

foresee

recognising signs,
devising solutions,
shaping the future

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foresee

Foreword by Prof. Dr Hartmut Ihne

“Without visions there is no change – but they do not yet lead to the goal.”

To “foresee” means to look into the future or better said – to want to look. The quality of this view differs: premonition, intuition, methodical extrapolation, logical consistency. The desire to be able to see into the future has accompanied humankind since time immemorial, in every epoch, every culture and in almost all areas – from the Oracle of Delphi to Homer’s blind seer, the religious mysticism of the Middle Ages, the scientific optimism since the European Enlightenment and up to today when futurology forecasts trends and megatrends with the assistance of AI. Science fiction also plays a role, by the way.

It is always about visions, too. Visions are important. They create a tension between now and later. Without them, there is no change. But visions alone do not lead to the goal. Nowadays, a qualitative look into the future is no longer just futuristic wishful thinking but instead closely linked to methods and concrete facts from science. Researchers from various fields are trying to find out which potential future scenarios are most likely in the coming decades. They can then identify fields of action and derive recommendations to guide political dialogue with society and initiate appropriate measures.

What role do scientific educational institutions such as Hochschule Bonn-Rhein-Sieg, University of Applied Sciences play in this?

As part of the Alliance of Science Organisations, institutes of higher education perform an important function. Unlike pure research institutes they, also and above all, foster talent. The minds of the future incubate here. At universities students acquire not only technical knowledge but also the skills to use their knowledge, their ideas, and also their personality to shape society today and in the future. The challenges and the responsibility that come along with them are immense.

Moreover, higher education institutions are always undergoing change. They follow reality and shape it at the same time. This is because they are not only part of the ‘science system’ but also part of society. As such, they are directly influenced by the developments of the transformation and change processes in which societies find themselves while, at the same time, they are constantly creating something new.

Hochschule Bonn-Rhein-Sieg recognised the signs early on and responded to challenging academic developments and social dynamics with its last three University Development Plans, formulating strategic guidelines, objectives and measures. Alongside digitalisation, an important topic in the University Development Plan 2020 to 2025 is sustainability. In 2022, for instance, Hochschule Bonn-Rhein-Sieg became one of the first universities in NRW to adopt a comprehensive sustainability strategy – as a valid framework for implementing, evaluating and optimising its measures in the area of sustainability.

For us as a university, sustainability is not just a word. We take the challenges seriously. Higher education institutes have the task of actively scientifically accompanying society and its stakeholders along the path to a sustainable and liveable future. Students, as the experts and leaders of tomorrow, are sensitised to this in all degree programmes. The President’s office of the university has therefore decided that ten per cent of all course content will be of an interdisciplinary nature and must deal with issues such as ethical responsibility in society and business.

No one should retreat into their comfort zone today in the face of gigantic ecological, social, economic, technological and geopolitical challenges. We sense now more than ever that we are all in the same boat: science, business, politics, the many social forces, we as individuals. We must learn to cooperate with each other in a new, more solution-oriented way. To Network, exchange information, communicate with each other – and to take each other seriously in mutual respect and recognition of our profound vulnerability. Then we can succeed in exploring possible options for the future and developing something like future literacy for our common future.

The future always starts right now. Good ideas are out there, so are options for action. The social climate fluctuates and is sometimes weary of change – but in large part inclined towards solutions. Please, let us not slacken in our duty to help shape the future in a positive way!

Prof. Dr Hartmut Ihne

President of H-BRS

Ministers visit

What is Hochschule Bonn-Rhein-Sieg researching in the fields of sustainability and digitalisation? How strong is a university of applied sciences in research? How well does the transfer between science and business function? In August 2022, Bettina Stark-Watzinger, Federal Minister of Education and Research (FDP), and one month later her colleague at the state level, Ina Brandes, NRW Minister of Culture and Science (CDU), informed themselves about these and other topics. In addition to discussions with University President Hartmut Ihne and other university staff, both ministers gained an overview of current research projects. Among other facilities, they visited the hydrogen and power electronics labs, the showroom of the Institute of Visual Computing (IVC) and the Biometrics Evaluation Centre (BEZ).

“Germany needs a reliable, affordable and clean energy supply in the future. Hochschule Bonn-Rhein-Sieg is pursuing ambitious research projects in this field, which are very important for this. It is our goal to embark on an innovation decade. In this endeavour, the universities of applied sciences, in particular, play an important role as bridge builders. They overcome the boundaries between theory and practice, between research and application, between science and business.”

Bettina Stark-Watzinger,

Federal Minister of Education and Research

“Hochschule Bonn-Rhein Sieg is an important location factor for the region. In research, teaching and transfer, the university of applied sciences is consistently breaking new ground and setting trends that are visible from afar. In doing so, the university can rely on the support of the state – not least in the reconstruction of the campus in Rheinbach, which was so badly hit by the severe weather disaster.”

Ina Brandes,

Minister of Culture and Science of the State
of North Rhine-Westphalia

study

We humans are the key ingredient

A long-term need and an acute impulse are two important ingredients for change. As far as long-term needs are concerned, they arise for teaching at H-BRS due to two major transformation processes at the beginning of the 21st century. The digital transformation and the transformation towards sustainability are a challenge and an opportunity for which our students must be prepared.

In view of this enormous challenge, do we need yet another impulse to develop our teaching? Well, we have plenty to choose from. The COVID pandemic gave us a crash course in the necessity and potential of digitalisation. A dialogue with ChatGPT illustrates the current level of performance of artificial intelligence and stirs up fears that machines will soon surpass humans. We painfully felt the consequences of climate change first-hand through the flood disaster at the Rheinbach campus. And our dependence on gas has forced us to conserve energy since the Russian invasion of Ukraine.

Is it all simply fate, something we are powerless against? No, and therein lies the real challenge – to foresee together, to recognise signs of undesirable developments as well as opportunities and to create solutions for them, to shape the future in a meaningful way.

I am convinced that we humans are the key ingredient. Each and every one of us is called upon to get involved, and university teaching provides a space for this. We, as teachers, have a responsibility to create meaningful learning opportunities. You, as students, are invited to choose from the relevant courses and offerings and challenge us by discussing the topics and demanding the competencies that are crucial for your future.

H-BRS is rising to the challenge. As a university of applied sciences, we discuss change and then consistently take action. You will find examples of how we are shaping teaching for the future here in this annual report.

Prof. Dr Marco Winzker,

Vice President for Teaching, Learning and Further Education

Win-win situation

The Deutschlandstipendium supports especially talented and committed students

The Deutschlandstipendium (Germany Scholarship), funded by the Federal Ministry of Education and Research, has been available since summer semester 2011. The goal, then as now, is to promote young talent at German universities. This has been very successful at H-BRS since the funding started. Currently the Germany Scholarship supports 83 students from all five departments.

It's not just performance that counts

Each scholarship holder receives 300 euros per month – 150 euros are paid by a private sponsor, the remaining 150 euros come from the federal government. Each scholarship is awarded for one year. Follow-up funding is possible after a new application. Several factors are considered when selecting the potential scholarship holders. Not only are outstanding academic achievements at school and university important but also aspects such as willingness to take on responsibility and social commitment. “The saying ‘Good things comes to those who do good’ applies,” says Melanie Garofalo, a Master’s student in the Technology and Innovation Communications degree programme. She is being sponsored for one year by the Dr Reinold Hagen Foundation. Special life stories, related to cultural background for instance, are also considered during the selection process for the Germany Scholarships.

Both sides benefit

At H-BRS, the current 83 Germany Scholarships are being supported by 37 sponsors. Six new companies joined in funding year 2022/23. These range from small start-ups to global corporations. “As part of a leading global company with more than 100,000 employees, the training and development of junior staff is a fundamental part of our corporate philosophy,” says Christoph Spiegel, managing director of Eaton Industries GmbH.

The scholarship makes a big difference for Melanie Garofalo: “Relief from the financial burden is a huge advantage. I can concentrate much better on my studies. The scholarship frees me from some extra worries.” The Master’s student also feels that the funding is a special recognition of her achievements in her studies so far. This motivates her to continue giving her all. “I get to know students from other degree programmes at workshops and lunches that the Germany Scholarship holders have together – that opens up new perspectives on the university,” Garofalo reports.

Between living room and lecture hall

The H-BRS library: redesigned and technically modernised

New furniture, new lighting, new design – the library at the Sankt Augustin campus is unrecognisable since undergoing its extensive renovation. “Thanks to great financial support from Marco Winzker, Vice President for Teaching, Learning and Further Education, we’ve been given the opportunity to modernise our library,” says Dr Armin Ehrhardt, director of the library. A lot has changed. The cosy seating creates an atmosphere “somewhere between a living room and a lecture hall”, finds Armin Ehrhardt. This is important because a pleasant atmosphere promotes learning. The library has also benefited technically, with large screens in every workroom, a WebEx desk and a one-button recording studio, where teachers can record video sequences and students can practise presentations. The student response is enthusiastic. Ehrhardt reports, “We notice this in the length of the stay – the library is often still quite full around 18:00, and study groups work well into the evening.”

New search system

The library team has not just renovated the central learning space for H-BRS students in terms of design and technology. Since July 2022, there has also been another change: Bib-Discover, the new search system of the H-BRS library. The system replaces the previous catalogue and offers a wide range of possibilities. “Bib-Discover is based on a completely new search index. The system searches the entire content of books and journals, no longer just the titles. So you find exactly what you need,” explains Ehrhardt. Thanks to Bib-Discover, students now have access to several million records, including many electronic sources. This way students can even access sources that are not part of the H-BRS library’s holdings. New filter functions also make it easier to search the huge database.

Guests on the sofa

But not everything in the library is new – old favourites are back again, too. The reading series “Guests on the Sofa”, which has been running since 2000, was reinstated after the COVID pandemic break. Prominent guests took a seat on the sofa in 2022. Among others, Natalie Amiri read from her book about Afghanistan, Shelly Kupferberg about the life of her Jewish great-granduncle, and David Wagner about family traditions at Christmas, ensuring some enthralling evenings at the library.

Fit for the future

SKILLS equips students for later – and sets new standards in e-examinations

Stress, being overwhelmed by demands, obstacles – commonplace both during studies and later in professional life. Hochschule Bonn-Rhein-Sieg counteracts this with Future Skills Training as part of the SKILLS project (“Steigerung der Kompetenzorientierung im digitalen Lehren und Lernen” – Increasing competence orientation in digital teaching and learning). “Future skills are competencies that are vital for success as a student and later on in a career. These include digital competence, self-management competence and resilience,” says Christine Syrek. The professor of business psychology leads the Future Skills Training sessions together with fellow professor Patrizia Ianiro-Dahm. “The students learn how to reduce stress, approach challenges in a relaxed way and switch off.” The free training sessions are open to H-BRS students from all departments and degree programmes. They are also well received. More than 250 students have already participated in the Future Skills Training.

By students for students

The training sessions take place in the form of 7-hour workshops. A special feature of the training since 2023 is that students themselves equip their fellow students for their studies and professional life. Participants develop future skills in interactive sessions with modern learning methods (e.g. gamification). “Students who participate in the training sessions can benefit from the experiences of their peers, who are much closer to them in terms of daily life routine and challenges than most lecturers can be,” says Ianiro-Dahm. Great interest has been shown in leading the workshops – 17 students have already completed their training as future skills trainers.

Examinations of the future

Susanne Kundmüller-Bianchini, deputy director of the library, is in charge of the second SKILLS sub-project, which is also very forward-looking: the further development of digital examinations. “So many different things are possible, from a purely digital free-text examination to complex task constructions, from completely manual to fully automated evaluation,” explains Miriam Wegener from the e-Assessment Team. The university is pressing ahead with the topic and started a pilot phase in 2021/22 with the Dynexite examination system developed by RWTH Aachen University. Demand is steadily growing. “At least one lecturer from each department has already conducted one or more examinations via Dynexite,” says Jasmin Breuer from the e-Assessment Team. Students also see advantages. “I prefer e-exams to paper exams. They’re closer to the actual working conditions and also clearer, more environmentally friendly and more modern,” reveals one student..

Mehr:

- www.h-brs.de/en/steigerung-kompetenzorientierung-im-digitalen-lehren-und-lernen

Internationalisation for everyone and everywhere

Digital international study programmes are well received and kindle interest in more

Only slightly less than ten per cent of the students at H-BRS take advantage of the university's outgoing offers to study for a semester at one of the many partner universities around the world or complete an internship abroad. "There are various reasons for this. Either the uncertainty is too great or there are financial, health or family reasons," explains Christine Freitag, project lead of the Digital International General Studies (DISG). "That's why we wanted to create a low-threshold opportunity aimed at all students, enabling them to gain international experience from home." For this reason, DISG was created in winter semester 2021/22. It offers virtual courses open to all students at H-BRS and its foreign partner universities. At the same time, H-BRS students can attend the events of the partner universities, and there are also jointly organised courses.

The content, which is almost exclusively in English, is deliberately interdisciplinary in order to reach as many people as possible. "Examples of courses include Inter-cultural Communication, Ethics, World Politics, Diversity Management and International Career Building," reports Christine Freitag. The DISG is a success – since its launch up to and including winter semester 2022/23, 353 H-BRS students and 288 students from seven international partner universities have participated in a total of 21 courses and three guest lectures. "We're very pleased about the high demand. Many students tell us that the DISG has significantly increased their interest in going abroad. The perspectives of the foreign students are perceived as enrichment," says Freitag.

Department-specific internationalisation

The Digital Internationalisation of the Faculties (DIF) project complements the DISG by providing department-specific courses and intensifying the development and expansion of digital English-language courses with the aim of supporting students in gaining international experience. "Each department has a person responsible for coordinating the implementation," explains Freitag, herself a coordinator in the Department of Social Policy and Social Security Studies. Students from Kosovo, Albania, the Netherlands and Ghana have already completed courses together with H-BRS students.

Portrait: Masharika Zamil

has been involved in student affairs at H-BRS as chair of the AStA since November 2021

“As AStA, we always work with foresight for the students. From the introduction of a new sports programme to the organisation of the summerfest and the design of the semester ticket – we are the interface between the university administration and the student body in everything. What I enjoy most about the AStA’s work is the interaction with many different groups of people. Of course, I’m in close contact with my fellow students, but I’m also in dialogue with the university management and external partners. This is the case with projects such as our new partnership with Nextbike, which we’re currently trying out at H-BRS and hope to make permanent. Anyone who has a semester ticket can borrow a bike free of charge for 30 minutes each day and ride it in Bonn and the Rhein-Sieg district to one of our university campuses, for instance. We want to promote sustainable mobility this way. Since the COVID crisis, we as AStA have been particularly concerned about bringing university sports back up to the pre-pandemic level. Sports are great for “togetherness”. We students, in particular, are aware that this has suffered in the last few years. I’m confident that we’ll do more together again in the future, which is why I’d probably like to stay involved in AStA for some time to come.”

Hochschulperle Game Studio

It is not just popular with students. Since July 2022, it has also officially been a “Hochschulperle” (“University Pearl”) recognised by the Donors’ Association – the H-BRS Game Studio. “Bestsellers in the video game industry – made in NRW” – this is how the vision of the H-BRS Department of Computer Science can be described. Professors André Hinkenjann and Ernst Kruijff opened the Game Studio in October 2021. Students acquire skills in visual computing and games technology here. They can develop and implement their own game ideas or observe and analyse the games of other game developers. The studio received the “University Pearl” award for “future-oriented learning architecture”. It will be exciting to see when the first games “made in NRW” are ready to be played.

Writing Centre in new rooms

Whether it is a research paper, a Bachelor’s or a Master’s thesis – all students are confronted with the task of writing academic texts during their university career. H-BRS supports them in this work in its own Writing Centre, which opened in centrally-located premises on the Sankt Augustin campus in summer 2022. “Through the Writing Centre’s offerings, we can address individual difficulties and make our teaching even more equal in terms of opportunity,” says Marco Winzker, Vice President for Teaching, Learning and Further Education. In addition, students can receive training to become tutors here. In the new, highly visible location, contact persons Gabriele Menne-El.Sawy and Jill Yates hope to be able to support even more students.

Detailed information on courses and other offers:

- www.h-brs.de/en/spz/writing-centre

Conference: Ethics of Transformation

A highly regarded event on the topic of responsibility took place in October 2022 at the UniClub Bonn: the conference “Ethics of Transformation”, hosted by the Forum Verantwortung (Responsibility Forum). The forum is the second pillar of the Centre for Ethics and Responsibility (ZEV) alongside the supplementary study programme “Responsibility”. The central question: What significance do ethical reflections have for a positive, just, climate-friendly shaping of our future? This was discussed by experts from science and society, including sociologist Harald Welzer, philosopher Janina Loh, environmental scientist Ernst Ulrich von Weizsäcker and environmental psychologist Lea Dohm from Psychologists for Future. H-BRS honorary professor Gert Scobel served as moderator. Around 350 people took part and joined in the discussion – over 100 of them were on site; the others tuned in online.

Video recording of the conference:

- <https://vimeo.com/764776749/d639a413ce>

Under the banner of responsibility

How do we deal with the social challenges of our time?

Climate change, war, social inequalities, poverty – we have seemingly never been faced with such a large number of crises as we are today. Many young people ask themselves: How do we deal with this? And how do we manage to initiate positive changes? H-BRS wants to find answers to these questions through the study programme “Responsibility”. Launched by the Centre for Ethics and Responsibility (ZEV) in 2021, the interdisciplinary study programme, designed to supplement a standard degree course, offers students the opportunity to deal intensively and self-determinedly with the topics of ethics, responsibility and sustainability. “Students learn to navigate the multitude of sustainability-related issues in a scientifically sound manner. They learn to describe and analyse open questions about the future, justify their own positions, perceive the perspectives of others, practise addressing complex issues, and deal with contradictions,” says Professor Klaus Lehmann, managing director of the ZEV and initiator of the “Responsibility” programme as a systematic studies-supplementing course. It is open to students of all departments and can be taken parallel to a Bachelor’s or Master’s degree. Successful graduates receive a sustainability certificate upon completion.

Innovation Award for Sustainability

The voluntary study programme is quite popular with students. “I chose H-BRS because of the “Responsibility” programme. It gives you the opportunity to earn a solid science degree while dealing in parallel with one of the biggest challenges of our society – how we want to and can live in the future,” says Jana Dingels. She studies Chemistry with Materials Science.

At the first-ever Innovation Award for Sustainability, the “Responsibility” programme won joint second place. Professor Lehmann’s team is particularly pleased about the 3,000 euros prize money: “This is a great encouragement for us. The prize belongs to the team and the students, who are so courageous, hopeful and motivated to shape the future responsibly.” The Innovation Award for Sustainability honours innovative sustainability projects from research, teaching and transfer and was created in the course of the H-BRS sustainability strategy published in 2022.

Right in the middle instead of just afterwards

H-BRS wants to optimise its teaching with a new evaluation tool

Teaching Analysis Poll – TAP for short – is the new system for evaluating courses at H-BRS. Introduced in winter semester 2021/22 by the Centre for Teaching Development and Innovation (ZIEL), TAP further develops the topic of teaching evaluation. Unlike classic evaluation methods, where students evaluate their seminars, lectures and courses at the end of each semester, TAP starts much earlier. “Since it is already used during the semester, it helps to identify factors that promote and hinder learning at an early stage,” says Alexandra Reher, research associate at ZIEL.

Three questions

Another special feature: the evaluation itself takes place without the teacher. Instead trained moderators from ZIEL accompany the process. The Teaching Analysis Poll follows a set pattern. After the teacher has left the room, the moderator asks the students three crucial questions. What do you learn most from in this course? What hinders your learning in this course? What suggestions for improvement do you have for these hindrances and for the course in general? Afterwards, the results are discussed in a plenary session – the moderator takes meeting minutes, formulates a majority opinion and hands the anonymised results over to the teacher. “It is important that the teacher discuss the results with the students afterwards, so that the intensive feedback from the students is also reflected upon,” explains Reher.

Demand doubled

TAP is very well received by the teachers, reports the research associate: “We started with six TAPs in winter semester 2021/22 as a pilot project. It was so welcomed that demand doubled the following semester. Since then, it has been a popular and well-established tool.” The students are also enthusiastic: “Their feedback is consistently positive. They appreciate the interactive exchange with the teacher. Even though it is more time-consuming than a questionnaire survey, the students find TAP efficient and useful.”

Overall, it is an excellent method for promoting the further development of teaching. “Especially when new teaching methods are used, they can be refined or developed further in a targeted manner,” says Alexandra Reher.

Glass or plastic?

Sustainable redesign of the degree programme in chemistry

The Bachelor's degree programme in Chemistry with Materials Science has new content and is now called Sustainable Chemistry and Materials. Director of the programme, Professor Steffen Witzleben, explains why this step was important.

Why did you redesign the Chemistry with Materials Science degree programme?

We have already had the "Blaue Schiene" (Blue Track) in the old degree programme since 2015 – an interdisciplinary module that familiarises students with the topic of sustainability. In 2022, we finally made changes to the degree programme itself as part of a re-accreditation procedure because we wanted to significantly strengthen the sustainability aspect.

How did the redesigning process work?

The students were part of the process from the beginning and contributed their ideas. In workshops each with four to six students, mostly from the fifth semester, we discussed how we could improve the degree programme. Which modules needed to be revised? What is important from a student's perspective? What is going well, what is going poorly? It quickly became clear that sustainability is a huge topic in chemistry and needed to become a more integral part of the programme.

Which study content has changed specifically?

We have created many new modules that deal with sustainability. The module "Stoffströme im Wandel" ("Material Flows in Transition"), for instance, which deals with the topic of recycling from a chemical perspective. How can substances and materials be reused to create new products? Or, what happens during the lifetime of a chemical?

Was internationalisation also a goal?

Yes. We now offer English-language portions for almost half of all modules. This prepares students even better for their future professional life.

How do you look forward to the coming winter semester when the new degree programme launches?

We hope that the degree programme will enable students to deal with the topic of sustainability in a well-founded and competent manner. That they acquire basic knowledge and know how to use it critically. A good example is the question: Which is more sustainable - a glass bottle or a plastic bottle? That's not so easy to answer in a general way, because glass is more difficult to produce, but it can be used for longer. Plastic, on the other hand, is thrown away more quickly, but is much easier and cheaper to produce. We want to sensitise the students to such issues.

Between Africa and the Rhineland

In the BAIN project, students learn to negotiate internationally

Discussing market entry strategies with colleagues from Kenya and Ghana – that sounds like the work of international representatives and politicians. But in fact it is part of the studies at H-BRS. The university, together with the University of Cape Coast in Ghana and the University of Nairobi in Kenya, organises BAIN, which stands for “Becoming an International Negotiator”. Regina Brautlacht, H-BRS Presidential Commissioner for Global Digital Learning, is the initiator of the project, which is funded by the German Academic Exchange Service (DAAD).

Across continents

BAIN launched in summer semester 2021: “Our goal with BAIN is to connect students from Ghana, Kenya and Germany in a digital learning environment. They gain practical experience in leading international negotiations in their Master’s programme in marketing,” Brautlacht explains. Currently, 43 marketing students from the three countries are participating in the virtual collaboration project. Brautlacht receives support from her African colleagues, Dr Gloria Agyapong from Ghana and Dr Joseph Owino from Kenya, who both teach marketing at their respective universities and designed case studies that the students used to discuss the entry of European products into the African market.

Students establish their first international contacts with BAIN: “I got to know our Ghanaian and Kenyan colleagues professionally and personally and, thanks to the interaction, better understood their communication styles, negotiation techniques and business practices. The knowledge of the different cultural backgrounds is absolutely useful for my future global business relations,” reports Linh Dinh, who participated in BAIN in summer semester 2022.

Summer School at H-BRS

In June 2022, the students finally met in person. Students from the two African universities travelled to the Rhineland to talk about the topics of negotiation and corruption. “The Summer School gave them the opportunity to continue building on their experiences from the online activities and have more intensive intercultural conversations,” says Brautlacht. In May 2023, the second BAIN Summer School took place, because: “The evaluations were very positive – we are extremely satisfied!”

research

Awarding of the right to confer PhDs – a landmark occasion

Why do we conduct research? Because we want to understand our world and identify where problems lie and how we can solve them to make our future sustainable and worth living. COVID, climate change, war or growing social inequalities – in times of crisis, independent research is particularly important because it provides orientation so that we do not succumb to mere opinions, manipulations and fake news.

The greatest challenge of our time is the socio-ecological transformation. The diverse research at H-BRS contributes to the success of this transformation by combining knowledge-based and application-oriented research. Transformation requires evidence-based and ethically-reflected research so that despite all the changes in our society, people remain in solidarity, mindsets remain open and our democracy remains resilient.

A landmark occasion for the universities of applied sciences was the awarding of the right to confer doctorates to the jointly supported Graduate School for Applied Research in NRW on 17 November 2022. This is also a recognition of the outstanding research achievements of H-BRS.

The right to confer doctorates ensures that students can follow a direct path to a PhD through their studies at H-BRS as a matter of course. For many years now, the H-BRS Graduate Institute and its scholarship programme have been creating the structures necessary to support researchers during the early phases of their career.

The further development of research at H-BRS is also reflected in the increasingly frequent interdisciplinary cooperation projects throughout the university, which successfully conduct research together with partners at home and abroad. In terms of topics, in addition to the university's established areas of research, forward-looking and rapidly growing research is emerging in the life sciences as well as in cross-disciplinary molecular modelling.

We cannot foresee the future, but strong research at Hochschule Bonn-Rhein Sieg will help us to navigate it better.

Prof. Dr Remi Maier-Rigaud,

Vice President for Research and Young Academics

Rescuing the forest with AI

Reforestation with drones – researchers from the Institute for Technology, Resource and Energy-efficient Engineering (TREE) develop reliable methods

Heat, drought, storms, wildfires and bark beetles – our forests are acutely threatened by many dangers. According to the federal government's Forest Status Report, only every fifth tree examined in Germany is still healthy. Counteracting forest dieback would mean reforesting an area larger than the Saarland. But skilled personnel for this task are lacking. A fast, reliable and cost-effective solution is offered by the Garrulus research project at TREE, led by Professor Alexander Asteroth.

Comprehensive analysis

Garrulus is the Latin name for the Eurasian jay, which contributes to reforestation through its natural behaviour. In autumn, a jay hides up to 5,000 acorns in the forest, but also loses some along the way or fails to rediscover some of its hidden stores later on. In a best-case scenario, this leads to the growth of new oak trees. "We imitate the bird's behaviour with the technology we have developed but drop the seeds in a more targeted manner," explains Asteroth, a computer scientist. This is because only fertile forest soil is suitable for sowing.

To locate such fertile soil, a drone with several cameras (RGB, thermal, multispectral), as well as light and distance sensors, flies over the area first. "The next step is to comprehensively analyse and quantify the data collected," clarifies Ahmad Drak, a doctoral student involved in the project. Specially developed machine learning and computer vision algorithms are used for the data analysis. "This allows us to assess the composition of the soils and prevents us from wasting expensive seeds on infertile ground," says Drak.

Efficient sowing

A drone with a 2.6-metre wingspan is used for precise direct sowing. "The sowing method we have developed is a combination of technology, software, AI and a free-moving mobile drone as well as a special sowing technique," reports Asteroth. Discussions on how the prototype can best be implemented are currently taking place with the project partner Landesbetrieb Wald und Holz NRW. The long-term goal is a sowing method that places the seeds so deeply into the ground that they are directly above the fertile mineral soil. The Garrulus project is funded by the Ministry of the Environment of North Rhine-Westphalia.

More:

- www.h-brs.de/en/garrulus
- www.innovationmall.de/showroom-tree/

In TREE's new virtual showroom, interested visitors can find detailed and descriptive information about the project. They digitally step out of a building and onto a cleared area in the middle of the forest where a drone is hovering. Embedded videos and information boards await them there.

Heart of the energy transition

H-BRS expands research on power electronics and signs cooperation agreement with Fraunhofer Institute for Energy Economics and Energy System Technology

Since the beginning of the Russian war of aggression against Ukraine, the implementation of the energy transition in Germany has picked up speed. Power electronics are of central importance to this because wind and solar energy are being further expanded. Efficient and cost-effective power electronics are required for feeding the electricity produced into the grid. In the energy supply system, they are used for coupling renewable energies, for sector coupling and for connecting storage systems and consumers. The team led by Marco Jung, Professor for Electromobility and Electrical Infrastructure, is working on future-proof power electronics components in several research projects.

Power electronics as a key technology

“We have to understand power electronics as a key technology in the energy transition, because it plays a decisive role not only in wind and solar energy but also in the production of green hydrogen, in electromobility and, in the future, in providing a stable power grid. Even heat pumps only work with the help of power electronics,” Jung explains. In addition to high-performance, resource-saving and cost-effective power converters for photovoltaic systems (GaN-HighPower project), he and his team are researching a battery power converter that can produce an electricity supply in the event of an emergency by using local renewable energies (LEITNING project). The HyleiT project is researching a cost-effective electrolysis converter with system services for the production of green hydrogen. Electromobility, in which power electronics are used for charging technology and in the engine, will also be increasingly focused on in the future.

In all these projects, H-BRS will be working even more closely with the Fraunhofer Institute for Energy Economics and Energy Systems Technology (Fraunhofer IEE) in Kassel in the future:

More:

- www.h-brs.de/en/hyleit
- www.h-brs.de/en/gan-highpower
- www.h-brs.de/en/leitning-leistungswandler-fuer-die-robuste-und-zuverlaessige-energieversorgung-durch-integration

Lucrative niche market for health and tourism industry

Germany's only research area in medical tourism is being further expanded

Around 750 million euros – that's how much the German healthcare system earned in 2021 from treating patients from abroad. The Department of Management Sciences is home to Germany's only research area on medical tourism. Its new head, H-BRS graduate Mariam Asefi, is expanding it further.

Strengthening Germany as a healthcare destination

Even though numbers dropped due to the pandemic, Germany is still one of the most popular destinations for international patients worldwide. "On the one hand, this is due to the sometimes inadequate supply of medication as well as the lack of trust in the healthcare system in the home countries, but on the other hand, it is also due to the highly specialised range of therapies available in this country," explains Mariam Asefi. The Bonn region, for instance, is known for its good ophthalmology services. The United Arab Emirates and Qatar even have health offices here. However, almost 65 per cent of all foreign patients in Germany now come from neighbouring European countries. H-BRS is the only university nationwide to publish a comprehensive data analysis on medical tourism annually.

Even though this industry is highly dependent on external factors such as inflation, war and sanctions, and environmental disasters, strengthening the niche market is well worth the effort, says Asefi: "If the management is well positioned, clinics and medical service providers can generate income that can be used to cross-finance other areas."

Since returning to Hochschule Bonn-Rhein-Sieg in 2021, she has been using her extensive practical experience to develop the research area further. She has, for instance, published the first practical handbook on medical tourism. It is dedicated to her mentor, medical tourism research pioneer and H-BRS lecturer Jens Juszcak, who passed away in 2020.

More:

- www.h-brs.de/en/wiwi/medizintourismus

Mariam Asefi

The topic of medical tourism has accompanied the business graduate (“Diplom-Kauffrau”) since she began her studies at H-BRS in 2007. Her first term paper on the economic significance of Arab patients for the hotel industry in Germany and her Diplom thesis on the topic of “Establishing International Offices” were followed by many other research projects in cooperation with Jens Juszcak, the founder of the research area. She also completed an internship at the German Chamber of Commerce Abroad in Dubai. Her first job took the H-BRS graduate to the international office of a large Berlin hospital group. During her 15 years of working at clinics, Asefi always kept in touch with H-BRS and her mentor Jens Juszcak. Thus, after his sudden passing, taking over management of the nationwide unique research area was of heartfelt importance to her. Asefi continues to pursue the topic of medical tourism as a teaching, research and transfer task for science and practice. She heads the working group “University and Large Hospitals” and also set up the working group “German Network – Health Tourism Destinations,” where German destinations active in medical tourism discuss the potential and challenges of their industry.

“Among the leaders in Germany”

In 2022, H-BRS and the Fraunhofer IEE institutionalised their existing project-related collaboration with a cooperation agreement. “This enables us to strengthen ties with applied research institutions, which opens up new opportunities at the highest level,” says Professor Marco Jung, who is also head of the unit “Power Electronics and Electrical Drive Systems” at Fraunhofer IEE. The cooperation also ensures sustainable expansion at the personnel level. Ten research associates now work in the field of power electronics at H-BRS, and another five are to be added in 2023. “We are among the leaders in Germany with what we have built up here,” says Jung.

Worthwhile competition for BRS Motorsport

The 2022 season was packed with highlights for the BRS Motorsport Club and their electrically-powered racing cars. Although they did not succeed in defending their title at the Formula Student in Spain, it was “a worthwhile competition and a successful end to the season,” according to team supervisor Professor Dirk Reith. In the club, which has existed since 2006, H-BRS students can train technical-practical and social skills as well as build contacts for their future careers. A racing engineer certificate is proof of the students’ commitment alongside their studies. Thanks to the support of numerous sponsors, the club has the financial backing to develop a racing car every year. With this car, the students compete in the international Formula Student competitions. The team regularly accepts new members:

- www.brsmotorsport.de

Portrait: Cathleen Müller

is working on a doctorate at the Centre for Entrepreneurship, Innovation and SMEs on the key factors behind the success of rural coworking spaces

“The world of work is changing. Mobile office, working from home – all this is part of everyday life for many people today. Coworking spaces in particular have experienced an enormous boost in recent years and are now an integral part of the infrastructure in metropolitan areas. I’m a big fan of this type of “New Work” myself. A good portion of my Master’s thesis was written in a coworking space in Bonn. There are also some coworking spaces in rural areas because people don’t want to commute to the city every day or sit alone in their office at home. In my doctoral dissertation, I want to find out what it takes for coworking spaces to be successful in rural areas. For instance, does municipal financial support during the start-up phase ensure that coworking spaces succeed? Can their longevity be predicted based on the choice of location? My approach to researching this is to work in an interdisciplinary way. On the one hand, I look at success factors, which is a research field in accounting and finance. On the other hand, I’m interested in rural development, which is part of economic geography. Research is a lot of fun for me and the epitome of foreseeing – I want to find out now which models will last into the future.”

Milestone for applied research

Graduate School for Applied Research in NRW awarded the right to confer doctorates

On 17 November 2022, the time had finally come. Ina Brandes, Minister of Science and Culture in NRW, awarded the Graduate School for Applied Research in NRW (PK NRW) the independent right to confer doctorates after the Science Council had issued a recommendation to this effect in July. The universities of applied sciences in NRW can now independently conduct doctoral procedures and confer PhD degrees. Previously, this was only possible in cooperation with a university. This “step consistent with science policy,” according to H-BRS President and PK NRW Board Member Hartmut Ihne, is a milestone – also for Hochschule Bonn-Rhein-Sieg.

Pioneering work by H-BRS

As a research-intensive university of applied sciences, H-BRS has been pursuing the issue of doctoral studies for a long time – with the establishment of the Graduate Institute (GI) in 2010, for instance. Doctoral students are supported in their PhD projects here and furthered in their scientific development through a number of qualifications on offer. Since the GI was established, 54 doctoral examination procedures have been completed successfully at H-BRS. Currently, about 120 doctoral projects are in progress. In addition to the natural sciences and computer science, there are now also more and more projects from engineering, the management sciences and social policy. The independent right to confer doctorates gives new impetus to the research work of H-BRS, which combines theory and practice. This is because it can now tap into new research funds that were previously closed. This also makes the university of applied sciences more attractive for students, the researchers of tomorrow.

As of February 2023, 366 professors and associated members from a total of 21 universities of applied sciences in the state belong to the Graduate School of Applied Research in NRW. Only professors who have proven their strength in research can become members and subsequently conduct doctorates with the help of the institution. 37 professors of Hochschule Bonn-Rhein-Sieg currently hold membership. University President Hartmut Ihne is a member of the Board.

More on the Graduate School:

- www.pknrw.de

PK NRW obtains right to confer doctorates

- youtu.be/YkQQ7dZN_VM

Big push for the freedom of research

Interview with Professor Rainer Herpers, Director of the Graduate Institute at H-BRS and Founding Director of the Department of Computer Science and Data Science at the Graduate School for Applied Research in NRW

Are you satisfied with the result?

With the independent right to confer doctorates, we have taken a big step that we have been working towards for twelve years. I am naturally quite pleased about this. But we are also facing a major challenge. The Graduate School NRW is, so far, a unique institution in Germany, which we are building from the ground up. In order to be able to create university-like structures, we will need adequate funding in all areas – administration, teaching, research – in the future.

What does the right to confer doctorates mean for H-BRS?

This is a big push for the freedom of research. H-BRS has been expanding its research capacities for years and is very strong in research. Now we can finally offer young scientists a reliable framework for their doctoral procedures and pursue research topics on our own responsibility. This strengthens our self-image.

What advantages do doctoral students have as a result of this?

They can plan more reliably and no longer have to go door-to-door at universities in the hope that someone will want to supervise their specific doctoral topic. From now on, everything remains in the same hands, and time-consuming coordination with the cooperating universities is no longer necessary. As a result, the doctoral students can conduct their research more efficiently right from the start.

What are your wishes for the future?

More resources so that we lose the competitive disadvantage against the universities. Due to the new additional responsibilities, the professorial staff needs to be increased so that there are no gaps in teaching. So far, a great deal is still based on voluntary structures. Engagement within the framework of doctoral procedures can be credited to the teaching load now, but it is nevertheless an additional responsibility that is not adequately counter-financed by the state. We also need some basic funding for research. Third-party funding alone is not enough.

Of whales and people

At the Institute for Functional Gene Analysis (IFGA), the regulation of the human salt balance is being researched with a focus on evolution

They are found in all cells and are important for the functioning of our body: ion channels. These proteins, which are located in cell membranes, are responsible for transporting salts. When an ion channel allows salts to pass through the membranes, small electrical voltages are created that the body uses as important physiological signals. Without enough salt in our body, we could neither hear nor smell, let alone think or move our muscles. However, an excess of salt can also be dangerous to our health. This is because the volume of extracellular fluid increases with the sodium content in our body, which leads to high blood pressure if there is too much salt in the organism.

Evolution helps in gaining knowledge

Our sense of taste for salt is also very important for the regulation of the salt balance, and a special ion channel is most likely involved. To investigate this more closely, Professor Mike

Althaus and students Yassmin Mohamed, Chiara Jäger and Fynn Zahnow set out together on the evolutionary trail. "Our sense of taste for salt probably arose when our vertebrate ancestors began settling on land and had to perceive salt through chemical senses in order to maintain their salt balance," Althaus explains. Conversely, there are vertebrates that moved from land to water later in evolution. Their descendants, such as whales, presumably no longer need the chemical senses in seawater. "A closer look at whale DNA shows that certain genes which code for ion channels are lost," says Althaus.

The find was made possible by large databases in which entire genomes of various creatures are stored. This enabled the students to bioinformatically analyse the DNA of selected organisms and find traces of the genes they were searching for in over 20 species of whale. According to Althaus, this is a prime example of linking basic and applied research: "Looking at the animal kingdom through the lens of evolution helps us understand how organisms have adapted to their habitats and lets us explore topics, such as how the sense of taste for salt works in humans."

VIDEO: Institut für funktionale Gen-Analytik

- youtu.be/RNYGI8EqCgQ

Safe at sea

Researchers at the Institute of Safety and Security Research are developing new sensor systems for hazard detection in alternatively-powered vehicles on ferries

At the latest with the EU's decision to allow only new emission-free cars from 2035, it is clear – the future belongs to alternatively-powered vehicles. Hydrogen, LPG (Liquefied Petroleum Gas) or LNG (Liquefied Natural Gas) as well as electric motors will replace petrol and diesel. However, the alternative fuels are far more volatile and pose a greater risk of fire or explosion in the event of a leak. This creates new challenges for safety – when transporting vehicles on ferries, for instance. Researchers at the Institute of Safety and Security Research (ISF) addressed this concern in the ALBERO project funded by the Federal Ministry of Education and Research.

Danger of hard-to-extinguish fires

“We have developed a multi-sensor system for monitoring ferry decks that sends alerts when alternative fuels are leaking. We also conducted research on the safety of charging stations for electric vehicles,” explains Professor Peter Kaul from ISF, head of the project. The worst-case scenario with electric vehicles can be a “thermal runaway”, i.e. overheating of the charging lithium-ion battery. “This can lead to a fire that is hard to extinguish since the battery does not require oxygen to burn,” says Kaul. With his team, he researched ways to detect when the battery was in a critical state at an early stage, such as by measuring the hydrogen that is produced shortly before the thermal runaway.

The challenge for the multi-sensor system is that hydrogen rises quickly due to its low density, whereas LPG and LNG tend to collect down below. Since the sensors are suspended from the ceiling, the research team has connected them to all areas of the deck via a pipe system. “We’ve achieved good results. Now we want to check whether the current development of the system suffices for comprehensive monitoring of the ferry deck or whether the sensors need to be distributed differently. Ultimately, this is also a question of cost,” says Kaul. The system developed at H-BRS will be operated on board the ferry between Hoek van Holland and Harwich in the UK after the project is completed in 2022 with funding from the university. This is a win-win for research, explains Kaul: “Everything is installed, and we can now generate information about the long-term stability of the system.”

More:

- https://alberoprojekt.de/#xl_xr_page_index-eng

In good form

Public research project on resource-saving processes for plastic products

From the shampoo bottle to the plastic tray in the fresh produce section of the supermarket – plastic packaging is pervasive in our lives. To save energy and resources in the future, something in its production has to change. Professor Christian Dresbach and his team are researching exactly what in the ROForm (Resource Optimized Forming) project.

ROForm focuses on the manufacturing processes of plastic packaging that is produced either by blow moulding (such as shampoo bottles) or thermoforming processes (such as the plastic trays at the deli counter). The packaging changes shape during the process. The researchers in the ROForm project are investigating exactly which factors play a role in this. Why does the shampoo bottle shrink when it cools down from melting temperature to room temperature? Which steps in the manufacturing process could be carried out more quickly? How can the resulting waste be reduced? “The core of our research work is complex computer simulations. In the process, we develop models that should lead to saving materials and energy in manufacturing,” explains head of the project, Christian Dresbach, Professor for Materials Science, particularly structural and functional materials and simulation.

Lower production costs and fewer emissions

Melting down, shaping, cooling – these steps are clearly defined, but there is some uncertainty about the detailed characteristics of the material. ROForm aims to change this. “To be able to develop models that are as reliable as possible, we attach great importance to detailed material characterisation,” Dresbach explains. On the basis of the individual parameters that make up the plastic, more precise information can be obtained about where material can be saved and which steps in the process can be carried out faster. This is advantageous for companies, says Dresbach, a materials scientist: “Less material and shorter production times reduce production costs and lower the carbon footprint.”

ROForm is funded by the Federal Ministry of Education and Research and runs until 2024. The Dr Reinold Hagen Foundation, the Rikutec Germany Group and Silver Plastics GmbH are involved as external partners.

MAGAZINE foresee

“Science diplomacy should be expanded”

In science as in diplomacy, it is advantageous to foresee circumstances and challenges and keep the channels of communication open even under difficult situations. But there are limits. Alexander Graf Lambsdorff, deputy chair of the FDP in the German Bundestag and future German ambassador to Moscow, and University President Hartmut Ihne talk about where the lines run. They also discuss the role of science diplomacy, the gap between scientific knowledge and political practice, and various ways of supporting scientists at risk.

Alexander Graf Lambsdorff

has been a member of the Bundestag for the FDP representing Bonn since 2017. His responsibilities include foreign, security, European and development policy. He was previously a member of the European Parliament from 2004 to 2017, and its Vice President from 2014 to 2017. As early as 1995, Lambsdorff received training as a diplomat and in 1997/1998 was a member of the planning committee in the German Federal Foreign Office under the then FDP Foreign Minister Klaus Kinkel. He gained experience in the German Embassy in Washington from 2000 to 2003. From summer 2023, Lambsdorff will represent Germany in Moscow as ambassador.

Could the Russian invasion of Ukraine have been foreseen?

Alexander Graf Lambsdorff: We should probably answer this question in the affirmative because in the Baltic States and Poland many people did foresee it. In German politics, only a few recognised how aggressively Russia had positioned itself towards Ukraine, and only some had taken note of what President Putin made public. Was it possible to foresee in what concrete form this would take place – such as with a major land war? Probably not. But that Russia intended to deny Ukraine its right to exist as a state and to take further measures – yes, it was foreseeable at the very latest after President Putin's last essay.

Hartmut Ihne: From the perspective of political science, I can state that there were sufficient indications. Apart from Putin's publications, we could see how Russia dealt with contracts. In parallel, the idea that Russia could become a democracy had evaporated – with regard to autocratisation and the interventions in the legal, media and scientific sectors, for instance.

You will take over the post of German Ambassador to Moscow this summer – with what expectations and what fears are you going there, Graf Lambsdorff?

Lambsdorff: Relations between Germany and Russia will remain difficult for the time being. Some say that we should not talk to each other at all. I see that completely differently. Through my conversations with Russian officials, I hope to gain a sense of when something is developing in a positive direction. There is no light at the end of the tunnel at the moment, but I think you have to be present there to notice when something begins to change.

What expectations do you have of the new ambassador in Moscow, Mr Ihne?

Ihne: My wish is that the ambassador helps to keep the science channels open. Science only works in an atmosphere of freedom; in Russia it is put under pressure by many restrictions. For this reason, we have put our relations on hold in response to the war of aggression. A difficult balancing act remains. To what extent do we want to keep the channels of science open so that bright minds in the country remain scientifically connected to liberal democracies and we can continue to cooperate with them, even at the risk of inadvertently supporting parts of the system we oppose through the back door?

Lambsdorff: I am quite happy to take up your wish. What continues to hold the door open are the networks that are the result of many years of cooperation, including scientific diplomacy. Many people in Russia were DAAD or Alexander von Humboldt Foundation scholarship holders, that is, they studied or conducted research in Germany. Their open-mindedness makes them less susceptible to state propaganda. I would like to use these fruits of scientific cooperation for my dialogues.

Ihne: It seems to me that science is an essential partner for staying in dialogue with the rest of the world – or reinstating dialogue, making sensible policies and shaping our coexistence. At the moment, we as a scientific community are suffering an immense loss of scientific discourse due to the severance of relations – because Russia has excellent science. That is bitter to see.

Keeping the dialogue on science open is part of the field of science diplomacy. Does science diplomacy need to be strengthened and made more visible? Where do you see a need?

Ihne: I think science diplomacy is an important channel that should be further developed. National borders are rather uninteresting for science. There is no national science, only national science systems – that is something else. As far as possible, we want to conduct science in such a way that it can also contribute to the development of society. But I see a certain reluctance in science itself to get involved politically. There is the world of research. In that world, some people feel self-sufficient with their own quality criteria, indices, impact factors and the like. Then there is the world of politics. There is no systematic bridge between the two worlds. We have been discussing “bridging the gap” between research and practice for a long time. In this case, practice also means political practice. This is the area where science needs to become more active. I find the approach of science diplomacy, which has been around for several years, exciting and important, but there is still much to be done.

Lambsdorff: As I understand it, there are three levels of science diplomacy. One is diplomacy for science, that is, diplomacy creates the preconditions for certain forms of scientific cooperation through contact with government agencies in the host country. The second is science for diplomacy. This includes the diverse scientific relationships, such as alumni networks. Even where circumstances are politically difficult at the moment, scientific cooperation can perhaps continue and people remain in dialogue with one other. In diplomacy we call this Track 2, that is, Track 2 diplomacy. And as a third aspect, there is science in diplomacy. New insights are constantly arising from science for how states deal with each other. For example, how do we regulate the use of AI in automated weapons? That is a highly scientific question ...

Ihne: ... and a highly ethical question ...

Lambsdorff: Yes, highly ethical. We need to be able to deal with the results of scientific work through diplomacy. Science diplomacy is a large and fascinating field.

Ihne: Nevertheless, for our mutual benefit, one must be aware of some points, such as the speeds and agendas one works with. Science focuses on the long term. Although some people directly address a current issue, there still remains a mismatch between the rapidly changing political reality and the long-term nature of scientific work. Researchers want to work methodically and cleanly, argue logically and be able to prove results empirically. This results in other time dimensions that need to be taken into account if we want to make science useful for political, meaning also diplomatic, processes.

What example comes to mind for the positive impact of science diplomacy?

Lambsdorff: A successful example – although the timing and intensity can be debated – is climate science. Its findings have translated into climate diplomacy. The Paris Accords would never have come about without the previous decades of findings in the field of climate science.

Ihne: Nevertheless, the gap remains, especially when it comes to the climate. It is easy to see what causes this gap. Several decades have passed since the scientific realisation that climate change is human-made. But when the evidence was available and scientists began sending out warning signals, very little happened in politics at first and only selectively, not in the totality. In science, the idea prevailed that after clear evidence was brought forward, politics, the world community had to act accordingly. But that is not the way it works because there are two concepts of truth. The scientific concept of truth is based on logical argumentation and empirical verifiability. In politics it is different. For a statement to have validity in the sense of effect, it requires majority backing – at least in democratic systems. Or vice versa – as long as a statement does not have a political majority backing, it cannot achieve any tangible political effect.

Lambsdorff: Exactly. Impact is all about power, and in democratic systems power stems from the majority. So not only does it usually take a long time for an insight to reach the wider public, but it also takes a great amount of time and persuasion to win over a majority. The work of gaining knowledge and the work of persuasion – in politics these are two different phases.

We are currently experiencing push-back against democracy and majority principles worldwide. How can politics and politically-independent science stop this trend?

Lambsdorff: The trend is worrying, but the honest answer is that we do not know how to stop it. In the nineties, there was a movement towards more democracy, more freedom. Today, we are seeing a decline in academic freedom, in freedom of the press, in political and entrepreneurial freedom. And this even in Poland, in Hungary – in other words right on our front doorstep within the European Union! It is true that pressure to stop the dismantling of basic democratic rights is increasing. But that is often not enough because it is not possible to exert sufficient social influence inside these countries. In Germany, we have a very respected instrument in the form of our political foundations, and this exerts positive influences on many processes. But this instrument can only be successful in a supportive way, it cannot reverse a dismantling of democracy wanted by the leadership of a country.

The situation has also deteriorated with regard to academic freedom. Scientists are persecuted or even arrested as opponents of the regime. Organisations such as Scholars at Risk or the Alexander von Humboldt Foundation's Philipp Schwartz Initiative assist those being persecuted. What role do individual universities play?

Ihne: In addition to the organisations mentioned, flexible individual procedures are important. An example – scientists from Chernihiv University were with us as guests when Russia started the war. We extended their contracts quickly with no red tape and ensured that they could stay until further notice, until the war is over. In this respect, the bilateral relations between universities contribute significantly to providing researchers with a space of freedom. If that didn't exist, no one would speak up anymore. Standing up for each other is a vital part of solidarity in the science system.

Lambsdorff: The foundation of successful science is freedom. That is why the concept of academic freedom exists. Viktor Orban, for instance, expelled the Central European University from Budapest because it was too free, too critical for him. The initiatives you mentioned are central safety-net systems. Sometimes endangered critical voices – scientists, artists, journalists, or politicians only leave the country shortly before their arrest. They are then left with nothing. That is why we should support organisations that stand up for the respective academic and artistic minds in these countries as much as possible.

Where do you see the strengths of the universities of applied sciences in this respect?

Ihne: The large, top-tier universities of excellence often have little interest in cooperating with universities that do not appear in the rankings. But these cooperation projects also support scientists and thus strengthen the instrument of German science diplomacy. Universities of applied sciences are, among other strong points, ideal partners in countries whose societies are in the process of development or democratisation. I am always surprised to see that far too few of the 268 universities in the German Rectors' Conference are prepared to seek cooperation in sub-Saharan Africa, for instance, where, in individual cases, they could help to spur innovation in entire regions. So, while some universities are primarily looking for top-tier research partners, universities of applied sciences place particular emphasis on creating an impact on society. Science must always have both: good foundations and good impact in practice. That is my aim in leading this university of applied sciences. I want to experience the added value of science. Who helps our SMEs to find and implement new business models in the ecological transformation, for instance? Or to venture into new markets? With the German Agency for Transfer and Innovation (DATI), we will hopefully in the future have an institution to promote our research on social impact.

“Bonn im Herzen – Die Welt im Blick” (“Bonn our heart – the world in view”) is the motto of your website, Graf Lambsdorff. Is being rooted locally particularly important in view of advancing globalisation?

Lambsdorff: I feel attached to home and at home in Bonn. A walk along the Rhine, the view of the Siebengebirge, the Hofgarten, the cafés in the city – these are all part of an emotionally important connection for me, and at the same time I travel internationally for work and would not want to give that up. If you look a little closer, this seems to be true for many people. On the one hand, we live globalisation with flexibility, relocation, long-distance relationships, and on the other hand, we have a longing for the regional and for home.

lhne: What exactly constitutes globalisation? That is an important question. Real life is rooted regionally everywhere in the world: productivity, relationships and the meaning of life originate there. And if you work in the region, you also work for the whole. The regions are the true core of globalism. And the global interacting network of regions – that is the meaning of globalisation.

When researchers take to the skies

New perspectives through drone projects

What do reforestation of damaged forest areas and aircraft safety checks have in common? Exactly, both tasks can be accomplished by drones.

Researchers at H-BRS are currently using drones in the Garrulus and SafeMUV projects. For Garrulus, they are developing special drones that can measure damaged forest areas, assess the extent of the damage and sow new seeds. Safe Airframe Inspection using Multiple UAVs (SafeMUV) involves drones working together in teams to inspect aircraft from the outside for safety – a task that previously had to be carried out by humans under great time pressure. The use of drones can relieve the burden on humans, save time and improve safety.

Head of the Garrulus project, Professor Alexander Asteroth, sees a need for further research on drones and especially on their civilian application: “Drones have great potential especially in places where access for humans is difficult or too dangerous.”

The two research projects underscore: Drones are an important research subject with great potential for practical application.

Coffee first, please!

Student project “Cappuccino Talk”

Hey :) I just saw the first episode of “Cappuccino Talk” about analogue photography with lecturer Frank Seidel. Were you involved in this?

Hi, I’m so glad you found your way to our videos. :)

Yes, exactly. The interview series is produced by students as bluedot tv. We all study visual technical communication and technical journalism. We’ve been around since 2020. Through the project we learn how to design and produce films and videos.

Cool! How do you prepare for the talks?

First the topic ... Then we work on the exposé and the script for the storytelling and for precise instructions for images, text, camera, lighting, moderation, etc. ... We think it’s important to convey scientific and technical topics in an understandable and visually appealing way. In the end, we put everything together – concept, image and sound for the final video on YouTube!

Speaking of which, I’m watching the next episode on energy consumption with our professor, Dieter Franke :D

Why the name “bluedot”?

The name was chosen by the students in 2020. It has a double meaning – “bluedot” alludes to the logo of H-BRS and to the famous photo “Pale Blue Dot” – have you seen it? It was taken in the 1990s with a special camera in space and shows the Earth at a distance of six billion kilometres!!!

Wow! I thought the little dot was a technical error :D I’ll be at your next bluedot meeting, sounds really exciting! But first, I’m going to watch the latest episode with my classmate Joel.

A perspective on the stock market

The Finance Club prepares participants for the stock market

No crystal ball to foresee the future of the stock market? That's what the stock market "driving licence" is for! Together with the Finance Club, the Department of Management Sciences has been offering this as a supplementary subject since 2022. A stock market game enables students to enter the thematic world of shares, funds and bonds and exchange ideas on investment philosophy, derivatives, hedge funds and crypto. The Finance Club Bonn-Rhein-Sieg is organised by students and belongs to the Federal Association of Stock Exchange Clubs at German Universities. The now more than 100 enthusiastic members expand their knowledge of financial management and investments in supplementary training courses as well as in practical applications and on excursions. They also have opportunities to meet professionals to expand their network and exchange ideas. Another advantage: free access to well-known business magazines.

Psst ... Finance Club membership is not just for students or those with prior background knowledge!!

More:

- www.fcbrs.de

Test your financial knowledge now:

1. What is the difference between a stock and a bond?
2. What is an ETF and how does it differ from traditional investment funds?
3. What is the difference between a “hot wallet” and a “cold wallet” when storing cryptocurrencies?
4. What is blockchain and how could it be used in the future?

Answers

1. Stocks are shares in the ownership of a company that can be traded on the stock exchange. Bonds are debt instruments where the buyer lends money to the issuer and receives interest in return.
2. An exchange-traded fund (ETF) is a mutual fund that is traded on an exchange. Traditional mutual funds trade once a day at a set price and usually have a fund manager who manages the portfolio and generally charges a management fee. ETFs can be bought and sold at any time during trading hours, just like shares of stock. They often track indices, holding a portfolio of stocks or other assets that mirrors the index.
3. A “hot wallet” is connected to the internet, is constantly online and is well-suited for frequent transactions. Disadvantage: It is more vulnerable to hacker attacks. A “cold wallet” remains offline and is more secure, but it is also slower and less practical for frequent transactions.
4. A blockchain is a decentralised, distributed database that records transactions transparently and securely. Blockchains can be used in a variety of ways to improve the efficiency and security of business processes, such as to speed up the processing of transactions in the financial industry and reduce costs or, in the healthcare industry, to store patient data securely and facilitate access for medical professionals.

The desire for applied research

Since November 2022, the universities of applied sciences (UAS) in NRW have the independent right to confer doctorates. This has been a long struggle – now the UAS in NRW can conduct doctoral procedures and confer doctoral degrees without cooperating with a traditional university. What the universities of applied sciences celebrated as a “landmark occasion” and a “milestone” has far-reaching consequences for doctoral students. What changes for them? How do they experience the new legal situation? Three doctoral students from H-BRS recount their journey.

“I want to conduct applied research”

“After completing my Master’s degree in mechanical engineering at H-BRS, I started working as a development engineer in the research and development department of Rikutec in 2018. My enthusiasm for practical research never waned, and even after graduation I continued to stay in close contact with my H-BRS professors. I was considering the idea of earning a doctorate for a while, but a cooperative doctorate with a traditional university was out of the question for me. I want to conduct applied research and tackle social challenges in a concrete way. After the universities of applied sciences were awarded the right to confer PhDs in November 2022, Professor Dirk Reith and Professor Olaf Bruch convinced me to pursue an industry-based doctorate at H-BRS. The conditions are ideal for me. I work on an application-focused research topic both at H-BRS and in my company in an environment that is familiar to me. I am working on analysing the ageing process of plastics. The aim is to be able to foresee material behaviour more accurately during product use so that, long-term, plastic products with a longer useable life span can be produced.”

Daniel Grotenburg *has been conducting research for his industry-based doctorate both at H-BRS and at Rikutec Richter Kunststofftechnik on the topic of ageing processes in plastics since October 2022.*

“Exchange with other UAS doctoral students beneficial”

“I came to H-BRS from Egypt in 2014 to earn my Master’s degree in autonomous systems. After my Master’s degree, my supervisor Professor Martin Müller encouraged me to apply for a PhD so that we could continue researching explainable machine learning methods for multi-agent systems together. At that time, the new right of universities of applied sciences to confer doctorates was not yet in force, so I had to enrol for a cooperative doctorate. Shortly after I started my doctorate, the COVID crisis hit. This meant that I was unable to complete the cooperative doctorate with the University of Augsburg as planned. Due to the COVID restrictions, I was very limited in my research, and to top it off, the bureaucratic hurdles that a cooperative doctorate entails were even higher due to the crisis. That was extremely frustrating for me. Because of this experience, I decided to make a change. The new right for UAS to confer doctorates allows me to focus more intensively on my research because the bureaucratic effort is reduced. The exchange with other UAS doctoral students at the Graduate School NRW is also beneficial for me, both professionally and personally.”

Youssef Mahmoud is earning his doctorate at the Department of Computer Science on AI-based fault detection and diagnosis in distributed robotic systems.

“Exciting synergy effects”

“The UAS’ independent right to confer doctorates gives me the opportunity to conduct applied research on topics related to my everyday professional life with a cooperating university minus the bureaucratic hassle. I also benefit from the helpful framework programme and the valuable exchange opportunities offered by both the H-BRS Graduate Institute and the Graduate School NRW. I also see exciting synergy effects with my research topics through the internal supervision of Professor Ianiro-Dahm from the Department of Management Sciences and my work as a specialist in UAS education at the Centre for Teaching Development and Innovation (ZIEL). One of the focal points of my work at ZIEL is the programme for our newly appointed professors. In this programme, we provide our new professors with strong didactic support to ensure the best possible start in teaching. We are continuously adapting our innovative and competence-oriented concepts in view of the current state of research. This gives me the opportunity to accompany and advance this process in a scientifically sound way.”

Alexandra Reher works as a research associate for university didactics at the Centre for Teaching Development and Innovation and is earning her doctorate at the Department Management Sciences.

live

Sustainable energy concepts for Rheinbach

Recognising signs is one thing. Coming up with sustainable solutions is sometimes harder than you would think, and creating a sustainable future requires a lot of foresight and perseverance.

The reconstruction of the Rheinbach Campus is in full swing after the floods of 14 July 2021 rendered all university-owned buildings, as well as both rented buildings, unusable from one day to the next. Just over a year later, the biology labs in Building F were once again ready for action as were the offices in Building E, and campus life also returned to the two rented buildings. The seminar rooms and a lab area in Building A were available for use again as well.

Nevertheless, bringing the whole campus back to life is still some way off. In 2023, offices, seminar rooms and labs in Building G, and hopefully also the library and cafeteria, will reopen. The topic of sustainability should not be neglected, so the feasibility of using alternative energy concepts, such as heat pumps, solar panels and hydrogen storage, was discussed at length with the general planner.

The creation of a sustainable future is in progress in Sankt Augustin as well, where large areas of land are being freed up and planted with greenery. Initial plans for an extension are also slowly gaining momentum now that the ministry has approved the planning programme and funding for the project has been included in the budget.

In all this work, people must not be overlooked. The last few years have been extremely strenuous and taken a lot of energy. Now it is high time to build a sense of community, to challenge our leadership culture and re-think our communication and cooperation methods. A goal for the future must be for employees to continue to enjoy working at the university and for students to continue to study here successfully.

As a result, for 2022 we can be satisfied with our solutions and look forward with optimism to the future that is waiting for us to shape it together.

Angela Fischer,
Chancellor

More than just a word: Sustainability

H-BRS supports the socio-economic transformation of society and embeds sustainable thinking and action in all areas.

“We are trying to implement sustainability very broadly at the university – into teaching, research, transfer, the way in which we build and use energy, and also into campus life,” says University President Hartmut Ihne. “We want to support the transformation to an eco-social market economy. That’s why sustainability is more than just a word for us.” In July 2022, the university adopted its sustainability strategy to cement its commitment in all areas.

In the Sustainable Engineering degree programme, for instance, students can continue their education in environmental engineering and renewable energies or earn a sustainability certificate in a supplementary interdisciplinary programme. Additional degree programmes in sustainability and the establishment of sustainability professorships are in planning.

Research projects revolve around topics such as transport systems for green hydrogen, sustainable mobility and using drones to reforest woodland that has been destroyed. H-BRS places great emphasis on involving the community in its research. “It’s only when you get everyone involved that things can happen,” says Wiltrud Terlau, Professor of Economics, Resilient and Sustainable Development. An example is the “Campus to World” project, which Terlau was involved in. From 2018 to 2022, it strengthened the transfer of knowledge among science, business, communities and civil society.

As part of implementing the sustainability strategy, H-BRS has been conferring an Innovation Award since 2022. It honours projects that strengthen cooperation between science, business and society in the region and beyond. The university itself is also becoming more sustainable. Fairtrade products are available in the cafeteria and dining hall, buildings at the Sankt Augustin campus are outfitted with solar panels and charging stations for e-vehicles have been installed. A particularly ambitious goal is the development of a carbon-neutral campus.

Greener studies: the campus garden

More sustainability and more relaxation – a campus garden, inspired and planned by students, ensures this. Five degree programmes and three departments developed the concept and helped put the plans into place. The result is an oasis of tranquillity and communal gardening. Workshops on sustainable gardening are held regularly. “In our heavily populated landscape, the garden plays an important role as an ecological habitat. With our garden project we want to support the students in shifting to a more sustainable way of eating,” says Iris Groß, Professor of Engineering Mechanics and Director of the Centre for Teaching Development and Innovation.

Innovation meetings

The innovation meetings also facilitate more networking since they support cooperation projects between researchers and companies. The initiator is the Centre for Science and Technology Transfer (ZWT). According to Fabian Tenk, Sustainability Innovation Manager at ZWT, the format has real potential. “In the best case, it will inspire new project ideas and joint research proposals.”

In 2022, the university invited representatives from business and science to the Innovation Meeting Circular Plastics Economy to discuss innovations in the plastic industry, such as using bio- and recycled plastics and addressing energy and resource efficiency. The meeting, which attracted almost 70 participants, had several co-organisers: the Bonn/Rhein-Sieg Chamber of Commerce and Industry, the Efficiency Agency NRW, the Bonn/Rhein-Sieg Plastics Initiative and the Troisdorf Plastics Competence Centre. Further meetings on the topic of sustainability are being planned.

Connected Rainland

It was awarded by a UN Decade and co-designed by H-BRS: the project Networked Rainland. Implementation partners are the European Animal Welfare and Nature Conservation Association (ETN), the International Centre for Sustainable Development of H-BRS (IZNE) and the Biological Station RheinSieg-Kreis. The title is a play on words, as some of the areas are “Raine”, the German word for marginal unploughed strips of fields. The project partners are supported by a cooperation of farmers, municipalities and other stakeholders. They want to dedicate suitable areas of municipalities in the Rhineland to insect conservation and develop a model for insect conservation in heavily-used cultivated landscapes to help endangered species. IZNE was involved in developing a concept for dialogue and communication between all stakeholders. “It was not easy to get all stakeholders on board. After all, six municipalities and some farmers are involved,” says IZNE Director Wiltrud Terlau. But it is only through them that the project is practical and promising. Current tasks include sowing areas with seeds and recruiting more farmers for the Networked Rainland.

VIDEO: sustainability – not just a word

- youtu.be/56D29msgxC4

Solidarity with Ukraine

H-BRS supports Ukrainian students and their partner university, Chernihiv Polytechnic National University

After the start of the Russian war of aggression against Ukraine in February 2022, Hochschule Bonn-Rhein-Sieg showed solidarity with the victims of the invasion, which is in contravention of international law. "We don't just want to express our solidarity, but also offer concrete support," stressed University President Hartmut Ihne. To fulfil this promise, H-BRS launched an emergency fund of 300,000 euros between April 2022 and March 2023 to provide short-term and uncomplicated assistance to students, doctoral candidates and prospective students from Ukraine. Alongside the emotional and psychological strain, it quickly became clear to those responsible at H-BRS that students were also threatened financially. "We noticed that many were afraid about what would soon happen. Some students were receiving support from their home country but that would no longer be possible in the foreseeable future, and some were even supporting their family at home. The fear of having to go back was also real," says Paulina Hinz, refugee project coordinator. This is why HBR-S implemented a short-term scholarship to be able to react flexibly to the students' needs. "No-one knew how long the war would last, when refugee students would arrive or how long they would stay."

Alongside financial support, the university organised language courses and counselling services for the refugee students and hired a Ukrainian-speaking assistant using money from the emergency fund. H-BRS students supported their fellow students and offered advice, discussion and help through a study-buddy programme. After the emergency fund expired in March 2023, H-BRS continued to support refugee students with help from programmes offered by the DAAD and the Ministry of Culture and Science.

Destruction and Rebuilding

Chernihiv Polytechnical National University, which has been a partner university of H-BRS since 2012, was hit heavily with bomb and drone strikes. 4,000 square metres of windows, the entire heating system, roofs, walls, floors and doors, along with IT systems, labs and research equipment were destroyed. To assist in the reconstruction, H-BRS appealed for donations of money and materials. Thanks to the funds donated thus far, a mobile power generator could be delivered to Ukraine.

More:

- www.h-brs.de/en/ukraine
- www.h-brs.de/en/io/h-brs-emergency-fund-2022

Reconstruction after the flood in full swing

The first buildings in Rheinbach are back in action

Reconstruction of the Rheinbach campus after the floods of July 2021 has picked up speed. In the first phase after the flood, pumping out the water, removing moisture and mould, as well as cleaning up the affected areas was the main focus. Likewise, around 4,300 square metres of the basement and parts of the ground floor were gutted.

The six university owned buildings as well as the two rented buildings on campus were severely damaged as a result of the severe weather disaster. Lecture halls and laboratories were half submerged in the vast amounts water. The heating system, ventilation, electrical supply and building control systems were destroyed and require replacing.

Visible successes

By the start of the 2022/23 winter semester, reconstruction had achieved visible successes. Building H was fully operational again with two renovated lecture halls in the basement. This was followed by Building F, which houses laboratories, and Building E. Two areas in Building A, one for biology and one for seminars, were also made usable on an interim basis. With the help of a general planner, the remaining buildings are now being renovated. The first building to be reconstructed is Building G, where the goal is to have the offices and seminar areas ready for winter semester 2023/24. Then it will progress step by step. "We hope that everything will be ready by winter semester 2024/25," says Ute Schmitz, Head of Facility Management, Building and Safety. The renovation work is being implemented hand in hand with the Ministry of Culture and Science NRW.

Shortly after the flood, the university moved into interim premises. An empty industrial building was rented on Heisenbergerstraße, just a short walk from the campus. The 5,000-square-metre hall, which can hold up to 200 people, is where the Department of Natural Sciences runs its operations. The Department of Management Sciences, also located in Rheinbach, has temporarily moved near to the Sankt Augustin campus, where it is housed in rooms of the former Philosophical-Theological College in the Steyl Monastery. Students, teachers and researchers have made themselves at home in the interim quarters but are looking forward to the reopening of the Rheinbach Campus.

“I feel heard here”

Inclusion and diversity strategies make H-BRS a leader in equal opportunity education

In May 2022, H-BRS adopted its inclusion strategy. Its most important goals: commitment to equal opportunities, strengthening inclusion competencies and the development of individual potential. The university wants to achieve this in a variety of ways. Consideration of different physical and psychological requirements in the design of inclusive forms of teaching and learning as well as in the structure of individual study paths are important components. H-BRS also wants to make the transition from school to university and ultimately into the workplace easier for students. Inclusive research contributes to equal opportunities and accessibility.

Regular events on inclusion are also held on campus. These range from public information events to workshops and opportunities for exchange. Tips for better participation and inclusion of students with certain illnesses or disabilities are presented and inclusive practices in teaching and in social interaction are strengthened. Another format is known as peer spaces, in which students with a need for inclusion can network.

Inclusion assistance for students

The Inclusion Assistance project has proven to be particularly successful. A contact person is available for all H-BRS students with disabilities, chronic or mental illnesses. The respective support is based on individual needs, says Katrin Maag, coordinator of the “Inclusive University” project at H-BRS. Students often receive help in organising their daily study and examination routine, or in communicating with teachers and other university staff. “The students are very interested in the offer,” says Maag. Around thirty have already benefited from the support, and some have now successfully completed their studies. For instance, one piece of feedback is: “I’m glad that I don’t have to go through this alone, and that there is someone I can turn to.” Another person says, “I feel heard here.”

The diversity strategy, of which the inclusion strategy is a part, was already adopted by H-BRS in 2021. In the same year the university was awarded a certificate from the diversity audit “Shaping Diversity” from the Donors’ Association for the Promotion of Science and the Humanities in Germany.

Alumna in the spotlight: “What counts is the output”

Technical journalist Konstanze Lang works in open-source software for social security at the German Society for International Cooperation (GIZ).

Ensuring a healthy life for people of all ages is one of the goals of the 2030 Agenda for Sustainable Development – and the cornerstone of German international development work. An important building block for this goal is a well-functioning health and social system in the countries of the global South. This is not possible without a digitalisation strategy. For a system to function efficiently and on a large scale, tasks such as the processing of applications and the recording of patient data must be accomplished digitally. This is where the openMIS project, funded by the Federal Ministry for Economic Cooperation and Development, comes in, in which H-BRS alum Konstanze Lang is working for GIZ international as a consultant.

Internship in Japan

OpenMIS is an open-source software that connects the data of patients, service providers and contributors thus optimising management. “The software’s open-source code allows it to be used and developed collaboratively,” explains Lang, who has been tech-savvy and interested in science since her youth. International projects like this inspire her. Even during her technical journalism studies at H-BRS, the Cottbus native was drawn to faraway places. “Inspired by an extracurricular Japanese course at H-BRS, I completed my internship semester at a Japanese telecommunications company thanks to the great support of the International Office,” says Lang.

The fascination for Japan remained, and Lang returned on the two-year DAAD scholarship “Language and Practice in Japan”. In Japan she worked at a daily newspaper, the German Embassy, and later at the Goethe Institute in Tokyo before she was drawn to work for GIZ in Bonn. “Regardless of where in the world my work takes me – for GIZ, for example, I was in China and Albania – I benefit anywhere from the methods I learned in my technical journalism degree programme. They enable me to process complex topics and think conceptually. I also benefit from the high degree of practical experience during my studies in my daily working life – my work is application orientated. What counts for me is the output,” says Lang.

She advises students to look beyond their own horizons and gain professional as well as international experience. She also believes they should take advantage of the many opportunities offered by H-BRS outside of their studies, such as the Language Centre. “You never know which doors might be opened as a result.”

Portrait: Gabriele Neugebauer

is responsible for online management in the Communication and Marketing team

“It’s organic, alive and constantly evolving” – this is just as true for H-BRS as it is for our new website. There was a lot to be said for a web relaunch – a big system update was due. H-BRS has grown, as have the requirements for technology, security and user friendliness. Our solution is a new system, a new design and improved usability for editors who now have a multitude of new web functions at their fingertips. In training sessions we advised them on how to use the system and informed them about search engine optimisation, accessibility, copyright and data protection. How does it look today? The website is now live, but our work is far from over. Further development will play an important role in the long term. Users will always be the focus, as well as the question of how we can make information channels simpler to better reach our target audience. We engage as many members of the university as possible in this process. For me, respect and being considerate in teamwork are important since many university employees are working on the website alongside their other responsibilities.

Identify injustices, find possible solutions

Interview with Equal Opportunity Officer Dr Barbara Hillen

The behaviour and performance of men and women are often evaluated differently. Equal opportunities involves striving to name the resulting injustices and finding possible solutions. As elected Equal Opportunity Officer at H-BRS, Dr Barbara Hillen is in charge of this task.

On Dialogue Day 2022, you focused on men's perspectives regarding balancing work and family life. Why is this perspective important?

Men tend to have to justify themselves within their peer group when, for instance, they want to take extended parental leave. This is especially the case for professors. Equal opportunities doesn't just mean supporting women professionally, it is also about encouraging men to fulfil their responsibilities within the family.

H-BRS has been certified as family-friendly since 2007. What effect does this certification have?

A certification first reflects on one's own work and then ideally has a ripple effect – employees of the university stand up for the topic of family justice in their everyday work. This long-standing certificate proves we are a reliable and modern employer. This means that children and their parents are without question a part of our university. In 2022, we set up nursing, nappy-changing and quiet rooms since parents need a quiet place to retreat or, at other times, a place to work where the child can also be noisy, such as in the parent-child office space. We've equipped this room with new, contemporary children's books that do away with gender clichés, for instance. Unfortunately, children's books are still very often full of clichés. Equality and diversity in this area is a matter close to our heart.

How do you work to combat violence against women?

Violence has many faces, and in the majority of cases it comes from men. Examples of this include sexist remarks; inappropriate behaviour in committees, on campus or in other work situations; hurtful messages in lecture chat groups or via email. It cuts through all social classes. The university does not tolerate such behaviour. In the event of assaults, those affected can report the incident to the "person of trust" in their department, the counselling centre HELP or the Equal Opportunities Officer. The Department of Computer Science has adopted an exemplary awareness concept for the prevention of violence and presented it to other departments. Such initiatives are valued and supported by the Equal Opportunities Office.

Children's rights in (climate) change

On the path to social sustainability: climate change from a children's rights perspective

"In the face of climate change, striving for the sustainable transformation of the economy is not enough. We have to take people with us," says Kerstin Rosenow-Williams, Professor of Social Sustainability. In her inaugural lecture in the scope of the lecture series "Interjections on Social Policy" 2022, the sociologist emphasised the social and children's rights perspectives on sustainability.

The goal of social sustainability should be to enable a decent life for everyone. This is often neglected, especially in relation to children's rights. Young children are at risk worldwide. Their rights are suffering, especially due to climate change and environmental dangers, such as air pollution, water shortages and heat waves. Their voices often go unheard despite being the ones who are most affected by climate change.

Inform, participate, and stand together

After five years as a research officer for studies on children's rights issues at UNICEF Germany, Kerstin Rosenow-Williams is now lecturing at H-BRS in the degree programmes "Sustainable Social Policy" (B.A.) and "Social Protection" (M.Sc) in the Department of Social Policy and Social Security Studies. She says, "It's not enough that we know something. We also have to do something. In the end, global challenges and possible solutions won't come from the government but from society." The first step, must be to inform yourself, followed by action: reduce emissions, share knowledge on environmental protection, and involve young people in important climate decisions.

The effects of climate change are evident all over the world, though poorer populations are often the ones most affected, as the UNICEF Children's Climate Risk Index (CCRI) shows. It rates how strongly children are exposed to the consequences of climate change in a country. The results could not be more unjust. The ten countries with the highest risk produce just 0.55% of global emissions. Countries with the highest emissions have a markedly lower CCRI score. Global and social cohesion for sustainability is necessary, according to Kerstin Rosenow-Williams. "The main contributors to climate change have a responsibility to implement social sustainability. The attitude of 'We only look after our own interests' will not help us. We can only tackle global challenges together."

Sustainable Social Policy

- youtu.be/QxffqR1I8z0

Virtual entrance

Accessible, modern and user friendly – these goals were set by the Communication and Marketing team for the relaunch of the website. The new H-BRS website has been online since October 2022. “It wasn’t our first relaunch, but it was the most challenging,” says Gabriele Neugebauer, the officer responsible for the redesign. The new website impresses visitors with its colourful design and its many pictures create a feeling of familiarity. The clear structure also makes it easy to navigate. It is definitely worth visiting the new website, which is continually being optimised, even after the relaunch:

- www.h-brs.de/en

Children’s uni “World Workshop”

“World Workshop – How do we want to live tomorrow?” From March to June 2022, this question was posed by the Children’s University at H-BRS. For the eighth time, scientists communicated their findings to children from the Rhein-Sieg district. The 60 to 90-minute lectures were aimed at school children from the 3rd to 6th class. The aim: to present current research topics in an easy-to-understand and playful manner. Lecturers from H-BRS and Jülich Research Centre gave talks on renewable energies, how to deal with plastic packaging, and gardening for environmental protection. The Children’s University ended with a graduation ceremony for the mini researchers who had taken part in at least two of the lectures.

A special celebration

Three years of graduates given their send-off together

900 hats flew through the air of the Telekom Dome on 22 October 2022. Never before had so many graduates come together to celebrate getting their degrees. Due to the COVID pandemic, the event could not take place in person for two years in a row. Not only were this year’s cohort of graduates celebrating, but also those from the two previous years. The result: 4,000 guests, a full stadium and an unforgettable picture of the traditional cap throwing.

New ways to UAS

H-BRS positions itself as an attractive employer for young academics

PeP@H-BRS – something that would likely raise question marks among the uninitiated is nothing less than a comprehensive initiative by H-BRS to increase its attractiveness as an employer. The project is part of the federal state programme “FH-Personal”, which aims to attract more young professors to universities of applied sciences (UAS). As such, H-BRS puts a special focus on supporting women on the career path to a professorship at a university of applied sciences.

By tandem to professorship

With funding of over two million Euros until 2028, H-BRS wants to establish a sustainable personnel development concept, fund focus-professorships and set up a tandem programme for postdocs.

The focus-professorships, which are advertised internally for five years, are meant to expand the university's own research on sustainability topics. “As a result, professors can contribute to building the profile of H-BRS, acquire funding for research, and ideally establish research and cooperation projects in the long term beyond the funding period,” says Vice President for Research and Young Academics, Remi Maier-Rigaud.

In the tandem programme, postdocs work for three years, half at H-BRS and half at a project partner (research institute or company). “Postdocs gain relevant professional, research and teaching experience to ultimately apply to work at a university of applied sciences. This means, at the end of the tandem programme, they can apply for a UAS-professorship – gladly with us,” Maier-Rigaud explains the advantages of the scheme.

A new management culture

A further goal of PeP@H-BRS is to increase the number of female professors. The new Gender Consulting position has been occupied since April 2023. It influences the leadership culture at H-BRS and cements topics such as teamwork and family justice in management and leadership structures. Furthermore, it advises researchers and supports them by addressing gender equality and diversity issues in research proposals. “Gender equality is now a requirement of funding institutions and research design. We see it as our task to encourage researchers to think of their research topics in terms of parity,” emphasizes Barbara Hillen, Equal Opportunity Officer.

collaborate

Cooperation and interaction are valuable assets

At the end of 2022, an extensive transfer project at our university – the “Campus to World” project – came to a close. From 2018 to 2022, it was funded by the federal-state initiative “Innovative Hochschule” (“Innovative University”) with a sum of nine million euros. The project’s motto was “Ideas and knowledge in exchange with business and society”. In a total of seven sub-projects, we extended and further developed cooperation with companies, institutional and municipal partners. We promoted interaction between ourselves and our citizens on scientific issues and significantly expanded our transfer instruments and understanding of transfer. Now all of this must be consolidated outside of the project, further intensified and prepared for the upcoming responsibility and opportunity in the context of the German Agency for Transfer and Innovation (DATI).

We are also opening up a new page of cooperation in the international context. With the DAAD-funded project “Take-Off4Internationalisation” (TOFI), representatives of all departments visit our most important university partners to gauge the extent to which these partnerships can be expanded in breadth and depth. The goal is to establish strategic cooperation partnerships with which we would like to increasingly intensify cross-university connections over the next few years in order to be better prepared for future challenges. This benefits not only the exchange of students, but also joint research and teaching, international transfer and university administration.

Cooperation and interaction with non-university actors at the national and the international level are valuable assets for us. They motivate us, especially in democratically fragile times, to foresee and master the great challenges of our future together.

Prof. Dr Michaela Wirtz,

Vice President for Transfer, Innovation and Sustainability

Prof. Dr Jürgen Bode,

Vice President for International Affairs and Diversity

Attacks from cyberspace

New demands on research and experts

Phishing, hacking, data theft: digital attacks and cybercrime are on the rise in our networked society. Hochschule Bonn-Rhein-Sieg contributes its expertise to this important social issue both with degree programmes and through research projects and conferences.

In the Bachelor's degree programme "Cyber Security & Privacy", the university has been training experts who care about security and privacy in the digital world since winter semester 2020/21. Many topics, technologies and applications are new and therefore require intensive research. In order to train scientists in this area who are much required for the future, the Master's programme "Cyber Security & Privacy" will launch in winter semester 2023/24.

Female students welcome

Due to an outdated understanding of gender roles, mainly men are interested in the field of computer science. Women are in the minority, says Dr Barbara Hillen, Equal Opportunity Officer at H-BRS. "But computer science also involves analytical and communicative skills, in which women often excel due to their socialisation." That's why the "Women in Cyber Security" (WISE) network has been specifically supporting female students since this year.

In addition to reflection and networking, WISE also offers the students excursions to non-university institutes or companies. Pegah Oveysy, who is in her third semester, gained insight into the IT security department at Deutsche Welle in Bonn. "It was very interesting to see where I could potentially work later on," she says. "Especially for me as a foreigner, it was a helpful impulse for career orientation."

SMEs threatened

Threats from cyberspace not only require IT specialists, they also lead to entirely new problems for legal jurisdiction. That is why Hochschule Bonn-Rhein-Sieg, in cooperation with the German Lawyers' Conference, organised the discussion round "Data, Hacking, Digital Forgeries – Challenges for the Judiciary" in June 2022. It became clear at the conference that such attacks can threaten the existence of SMEs (small and medium-sized enterprises) in particular. But prosecution is made more difficult by constantly changing business models and a high number of unreported cases. Research plays an important role in the counterstrategy. The Federal Office for Information Security (BSI), for instance, operates the Biometrics Evaluation Centre (BEZ) together with H-BRS, providing valuable insights into the detection of digital forgeries.

Sensitising medical staff

Hacking attacks do not just cause economic damage. “When computer systems fail in hospitals, this can have dramatic consequences for patients,” says Luigi Lo Iacono, Professor for Information Security at H-BRS and head of the Institute for Cyber Security & Privacy (ICSP). On the one hand, this is a matter of spying out sensitive data, and on the other hand, it is a concrete threat to medical care – because from patient files to diagnostic equipment, information technology is used everywhere.

One challenge in practice is the improper handling of IT infrastructure and the insufficiently developed information security awareness of employees. “A lack of IT expertise about potential damage and too little risk perception can put medical institutions at risk,” explains Lo Iacono. This is where one of six third-party funded projects of the ICSP comes in – the research project MedISA. The team led by Professor Lo Iacono with David Langer and Dr Jan Tolsdorf is developing strategies in cooperation with the university hospitals of Aachen, Bonn and Düsseldorf, as well as other healthcare institutions, to raise the necessary awareness among employees in medical care facilities.

Strengthening the police in the fight against cybercrime

The North Rhine-Westphalian police also require more knowledge about the dangers looming in cyberspace because crime in digital space has developed into a global problem. Since H-BRS and Hochschule Niederrhein founded the joint Cyber Campus NRW in 2020, police officers can obtain further training there to become cybercriminalists, too. Beginning winter semester 2023/24, a degree programme designed to be completed alongside a career and specially geared towards the needs of the police will be added to the Bachelor’s and Master’s programmes already offered by the Cyber Campus NRW. “It’s very beneficial if police officers decide to take this additional course of study,” said Herbert Reul, Minister of the Interior of North Rhine-Westphalia, in April 2022, when the two universities signed a memorandum of understanding together with the state. “With this programme, we are arming our “cyber cops” for the digital world of tomorrow. And we’re going to need their expertise desperately.”

Tasting sustainability

Citizen science brings research to life

What do insects taste like? How can crowdmapping contribute to a more climate-friendly city? The “Campus to World” project strengthened the transfer of ideas, knowledge, and technology between H-BRS and society from 2018 to 2022. In the fifth and final year of the project, citizen science once again addressed exciting questions and applied results to practice. Many of the measures will remain permanently in place even after the project ends.

The online exhibition “Future Food Insects – Sustainability Tastes Good” in cooperation with the Leibniz Institute for the Analysis of Biodiversity Change (LIB) at the Museum Koenig Bonn, met with great public interest. Insects, a common food in Asia, are also used in our culture as a sustainably-produced source of protein. The virtual exhibition allows visitors to tour the main hall of the museum. In the 3D simulation, visitors can find out about insects that are on the menu and collect ingredients for recipes in a hidden objects game presented in a virtual kitchen. The aim of this first cooperation project with the museum is to make science “tangible, approachable, perceptible and also understandable”, says Professor Michaela Wirtz, Vice President for Transfer, Innovation and Sustainability at Hochschule Bonn-Rhein-Sieg. The playful conception of the exhibition reached the target audience, young people, in particular.

Designing your own city

Bridge-building was also the goal of the five Citizen Labs. Under the motto “Participate – Research – Educate”, people from Bonn and the Rhein-Sieg district were able to exchange and discuss ideas with scientists as equals face to face. The climate-friendly transformation of the city of Sankt Augustin was the topic of the “Citizen Lab: SDG (Sustainable Development Goals) Workshop”. According to Professor Wiltrud Terlau, the project offered a unique opportunity to “actively shape the city, which is best known to the citizens themselves”. A method called crowdmapping was used for this purpose. Participants could enter places with potential for improvement – places without shade trees where it gets too hot in the summer, for instance – on an interactive map of their place of residence. Although the “Campus to World” project is now over, crowdmapping will continue.

The same goes for the workshop series “Gardening for the Environment”. In this initiative, citizens can collect soil samples from their own gardens and analyse them with the help of researchers. With the data already collected, the university wants to develop a recommendation for action for cities and municipalities in the region to help them make better use of the ecosystem benefits of green spaces.

Citizen Science Forum

The success of citizen science made the university the ideal venue for the Citizen Science Forum in May 2022, entitled “Global – Regional – Local: with Citizen Science for the UN Sustainable Development Goals”. The German-speaking citizen science community exchanged ideas at the conference, which takes place annually at changing locations. At the “Market of Opportunities”, research institutions, universities, museums and initiatives presented their citizen science projects.

More: Online Exhibition:

- <https://digital.leibniz-lib.de/future-food-insekten>

Information on citizen science:

- www.h-brs.de/de/izne/buergerwissenschaften

Workshops in Jordan

As an expert in transfer projects with Jordanian universities, Rainer Herpers, professor of computer science, enlisted colleagues from the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism (EMT) for the DAAD project “YURL – Remote Lab at Yarmouk University”. Teachers and students from H-BRS travelled to Irbid together in December 2022. There they set up the technical equipment for teaching via remote labs, imparted the relevant technical and didactic know-how and organised two practice-oriented workshops. YURL came to a successful end with the trip but will continue in a different format. A future Erasmus+ project will continue working on the topic of remote labs – even beyond Jordan’s borders.

KLUGER transfer to practice

How do we transfer knowledge from science to society? “KLUGER Transfer” (“More Clever Transfer”) provides answers. The topics of climate, environment and health build the focus of the cooperation project between Hochschule Bonn Rhein Sieg’s International Centre for Sustainable Development (IZNE) and the Max Planck Institute for Chemistry (MPIC). The aim of the tandem project is to develop, test and communicate innovative methods and tools. Together, the two institutions are designing a toolbox filled with valuable tools for sustainable knowledge transfer. The basic research of the MPIC and the applied science of H-BRS will thus evolve into a collaborative effort rich in ideas.

More:

- www.kluger-transfer.de

Portrait: Roustiam Chakirov

is Professor for Control Engineering at the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

“Science thrives on international exchange. Since I come from Russia, cooperation with universities from Eastern Europe was an obvious choice. Thanks to DAAD funding, we started an Eastern partnership with a Ukrainian and a Russian university 13 years ago. Joint research, mutual visits by researchers and students – all this was fruitful and enriching for us. The Russian invasion of Ukraine put an end to this. At that time, my colleague Dr Oleksandr Velihorskyi from Chernihiv Polytechnic National University (CPNU) was just visiting Sankt Augustin. I took him in at first, and he is safe here. But many other Ukrainian colleagues are not. Unfortunately, the CPNU was also badly damaged by the Russian army. We have jointly developed remote labs for experiments on electronic components to supervise students remotely. I can’t foresee what will happen next. But our relationship with the CPNU is stronger than ever and will continue to be supported by the DAAD.”

360-degree sustainable research

3D-animated TREE showroom goes live

In the middle of a towering spruce forest, in a light-flooded, white low-rise building with a glass roof through which you can see the treetops, lies the Institute for Technology, Resource and Energy-efficient Engineering (TREE). At least in its virtual form. In Hochschule Bonn-Rhein-Sieg's new showroom, you can wander through this 3D-animated building – through a corridor with a “welcome video”, into a large hall with virtual walls displaying information boards and videos. You can also enter a laboratory.

In this environment, the institute, its technical equipment and its four research fields are presented via a 360-degree view. This includes Modelling and Simulation, Energy, Technology Transfer and Acceptance as well as Materials and Processes. Each field in turn is assigned research projects that visitors to the showroom can learn about via a simple click.

New points of contact

The institute combines know-how from various departments, such as the natural sciences, electrical engineering and computer science. This diversity, explains Michael Meurer, one of TREE's managing directors, should become clear when touring the showroom – on the one hand, to researchers who are looking for a link to the content of their own work and on the other, to companies from the industrial sector or institutions that deal professionally with the topic of sustainability. “We hope that these contacts will lead to new questions and topics for joint research projects or industrial services.”

The Centre for Science and Technology Transfer (ZWT) took charge of the conceptual implementation of the TREE showroom, and the “Campus to World” project provided the funding. Based on TREE's diverse research and thanks to the use of programming-design possibilities from the digital agency Panovia in Bonn, the institute's internal AG Showroom was able to bring the exhibition rooms to life in a very appealing way.

Showroom of the Institute for Technology, Resource and Energy-efficient Engineering (TREE):

- www.h-brs.de/en/tree/tree-showroom-innovation-mall

Mobility of tomorrow

Conference provides new impulses

Getting from A to B in your own car is usually the most comfortable form of transport but by no means the most climate-friendly. The mobility of tomorrow will probably look different and was the topic of the conference by the same name in September 2022. It was hosted by Hochschule Bonn-Rhein-Sieg in cooperation with the Institute for Technology, Resource and Energy-efficient Engineering (TREE) and the Institute for Digital Consumption (IVI). More than 200 visitors took part on site or via live streaming to learn about new approaches ranging from the 9-euro ticket to corporate mobility management and data-driven solutions for selecting a means of transportation.

The university space offered four parallel thematic tracks for presenting one's own projects on the topic, such as "MobilCharta5". In this track, researchers, together with the city of Overath as a partner, are looking for creative mobility solutions for rural regions with a lack of public transport. Transport by volunteer-run community buses is being tested, for instance.

Bike wash or coffee bike

While experts exchanged views at the Sankt Augustin campus, interested members of the public could visit the exhibition area in a neighbouring car park. Companies, municipalities, clubs and associations presented what they had on offer as well as ideas on the topic of mobility. This included a diverse range of options, such as a hydrogen-powered bus, cargo bikes and a bicycle washing system.

Both formats, inside and outside, followed a networking approach under the common umbrella of the first "Regional Intercommunal Mobility Day". The Network for Intelligent Mobility (NiMo) and the cities of Sankt Augustin, Siegburg, Königswinter and Troisdorf were involved in the organisation. Paul Bossauer, research associate at H-BRS, considers this overarching approach to be particularly important: "Municipalities often only consider mobility within their own borders. But people frequently move beyond municipal boundaries." For this reason, intelligent solutions that see the big picture must be found for the mobility of tomorrow – so there was plenty of material for the already planned, even larger second Intercommunal Mobility Day.

More about the event 2023

- <https://interkommunaler-mobilitaetstag.de>

20 years of b-it

Interview with computer science professor, Paul Plöger

Twenty years ago, money from the Bonn-Berlin compensation scheme went towards an ambitious project. Financed by a foundation, the aim was to create a range of forward-looking international degree programmes. This is how the Bonn-Aachen International Center for Information Technology (b-it) was established and with it three Master's programmes: Media Informatics at RWTH Aachen University, Life Science Informatics at the University of Bonn, and Autonomous Systems at H-BRS. Professor Paul Plöger was there from the very beginning.

How were International Master's programmes in applied computer science received in 2002?

That was something completely new at the time. The Bologna Declaration was only three years old. There were no German Bachelor's graduates who could have enrolled in these degree programmes. Since all the degree programmes were designed internationally, we mainly had enquiries from English-speaking countries, which still remains 90 per cent true to this day.

Where do the students come from, and what do they expect from studying in Germany?

They come from India, Pakistan, the USA, Canada or Mexico. Many associate the training with a clear career goal. Graduates from India, for instance, get around 10,000 dollars higher salary with their degree. In addition, we have a lot to offer both scientifically and on the practical-application side.

What does b-it offer over comparable programmes?

We are very research-focused, and the degree programmes are networked with each other. If you study autonomous systems at H-BRS, you can take a module at the University of Bonn and get it recognised for credits. We are also strong in the area of application. Take the RoboCup, for instance, where our students are on the winners' podium every year with their developments.

A project funded by the Bonn-Berlin compensation scheme to qualify skilled workers from foreign countries – how useful is that?

Although our students come from abroad, around 80 per cent of them stay in Germany for their first qualified job, in some cases for many years, in industry or in research and development. In this respect, it is a good investment in the German economy.

You started at b-it as a lecturer and took over one of the three scientific director positions in 2016. What are your goals?

According to our new mission statement, we also see ourselves as a strategic partner of the regional economy. We want to drive the digital transformation forward in fields of application, such as AI, media, life sciences and autonomous systems – in dialogue with business and society. This is how b-it lives up to its founding purpose.

Springboard to the world of work

Great response at the Company Day career fair

With 148 companies from all over Germany and more than 2,500 visitors, Company Day at Hochschule Bonn-Rhein-Sieg's Sankt Augustin campus is the largest career fair in the region. On 9 and 10 November 2022, the networking days for students, graduates and companies could finally take place again in person at the university. Interest was so great that the university had to decline some of the exhibitors.

“Characteristic of Company Day is the wide range of sectors and company sizes,” says Birgit Jendrock, who organises the event. From bakeries to IT companies, from fashion retailers to globally-operating logistics groups and machinery and industrial plant manufacturers, every sector was represented. The participating companies had more than 500 job ads in their pack – plenty of choice for the professionals of tomorrow, who were able to prepare for their career entry through CV reviews, career coaching and specialist lectures during the fair.

Personal contacts count

The first contacts were correspondingly successful. Billy Kohlberg, Recruiting & Employer Branding Officer at RTL Germany, sums up: “There were many interesting conversations with students who have a clear idea of their professional future and were very receptive to what we presented them with in terms of opportunities.”

Just how useful personal contact with the university can be was experienced by the numerous H-BRS alumni who, after completing their studies and starting their careers, were now recruiting for their companies themselves at Company Day. “This connection quickly establishes a basis of trust with students,” says Birgit Jendrock. The fair is also a welcome opportunity for H-BRS teachers and researchers to build contacts that often lead to long-term partnerships or projects.

Sparking ideas

Start-up Cup awards clever start-up concepts

From intelligent mattress covers to pocket PCR tests – last year, students, employees and alumni of Hochschule Bonn-Rhein-Sieg entered their start-up ideas in the Start-up Cup for the second time. The competition was organised by the “Start-up-Manufaktur” (“Start-up Factory”), the university’s entrepreneurship centre, and more than 20 exciting entries signed up for the competition in advance. Five teams were selected for the public finals on 13 October 2022. There they had exactly five minutes to convince a jury of four of the future viability of their business idea.

“To see the transformation of the teams, from the first “pitch training” session to the finals was very impressive,” says Dr Reza Esmailie. The H-BRS research associate was awarded first prize together with Dr Robin Bayer for the idea of an inexpensive but highly sensitive rapid virus test that does not require lab work. The biologist and the physician have now founded their start-up “Detechgene” to market the test. The prize money of 2,500 euros, sponsored by the University Society, went towards improving their prototype, which is now more user-friendly and has cut back on waste.

Participation pays off

The second prize, endowed with 1,500 euros and sponsored by the Centre for Entrepreneurship, Innovation and SMEs (CENTIM), went to Jan Geyer and Max Müller with their “Sleepy Systems” concept, a smart mattress cover that uses sensors to monitor sleep. This idea also earned the two students the audience award. The jury awarded third place to Christopher Kossack and Fabian Mierau. They created the digital platform “Meinefasssauna.de” for renting barrel saunas and were awarded prize money of 1,000 euros donated by CENTIM.

Two special prizes had already been awarded in the run-up to the finals. Dr Reza Esmailie received a scholarship for the MBA programme Start-up Development. David-Lennart Sturz, H-BRS research associate, was accepted into the Accelerator Programme of the DIGITALHUB.DE Bonn with “Nuntium”, a subscription model for newspaper articles from various publishers.

More about the Start-up Manufaktur, the H-BRS entrepreneurship centre:

- <https://www.h-brs.de/en/gruenden-en>

report

Zahlen und Fakten

Number of students

Winter semester 2022/23

- 5,546 male
- 3,711 female

First semester students

- 2,308 to academic year 2021/22

Graduates

- 1,312 to academic year 2021/22

Degree programmes

Bachelor's programmes

- Business Management Rheinbach
- Business Management Sankt Augustin
- International Business
- Business Psychology
- Cyber Security & Privacy
- Computer Science
- Computer Science dual
- Business Information Systems
- Electrical Engineering
- Electrical Engineering – Cooperative Study
- Mechanical Engineering
- Mechanical Engineering – Cooperative Study
- Sustainable Engineering
- Sustainable Engineering – Cooperative Study
- Technical Journalism
- Visual Technical Communication

- Applied Biology
- Chemistry with Materials Science
- Forensic Sciences
- Sustainable Social Policy
- Social Security Management – Accident Insurance

Master's programmes

- Management Accounting and Management Control
- CSR & NGO Management
- Innovation and Information Management
- Marketing
- Start-up Development
- Business Psychology
- Autonomous Systems
- Computer Science
- Visual Computing & Games Technology
- Electrical Engineering
- International Media Studies
- Mechanical Engineering
- Sustainable Engineering
- Technology and Innovation Communications
- Analytical Chemistry and Quality Assurance
- Biomedical Sciences
- Materials Science and Sustainability Methods
- Social Protection

Doctorates

- PhD programme at H-BRS Graduate Institute: 124 doctoral candidates

The University Council

The current University Council was appointed in September 2022 by Ina Brandes, Minister of Culture and Science in North Rhine-Westphalia. The University Council is responsible for all strategic matters relating to the university. It advises the President's Office and monitors the way business is conducted. It also appoints the President of Hochschule Bonn-Rhein-Sieg, University of Applied Sciences and acts as a supervisory body. The council's board consists of four external members and four members from the university. Half of these are men and half women.

The eight voting members of the council are:

- Sylvie Hambloch-Gesinn,
Solicitor (Chair)
- Prof. Dr Jakob Rhyner,
University of Bonn (Vice Chair)
- Prof. Dr Simone Bürsner,
Hochschule Bonn-Rhein-Sieg
- Prof. Dr Klaus Deimel,
Hochschule Bonn-Rhein-Sieg
- Prof. Dr Karin Hummel,
Hochschule Bonn-Rhein-Sieg
- Prof. Dr Peter Kaul,
Hochschule Bonn-Rhein-Sieg
- Dr Andrea Niehaus,
Director of the Deutsches Museum Bonn
- Rainer Otto,
former Commercial Managing Director Wirtgen Group Holding GmbH

Internationale Kooperationen

- more than 90 partner universities in 43 countries

Newly appointed professors

- **Sonja Christ-Brendemühl**, 01/09/2022, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- **Mandy Gieler**, 01/07/2022, Department of Natural Sciences
- **Jörn Hees**, 01/09/2022, Department of Computer Science
- **Simona Helmsmüller**, 01/09/2022, Department of Social Policy and Social Security Studies
- **Anna-Lena Menn**, 15/09/2022, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- **Michael Rademacher**, 15/10/2022, Department of Computer Science (substitute professor)
- **Anita Tisch**, 01/09/2022, Department of Social Policy and Social Security Studies
- **Marc Williams**, 01/07/2022, Department of Natural Sciences

Honorarprofessuren

- **Britta Essing**, 02/11/2022, Institute for Management
- **Thomas Östreich**, 20/04/2022, Department of Computer Sciences
- **Goodarz Mahbobi**, 15/03/2022, Centre for Ethics and Responsibility

Staff announcements

New in the President's Office

Since September 2022, the university management has had two new members. Professor Michaela Wirtz is Vice President for Transfer, Innovation and Sustainability. Professor Remi Maier-Rigaud is Vice President for Research and Young Academics.

[Michaela Wirtz](#) is a professor of chemistry in the Department of Natural Sciences. She teaches in Rheinbach and was previously dean of the department. As Vice President, she wants to focus on the topic of sustainability. In her view, there is no alternative to this topic, and she wants to promote it in cooperation with other universities.

[Remi Maier-Rigaud](#) is an economist in the Department of Social Policy and Social Security Studies. He is the head of the Bachelor's programme in Sustainable Social Policy. As Vice President, he pursues the goal of harnessing research synergies for topics of the future, such as sustainability, digitalisation and social responsibility.

Margit Geißler: Change of office

Vice president becomes presidential commissioner

After seven years as Vice President for Research and Young Academics, Professor Margit Geißler has passed this position in the President's Office on to Professor Remi Maier-Rigaud. She will now devote herself more to research and teaching again but will continue to advise the university management as presidential commissioner on the implementation of the Research Information System (FIS). At the Rheinbach Campus, Institute of Safety and Security Research, Margit Geißler pursues her research projects in analytical chemistry and chemometrics and teaches in the Bachelor's programmes in Forensic Sciences and Applied Biology as well as in the Master's programme in Analytical Chemistry and Quality Assurance. As vice president, Margit Geißler was instrumental in advancing the development of H-BRS. The passionate researcher has fostered young talent, advanced research projects and supported a growing number of PhD degrees. Her impressive track record includes additional research projects as well as further collaboration projects with renowned partners, such as the Fraunhofer Society and the German Aerospace Center.

Udo Scheuer: The man for transfer is leaving

Vice President for Regional Development and Innovation says goodbye

Silver anniversary with Hochschule Bonn-Rhein-Sieg, University of Applied Sciences: For 25 years, Vice President for Regional Development and Innovation, Udo Scheuer, has shown full commitment to the university. Now he has retired. His name is firmly associated with the founding of the transfer office, with which Udo Scheuer initiated important partnerships between science and business. With his dedication to knowledge transfer, he not only enriched research and teaching, but also the academic careers of numerous students and graduates. The transfer activities resulted in the successful submission of research proposals as well as the securing of patent applications and contract projects. An important milestone of his time of service is the "Campus to World" project, which promoted the transfer of ideas, knowledge and technology between university and society. In short, Udo Scheuer's engagement and innovative strength laid numerous building blocks that can be built upon in the future. If the university can continue to successfully promote excellent science and practice-oriented education, this is, in great part, thanks to the foundations laid by Udo Scheuer.

Prizes and awards 2022

University

“Fairtrade University certificate” from Transfair e. V. /Fairtrade Germany

- H-BRS is awarded this title for another two years

“Hochschulperle July 2022” of the Donors’ Association

- For the new Game Studio of the Institute of Visual Computing and the Department of Computer Science

International E-Learning Award 2022

- Bronze for e-learning experience in “Open Online Course with FPGA Remote-Lab”

Manager Magazin Rankings

- 7th place for teaching in auditing

“Study and Career in North Rhine-Westphalia” of the Institute for Applied Statistics (IAST)

- H-BRS in 1st place, particularly high satisfaction in the Department of Computer Science
- **Graduate Institute, doctorates awarded in 2022**
- Dr Daniel Schulke, Department of Natural Sciences
- Dr Jan Tolsdorf, Department of Computer Science
- Dr Callistus Agbaam, Department of Management Sciences
- Dr Syed Afraz Gillani, Department of Management Sciences
- Dr Sven Seele, Department of Computer Science
- Dr Philipp Swoboda, Department of Natural Sciences
- Dr rer. nat. Sarah Aurora Heß, Department of Natural Sciences
- Dr rer. nat. Thomas Havel, Department of Natural Sciences

Advancement Awards from H-BRS Donors

Advancement Awards for Bachelor’s Thesis

- Julia Franziska Johanna Wulf, Department of Management Sciences
- Marc Schmickler, Department of Management Sciences
- Peter Volbach, Department of Computer Science
- Elena Albus, Department of Computer Science
- Daniel Heuser, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

- Helena Noack, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Feven Berhanne, Department of Natural Sciences
- Thembiso Tlotlo Nhlekisana, Department of Social Policy and Social Security Studies
- Sarah Wasik, Department of Social Policy and Social Security Studies
- Laura Hinz, Department of Social Policy and Social Security Studies
- Theresa Göbel, Department of Social Policy and Social Security Studies

Advancement Awards for Master's Thesis

- Nadine Thomas-Frank, Department of Management Sciences
- Annika Hagen, Department of Management Sciences
- Julius Breiholz, Department of Computer Science
- Christin Weber, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism
- Katharina Wetzel, Department of Natural Sciences
- Carina Cläsgens, Department of Natural Sciences

Award for PhD

- Dr Jan Tolsdorf, Department of Computer Science – H-BRS Donors

Persons and Teams

BRS Motorsport

- 2nd place, overall ranking, Formula Student Italy
- 3rd place, overall ranking, Formula Student Czech
- 3rd place, category endurance, Formula Student Germany
- 3rd place, category cost, Formula Student Spain

DAAD Prize 2022

- Allex Semba, Department of Social Policy and Social Security Studies

VDI Badge of Honour

- Prof. Dr Iris Groß

IEE ISMAR 2022 Impact Award

- Prof. Dr Ernst Kruijff, Department of Computer Science

Innovation Award Sustainability

- Prof. Dr Alexander Boden, Department of Management Sciences – Institute for Digital Consumption (IVI)
- Prof. Dr Martin Hamer, Department of Natural Sciences – International Centre for Sustainable Development (IZNE)
- Prof. Dr Klaus Lehmann, Department of Natural Sciences – Centre for Ethics and Responsibility (ZEV)

Award for Teaching 2022

- Prof. Dr Andreas Schümchen, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – Institute for Media Research and Development (IMEA)

Open Data Impact Award 2022

- Prof. Dr Luigi Lo Iacono & Stephan Wiefling, Department of Computer Science – Institute for Cyber Security & Privacy (ICSP)

Equal Opportunities Award 2022

- Dana Löchel, Department of Social Policy and Social Security Studies

Doctoral Scholarships 2022

- Alexander Busch, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism – Dr. Reinold Hagen Foundation
- Mohammad Wasil, Department of Computer Science – Institute for AI and Autonomous Systems (A2S)
- Alina Gerke, Department of Management Sciences – Equal Opportunities Commission
- Erik Dethier, Department of Management Sciences
- Cathleen Müller, Department of Management Sciences – Graduate Institute, Graduate School for Applied Research NRW

Red Rocket

- 1st place Maple CTF 2022
- 2nd place Midnight Sun CTF 2022
- 2nd place Real World CTF 2022 – together with Sauercloud
- 4th place HITB SECCONF CTF 2022
- 4th place in the qualifier of the DEF CON CTF 2022 – together with Sauercloud
- 5th place ENOWARS 6
- 12th place Google CTF 2022
- 14th place in the final of the DEF CON CTF 2022 – together with Sauercloud

Respect! Diversity Ambassadors

- Jairo Compostela Paramio
- Njavwa Mbao
- Fayez Allalaf

Start-up Cup 2022

- Dr Reza Esmailie & Dr Robin Bayer, Department of Natural Sciences

Transfer Impulse Prize

- Dr James Barry, International Centre for Sustainable Development (IZNE) (1st prize)
- Prof. Dr Ingo Groß, Prof. Dr Paul Melcher and Prof. Dr Irene Rothe, Department of Electrical Engineering, Mechanical Engineering and Technical Journalism (EMT) (2nd prize)
- Maximilian Johnenken, Department of Computer Science – Institute for Technology, Resource and Energy-efficient Engineering (TREE) (2nd prize)

VDI Advancement Award 2022

- 1st prize for Bachelor's thesis: Jannik Brockerhoff, Department of Computer Science

World Games 2022

- Gold and Bronze for Tim Brang, lifeguard and student in the Department of Electrical Engineering, Mechanical Engineering and Technical Journalism

Bachelor's, Master's or vocational training?

Apprentices at the university

Hochschule Bonn-Rhein-Sieg, University of Applied Sciences offers the entire spectrum of higher education degrees, including Bachelor's, Master's and doctoral degrees. However, it is also an attractive place of learning for those who opt for a classic apprenticeship. Seven young people started their first year of training at H-BRS at the beginning of August 2022. The new apprentices were warmly welcomed in various departments. As biology and chemistry lab technicians, in office management and in the library, but also as IT specialists, the committed young professionals bring fresh ideas and new perspectives to the university team.

The fact that vocational training at H-BRS is worthwhile is shown time and again by the outstanding qualifications achieved. Like Sura Tat's, for instance – she completed an apprenticeship as a chemistry lab technician and gained deep insights into the analytical and inorganic fields. The Bonn/Rhein-Sieg Chamber of Industry and Commerce (IHK) honoured her as best of class in her apprenticeship year. "With our very practice-oriented apprenticeships, we want to give young people a good start in their careers. They receive a good basis for their professional career here," says vocational training coordinator Nina Schug, who is looking forward to receiving applications for the coming years as well.

Five classic apprenticeship occupations

Hochschule Bonn-Rhein-Sieg offers five classic apprenticeships alongside its degree programmes. Young people can obtain their vocational qualifications here as biology lab technicians, chemistry lab technicians, office management assistants, media and information services specialists and IT specialists. Currently, 17 women and men are undergoing training at the Sankt Augustin and Rheinbach campuses.

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