they feel confident about. After all, they have to be able to defend their decisions. I want to do more to ensure that the politicians who are responsible for the Foundation feel confident that they are espousing a good cause.

That’s easy when you are dealing with applied research, like green energy. The value of the Foundation’s worldwide network seems pretty abstract by comparison. How would you explain its usefulness to politicians? Science only functions when it is a global undertaking. Gaining knowledge by falsification only works if you look at one and the same thing from different perspectives. If those perspectives are subject to discipline-specific or national restrictions, the bigger picture quickly gets lost. Climate change, for instance, touches on so many different aspects that it would be completely hopeless to try and fight it without adopting a holistic approach. The Alexander von Humboldt Foundation’s network is exceptionally well positioned because it is neither oriented to a specific discipline nor along national lines. Everything is connected to everything else, as Humboldt once established.

The Global South is being particularly hard hit by climate change. At the same time, these countries are under-represented in top-flight research, even to some extent in the Humboldt Network...

And to change that is one of my goals. Excellent science should not be a question of geography. But the conditions under which people work are very different. What we here consider to be excellent is simply difficult to accomplish when you are not working in a highly developed country. I have huge respect, for example, for the researchers I have met in Africa who achieve great things under really difficult conditions. Africa has enormous potential, not just as a source of green energy but also in the concomitant research and development. Research in Germany is missing out by not integrating this potential sufficiently.

In its 70-year history, the Foundation has managed to recruit researchers from more than 140 countries for its “network of trust”. In the case of Russia or China, people are now asking whether Germany has been too trusting of its partners...

The accusation of being too trusting is absolutely justified, in my opinion. I think Germany sometimes goes over the top in its desire to be international. And that even goes so far as to betray its own interests.

What needs to change in our dealings with a country like China? This has nothing to do with individuals from China with whom we cooperate on a basis of trust. But in the last resort, a science system is, of course, part of a state system. And if the latter is geared towards autocratic world dominance, we must also ask ourselves whether we really want to place our trust in its hands. I don’t think so. I’m not in favour of isolation, but we have to agree on clear rules, first and foremost on the issue of intellectual property. The federal government strives for value-based foreign policy. Should the Foundation be taking an interest in human rights as well as academic standards?

One problem common to all science systems is the pressure to compete and publish. What does this mean for the Foundation’s work? This is a real failure in our system. If the aim is to gain knowledge, it is totally unproductive for researchers to always have to be on the lookout for the next paper in Science to be able to achieve the h-index score for their ongoing funding application. This makes the Humboldt Foundation’s task of identifying excellence even more difficult. In selling science an indication of excellence? Is that what impact means? When we are talking about genuinely original research, that is a very, very difficult question to answer because initially, at least, it has no impact whatsoever in terms of multiple citations.

How can we go about making fair funding decisions? You have to make the effort to evaluate individually, be absolutely clear about the selection criteria and come to a decision on the basis of verifiable arguments. Generally, I would like to see more discussion of content rather than who has written what about whom. I really dislike expert opinions that force you to study the precise choice of words in the very last sentence in order to discover what the reviewer is actually trying to tell you.

The precise, or rather, the supposedly correct choice of words is becoming ever more important in university debates, too. How important is political correctness to you? I think there is a tendency to expect academia to buckle down and behave exactly as certain segments of society want it to. That’s dreadful – because academia should really be a place for open and free debate, and universities a place where people learn to tolerate and thrash out differing points of view.

There is evidence to suggest that diversified teams produce better results. Is diversity an indispensable goal in enhancing the quality of research? If we were to select people totally impartially, solely on the grounds of quality, the problem would solve itself. I know this happens with musicians. They have to audition behind a black curtain, so no-one knows anything about their attributes. Their music is heard, and a decision is made. I sometimes wish it were like this in science because we all have prejudices and let ourselves be influenced by them. German society in particular is not free of prejudice.

Which countries are better? The United States, for example, Australia and England, too, three countries in which I gained some experience of life and observed prejudice. This may only be true on the surface, but integrating people from other cultures is certainly easier than it is here.

You trained as a bricklayer. Did you yourself meet with resistance in academia? No. But I have to say that I did my apprenticeship earlier than I was still at school. I wasn’t the least interested in my schooling at the time, so I skived off and headed for the building site. My parents had a lot of excuse letters. Despite that, my final grades were still quite good, although I ended up with serious gaps in my education, of course...
Your field of research is the energy transition. How well equipped is Germany for the transition?

When it comes to the energy transition, reliability is extremely important – because we are talking about facilities that are large, expensive and dangerous. You can’t afford to make mistakes. This is something we in this country are good at, dealing with large-scale, complex systems and designing them to be reliable. Where we fall down, is getting the intersection between regulation and technology right.

In what way?

Every day, we hear that we need to speed up. And, at the same time, we create new regulations in Germany that slow things down. New LNG terminals go into operation and then for some reason are initially only granted a licence to operate for four hours a day. What’s the point of that? No one can trust the world would hit on the idea of imposing such a limit on remedial action if there were a gas emergency.

Is over-regulation a locational disadvantage for Germany?

We simply restrict ourselves to a ridiculous scale, complex systems and designing them to be reliable. Where we fall down, is getting the intersection between regulation and technology right.

“Is over-regulation a locational disadvantage for Germany?”

“We need a healthy combination of German thoroughness and American hands on! That is one of the good things about academic thoroughness and American hands on! That is one of the good things about academic investigations into dark energy. There’s a lot of ideology floating around and that is completely useless when you are searching for new solutions. It’s a disadvantage in comparison with competitors like the United States. There they are much more casual about things and maybe end up like the United States. There they are much more casual about things and maybe end up like the United States. There they are much more casual about things and maybe end up like the United States.

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“In the quest to get diverse groups of people interested in science, Heymans believes that what is needed first and foremost is constant representation, for example by female scientists who deliberately reach out to the public as role models. “We have to start with the parents,” says Heymans. “This is how we may save each other a lot of valuable time.”

One issue that has occupied Heymans long been accepted as common sense that diversity in science and society can’t do as much, I concentrate on the really important things.”

“Your field of research is the energy transition. How well equipped is Germany for the transition?”

“Is over-regulation a locational disadvantage for Germany?”

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Immune Therapy Against Conspiracy Myths

Extremism is booming and, in many countries, threatening democracy. The good news is that you can train resistance to propaganda and disinformation.

The future of democracy is what drives Cynthia Miller-Idriss. And the biggest test of our times, she believes, is to maintain social cohesion. “In social terms, we are facing greater challenges to democracy today than we did some 20 years ago,” says the US American extremism researcher. “The stability of democratic systems and social cohesion are being undermined by the spread of disinformation and propaganda,” she says.

With far-reaching consequences “People’s susceptibility to conspiracy stories influences election results and erodes trust in state institutions as well as in research and science.” This, in its turn, reinforces systemic racism and misogyny or makes some people unwilling to believe the climate crisis is real or to show solidarity in a global health crisis like the COVID-19 pandemic. This all leads to increasing divisions in society, she notes.

No Return for Believers in Conspiracy

In the Polarization and Extremism Research & Innovation Lab (PERIL) she founded at the American University in Washington D.C., Miller-Idriss therefore investigates the issue of how to make people more resilient to conspiracy stories. “I am not aware of any evidence to suggest that you can re-convert someone who already believes in conspiracy myths,” says the political scientist. “But in our experiments, we can clearly show that information can prevent people from believing such stories and becoming radicalised in the first place.”

To this end, says Miller-Idriss, it is paramount to provide people with the right tools to see through the propaganda. Together with her team, she develops and tests 30-second videos, for example, designed for the public sphere, explaining the mechanisms of propaganda and disinformation. Scary music, colours and images that trigger fear and discomfort, but also rhetoric designed to manipulate and specific slogans can be identified much more easily, says Miller-Idriss, if you know what to look out for. She calls this concept “video-based inoculation”. Videos like this can be disseminated on social media platforms but also on public or semi-public screens and digital advertising billboards such as on public transport.

Miller-Idriss’s ideas and expertise are highly valued outside of academia, too. She regularly addresses the US Congress and informs politicians, educational institutions, the security and secret services in the United States and other countries as well as the United Nations about new extremist developments and potential prevention strategies. As recently as September 2022, Miller-Idriss was invited to the White House to give an expert presentation at the United We Stand Summit, initiated by Joe Biden, to fight violence fuelled by hate.

Miller-Idriss describes the Humboldt Residency Programme as an important source of inspiration for her work. It brings together researchers sponsored by the Humboldt Foundation and other researchers with actors in civil society, journalists, entrepreneurs and artists to work on a common topic. In summer 2022, Miller-Idriss led the programme on “Social Cohesion”.

When Cohesion is Damaging

“One important point that emerged in the discussions was that – notwithstanding the importance of social cohesion – you can also have too much of it,” says Miller-Idriss. On the one hand, she states, social cohesion is currently under acute threat from conspiracy stories, propaganda and disinformation. On the other, too much homogeneity in a society can also be damaging because society thrives on the non-conformance and diversity of various groups. “Social cohesion must integrate minorities without wanting to force them to assimilate,” the researcher emphasises. • Text MARLENE HALSER

Focus on Social Cohesion

In 2022, Cynthia Miller-Idriss, who teaches and conducts research at the School of Public Affairs at the American University in Washington, D.C. in summer 2022, the former German Chancellor Fellow took on the leadership of the Humboldt Residency Programme on “Social Cohesion”.

The good news is that the spread of disinformation and propaganda, “One important point that emerged in the discussions was that – notwithstanding the importance of social cohesion – you can also have too much of it,” says Miller-Idriss. On the one hand, she states, social cohesion is currently under acute threat from conspiracy stories, propaganda and disinformation. On the other, too much homogeneity in a society can also be damaging because society thrives on the non-conformance and diversity of various groups. “Social cohesion must integrate minorities without wanting to force them to assimilate,” the researcher emphasises.

The real, everyday meaning of climate change becomes drastically clear when Faisal Abbas talks about his native country, Pakistan. Within four months in 2022, extreme drought was followed by the worst flooding since records began. The flooding alone claimed more than 1,700 lives, eight million people lost their homes. Since then, agriculture, the source of income for almost half the population, has lain in ruins. Food prices have rocketed. “Within days they trebled or increased fourfold,” Faisal Abbas reports. The economist at the National University of Sciences & Technology in Islamabad continues. “For people who hardly have enough to live on in the first place, this has dramatic results. Many are starving.”

Through his research, Abbas wants to mitigate situations like this. He specialises in developmental topics such as food security, health, especially of mothers and children, as well as gender-specific oppression. “During my doctorate at the University of Bonn 15 years ago, it was the first time I experienced how well women do their jobs,” he reports. “In my native culture, I only knew that traditionally...
The German epidemiologist PROFESSOR DR TILL BÄRNIGHAUSEN is the director of the Heidelberg Institute of Global Health at Heidelberg University Hospital. In 2017, he was awarded an Alexander von Humboldt Professorship.

"At this time, the planet is the health of the individual and social justice – these are the three major global challenges facing us in the coming decades, according to Humboldt Professor Till Bärnighausen. And they are all closely connected. "If we use up or destroy the Earth’s natural resources – pollute the air and the water and chop down the forests, for example – that also has a negative impact on our bodily and mental health."

"And, of course, a shortage of resources also engenders social problems. However, says Bärnighausen, progress in human health may come at the expense of planetary health when, for instance, better food supplies are achieved by environmentally detrimental intensive agriculture.

In his role as director of the Heidelberg Institute of Global Health (HIGH), Bärnighausen works directly on solutions to these challenges and their interaction. He was recently one of the organisers of a major symposium on climate change and pandemics: climate change is not only responsible for heat, storms and torrential rainfall that pose an immediate threat to our lives, it also indirectly threatens our health by increasing the likelihood of pandemics – such as the spread of exotic mosquitoes in Europe which can transmit dangerous diseases like the West Nile virus, dengue fever or malaria.

In 2005, for example, the first Asian tiger mosquito turned up in Barcelona. In the last few years, there have been outbreaks of Chikungunya fever, which it transmits. Bärnighausen, who is conducting a project there together with his team and local partners, thinks the sewer system could offer a solution. In Barcelona, it partly dates back to Roman times and is an ideal breeding ground for exotic mosquitoes that feel happy as Larry in the warm and humid darkness. "The mosquito offspring thrive in the underground canals where there is often a lot of standing water. They are now supposed to be replaced by curved canals so that the water can drain everywhere."

One method the researchers use to regularly check whether the measures are having the desired effect involves setting up mosquito traps to measure population density.

Bärnighausen’s institute specialises in what is known as intervention research, in which it is a world leader. He would like more institutions to do the same. "Not just in health research but also in politics, development aid and climate protection – everywhere where we should constantly be conducting scientifically sound checks to see whether an intervention in a system is really having a positive impact." Medicine, in which evidence as the basis for progress is now the standard, was a pioneer in this respect.

In this, Bärnighausen also addresses the German government. "There tends to be a lack of willingness to try out new approaches of the type I encounter in Africa, for example in trying to contain HIV."

The mathematician is an AI specialist and models, amongst other things, the links between climate change and infectious diseases on a computer. Thus, at HIGH, medicine, social science and computer science form something of a symbiotic relationship.

"As a medical historian by training, I know that people in history always found good solutions to the challenges of their time," says Bärnighausen. "With intervention research and our new technologies, we are now managing that considerably faster and more sustainably."

THE GOVERNMENT IS HESITANT TO TRY OUT NEW APPROACHES.

AI FOR FASTER SOLUTIONS

In order to explore which approaches prove successful, huge volumes of data are required. And to manage these, Bärnighausen works together with his colleague Joacim Rocklöv, the second Humboldt Professor at his institute. The mathematician is an AI specialist and models, amongst other things, the links between climate change and infectious diseases on a computer. Thus, at HIGH, medicine, social science and computer science form something of a symbiotic relationship.

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FROM THE FOUNDATION’S NETWORK

Humboldt Foundation and partners support Ukrainian researchers

Under the Europe-wide aid programme MSCA4Ukraine, the Humboldt Foundation, together with Scholars at Risk Europe and the European University Association, has selected 124 at-risk researchers from Ukraine, 111 postdocs and experienced researchers as well as 13 doctoral candidates, to continue their work at European host institutions. The European Union is providing 25 million euros to implement the programme.

DIVERSITY

Investigating strategies

Representatives of the political arena, science and diversity management as well as research funding organisations got together on 2 March at the Berlin-Brandenburg Academy of Sciences and Humanities to discuss the interaction between excellence and diversity. Reviewing current measures and activities being undertaken in the international science system, the aim was to gain strategic ideas for the work of research and funding organisations.

NOBEL PRIZES

Physics Nobel Prize for Humboldtians

The Humboldtians Alain Aspect (l.) and Anton Zeilinger (r.) were jointly awarded the 2022 Nobel Prize in Physics together with John F. Clauser. The three scientists were honoured for their pioneering experiments in quantum research. This now takes the total number of sponsorship recipients in the Humboldt Foundation’s worldwide network who have received a Nobel Prize to 59.

EU FELLOWSHIPS

SCIENCE COMMUNICATION

The next big bang in research

What is science expecting to see in 2023? With new space missions, pioneering AI applications and developments in biotechnology – how can and should researchers and journalists report on the next “big bang” which is already fundamentally happening, even though it has not yet become everyday reality? How much news value should we ascribe to risky or early-stage research? In May 2023, Humboldt Foundation sponsorship-recipients and journalists in the International Journalists’ Programmes are getting together for a joint workshop.

All current topics at www.humboldt-foundation.de/en/newsroom

CORPORATE DESIGN

The Humboldt Foundation’s new look

In the Foundation’s anniversary year, we are asking “What’s next?” – visually, too. In mid-March, the Humboldt Foundation launched a new corporate design which evokes a spirit of new departures and hope. The modernised image mark reflects the diversity of our international network and, at the same time, demonstrates qualities that characterised our namegiver, Alexander von Humboldt: flexibility of thought and action.

All current topics at www.humboldt-foundation.de/en/newsroom

DIALOGUE

Handling natural resources sustainably

In the context of the Humboldt Residency Programme, the Foundation brings together researchers, creatives, activists and journalists at a six-week residency in Berlin. The aim is to share ideas on the challenges currently facing society. The motto for 2023 is “Our Precious Resources: Pathways to a Secure and Sustainable Future.” Interdisciplinary dialogue is designed to generate new approaches to tackling the global resource crisis.

More information at www.humboldt-foundation.de/k115-02

MORE INFORMATION

www.humboldt-foundation.de/k115-01

www.humboldt-foundation.de/k115-02

www.humboldt-foundation.de/k115-03

www.humboldt-foundation.de/k115-04

www.humboldt-foundation.de/k115-05

www.humboldt-foundation.de/k115-06
SHE MONITORS THE MONITORING

Margaret E. Roberts’ research field could not be more pertinent. With the help of artificial intelligence and machine learning, the political scientist and data researcher investigates the Internet censorship practices of authoritarian states. Furnished with a Max Planck-Humboldt Research Award, she is now examining the role of social media platforms.

Text: MARLENE HALSEN

THE FACT THAT MARGARET E. ROBERTS IS CURRENTLY RESEARCHING INTO CENSORSHIP AND THE INFLUENCE OF SOCIAL MEDIA PLATFORMS ON PEOPLE’S DECISION-MAKING IS DUE TO A COINCIDENCE. OR RATHER, A DISCOVERY THE AMERICAN MADE QUITE BY CHANCE.

WHEN ROBERTS, KNOWN AS MOLLY, BEGAN WORKING ON HER DOCTORATE AT HARVARD IN 2009, SHE ACTUALLY INTENDED TO FOCUS ON INTERNATIONAL TRADE RELATIONS. SHE HAD PREVIOUSLY STUDIED INTERNATIONAL RELATIONS AND ECONOMICS AT STANFORD AND RECEIVED A MASTER’S IN STATISTICS THERE. SHE HAD, HOWEVER, TAKEN CHINESE LANGUAGE CLASSES AND REPEATEDLY SPENT TIME IN CHINA. “I WAS VERY INTERESTED IN THE RAPID GROWTH OF THE CHINESE ECONOMY AT THAT TIME AND WANTED TO USE DATA ANALYSIS TO DISCOVER HOW IT CAME ABOUT,” SAYS ROBERTS. BUT EVERYTHING TURNED OUT DIFFERENTLY.

MOLLY ROBERTS’ SUPERVISOR AT HARVARD WAS GARY KING, A WORLD-LEADING SPECIALIST IN QUANTITATIVE METHODS. “GARY WROTE TO TELL ME AND ANOTHER GRADUATE STUDENT AT HARVARD, JENNIFER PAN, THAT HE HAD FOUND ALL THESE CHINESE BLOGS AND THERE WERE FAR TOO MANY OF THEM TO READ THEM ALL,” ROBERTS EXPLAINS IN A VIDEO THAT FROM HER APARTMENT IN CALIFORNIA, WHERE SHE LIVES WITH HER HUSBAND AND CHILDREN. “HE WANTED TO KNOW WHETHER I WOULD BE INTERESTED IN FINDING OUT HOW YOU COULD USE ARTIFICIAL INTELLIGENCE TO DISCOVER A WAY OF STRUCTURING THIS MASS OF DATA.”

THE POST WASN’T THERE ANYMORE. “SORRY, THIS ENTRY IS NO LONGER AVAILABLE!” APPEARED ON HER SCREEN. THE RESEARCHER STARTED CHECKING OTHER URLS AND DISCOVERED THAT ESPECIALLY THE POSTS THAT HAD BEEN POSITIVE ABOUT THE PROTESTS HAD DISAPPEARED. IT SOON BECAME CLEAR THAT THE CHINESE PROPAGANDA MINISTRY HAD CENSORED THE POST. ROBERTS REALISED WHAT SHE HAD HIT ON: “WITHOUT SEARCHING FOR IT, WE HAD FOUND A MECHANISM FOR MEASURING INTERNET CENSORSHIP,” SHE SAYS, STILL SOUNGING REALLY EXCITED WHEN SHE TALKS ABOUT IT.

ROBERTS WROTE A PROGRAMME THAT REGULARLY PINGED THE PAGES TO SEE WHETHER THEY WERE STILL ONLINE. NO EASY TASK. IF THE COMPUTER PINGS TOO OFTEN, AT SOME STAGE THE SENDER, I.E., THE COMPUTER, WILL BE BLOCKED. “I FIRST HAD TO LEARN QUITE A LOT ABOUT PROGRAMMING,” SAYS ROBERTS, LAUGHING. AND SHE MANAGED THAT, TOO. BUT IT ALSO MEANT THAT SHE HAD TO DECIDE WHAT SHE WANTED TO WORK ON IN THE FUTURE: INTERNATIONAL TRADE RELATIONS OR CENSORSHIP?

ROBERTS’ RESEARCH FIELD COULD NOT BE MORE PERTINENT. WITH THE HELP OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING, THE POLITICAL SCIENTIST AND DATA RESEARCHER INVESTIGATES THE INTERNET CENSORSHIP PRACTICES OF AUTHORITARIAN STATES. FURNISHED WITH A MAX PLANCK-HUMBOLDT RESEARCH AWARD, SHE IS NOW EXAMINING THE ROLE OF SOCIAL MEDIA PLATFORMS.

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local protests in China, for example: “Let’s assume a person has heard about a protest but can’t find anything about it online because all the posts on the topic have been tactfully removed,” Roberts explains. “This person will ask themselves: Are there any protests happening at all? Or perhaps they will think: It can’t be that important, after all.”

PROTESTS REMAIN HIDDEN

In this situation, people need to have observed the protests themselves or heard about them from others if they are to find out about them in the first place. And in order to access blocked foreign media and their reporting, you need technical solutions like virtual private network (VPN) connections to bypass the censor. But that costs money and involves a good deal of effort, so not everyone will go the extra mile. Consequently, says Roberts, networking directed against the government and the narrative it pursues is forestalled or at least made more difficult.

Roberts is now a professor at the University of California in San Diego where she teaches and conducts research. In 2022, she received the Max Planck-Humboldt Research Award, which is granted jointly by the Humboldt Foundation and the Max Planck Society. The selection committee was convinced by Roberts’ unusual career and innovative research profile. She wants to use the award amount of 1.5 million euros to extend her research on censorship and launch a project on the role of social media platforms together with the Technical University of Munich and the University of Konstanz.

Asked about her career path, Molly Roberts says she was very lucky – simply because she had the opportunity to freely pursue her ideas and interests. “It was just on a whim that I signed up for Chinese language classes when I was a student.” She had never even been to Asia when she started university: “I was just curious and wanted to try something new.” Again, it was a mentor who nudged her in the right direction. “She recommended me to take an extra course in sociology that dealt with China under Mao.” After the course, Roberts was so fascinated that, in 2005, she spontaneously applied to a programme enabling her to spend the summer in China. “I had never even been to Asia when she started university.”

According to Roberts, the fascinating thing about it is that the machine more or less does it unsupervised. “The tool does the filtering on its own using word probability distribution,” says Roberts. “I only interpret which topic the terms belong to afterwards.”

As a young researcher, Roberts got involved in artificial intelligence through statistics. For her final project on a machine learning course at Harvard, she developed a digital tool for topic analysis that she still uses to this day. “The analysis examines the words in the various documents and then calculates which topics are the most probable,” Roberts explains. In this way huge datasets can be evaluated with the help of a computer. Together with a fellow student, Brandon Stewart, Roberts wrote a programme which also allows you to trace how topics change in the course of time. For evaluating social media platforms, this is now worth its weight in gold because you can follow online debates using the programme without having to read every single post.

The programme is now also used by other researchers as well as journalists for evaluating social media posts.

THE CENSOR AS MODERATOR

Thanks to receiving the Max Planck-Humboldt Research Award, Roberts now wants to channel these diverse findings into a completely new project: she intends to investigate how users are influenced on social media platforms and how their content moderation methods, which are anything but transparent. Molly Roberts will cooperate, amongst others, with the Konstanz political scientist Nils B. Weidmann, who conducts research on protest movements and civil wars as well as digital communication and political mobilisation. Weidmann originally came to Konstanz sponsored by the Humboldt Foundation: in 2012, he relocated there from Norway on the strength of a Sofja Kovalevskaja Award and used the funding for outstanding junior researchers to build up his own research project and working groups.

The emergence of social media platforms has produced a raft of new, interesting phenomena,” says Roberts and lists just some of them: disinformation, online harassment, hate speech, the influence of foreign governments on elections. She now wants to explore the tools that are necessary to guarantee freedom of information as well as the influence that internal moderation methods on social media platforms have on democracies. Her project is scheduled to take five years, and Roberts intends to commute between California and Germany.

Most of the work is done at the computer anyway, she notes. And the tools that she developed in the past will stand her in good stead here as well. “We’re talking huge volumes of data,” says Roberts. “They can only be tackled with the help of artificial intelligence and machine learning.”

war in Ukraine. In Iran, the regime throttles the Internet in the hope of preventing protesters from connecting and preventing information from getting out. But censorship, according to Roberts, is more than that. Particularly in peacetime, censorship is often far more subtle.

“Certain kinds of information become harder to access without people necessarily noticing,” she explains. “They have to make much more of an effort to get at the information, but many people don’t make the effort because it’s often just not practical in everyday life.” Take
The study, Germany from the outside, reveals how visiting researchers from abroad rate working and living here.

How open and tolerant are Germans in their dealings with visiting researchers from abroad? How progressive are we, how bureaucratic, how hospitable? How well equipped are the labs or libraries? What about working hours, childcare and career opportunities for junior researchers?

The Humboldt Foundation has evaluated feedback from more than 1,800 fellows from 119 countries who were hosted by German universities and research institutions between August 2018 and May 2022. The survey reveals how Germany compares with the fellows’ own countries.

TOP MARKS FOR RESEARCH AND FINANCING

Without exception, Germany scores very well as a science location in comparison with the other countries. On a scale from zero to ten, there are top scores for infrastructure, quality of research, project financing opportunities, internationality and childcare. The results vary, however, according to the fellows’ regions of origin. Sponsorship recipients from Asia, for example, rate the quality of research higher than those from North America. Nevertheless, the evaluation does show that in these fields Germany performs well irrespective of the country it is compared with.

Asked what they associated with Germany on a scale from minus five to plus five, Germany emerged as very science-friendly, democratic, gender equal, hospitable and tolerant. When it came to sense of humour and openness, the responses were not so positive.

The only negative result was for bureaucracy, whereby the fellows from Asia were the only ones to rate Germany as rather unbureaucratic. The worst score in this category came from sponsorship recipients from North America. In comparison with the last survey covering the period 2012 to mid-2018, this score dropped by a further 0.6 points.

In the comments, too, bureaucracy is frequently criticised (27 percent), followed by the language barrier (26 percent). Individual references to discrimination and racism account for six percent of the entire number of comments with sponsorship recipients from Sub-Saharan Africa reporting particularly frequently on this (10 percent of respondents from this region) and European sponsorship recipients least frequently (4 percent).

The study, Germany from the outside, reveals how visiting researchers from abroad rate working and living here.

For all the results of Germany from the outside visit: www.humboldt-foundation.de/en/explore/germany-from-the-outside/2023

Coming from USA, the level of bureaucracy was unexpectedly high. While Humboldt Foundation staff made things easy, other interactions (including international office, local city registration requirements and VISA for my family) were often very stressful.

For all the results of Germany from the outside visit: www.humboldt-foundation.de/en/explore/germany-from-the-outside/2023

The main bottlenecks during the stay in Germany were associated with adjusting to the culture, language and procedures. But these small issues were sorted near to the end of the fellowship owing to the language fellowship support from the Foundation. After a few months of stay, it was also easy to acculturate to the culture and procedural systems.

India, m
GREAT AT CHANGING DIRECTION

Who actually does what at Humboldt headquarters? Who are the people behind the scenes making sure that everything runs smoothly? This page is devoted to the colleagues at the Humboldt Foundation, their lives at work and beyond.

TODAY: DANIELA NIES.

When I joined the Foundation 13 years ago, I could already look back on several stages in my working life: I trained as a carpenter in my father’s firm, but it wasn’t the right thing for me. So, I did a complete reverse turn and finally worked as a multilingual secretary for various science organisations. Alongside this, I taught yoga and started my own yoga school. And with my yoga trainer, an Irishman, I set up the folksong duo “Laurence and Dani”. Recently, I have started doing rock music again and sing with a band. When I hear about somebody having a “krumm Lebenslauf”, which is the German equivalent of an “unusual CV” – someone who has tried out lots of things and changed direction – I really have to laugh. I like changing direction – after all I ride a motorbike.

I enjoy dealing with people in my work. And that suits me very well at the Foundation. I started in the press department in 2010 and am now the assistant to the Deputy Secretary General. I am quality coordinator and internal auditor. A lot has changed over the years: when I started, the Foundation had a staff of roughly 170, today it’s 270. And the topics are quite different, too. There was nothing like the amount of mobile working then that there is now. With all these innovations, it’s really important to me to represent the interests and rights of staff so that, hopefully, everyone feels at home in the workplace. That’s why I’ve been on the Foundation’s works council for the last seven years.

And just to be sure I don’t get bored when I finally stop work, I’ve already made plans: my husband and I recently bought two vintage motorcycles, which we are now restoring. When we reach retirement age, they will ensure we never stop changing direction. 

Recorded by TERESA HAVLICEK