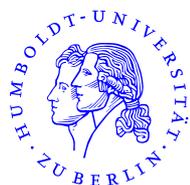


# Laboratory

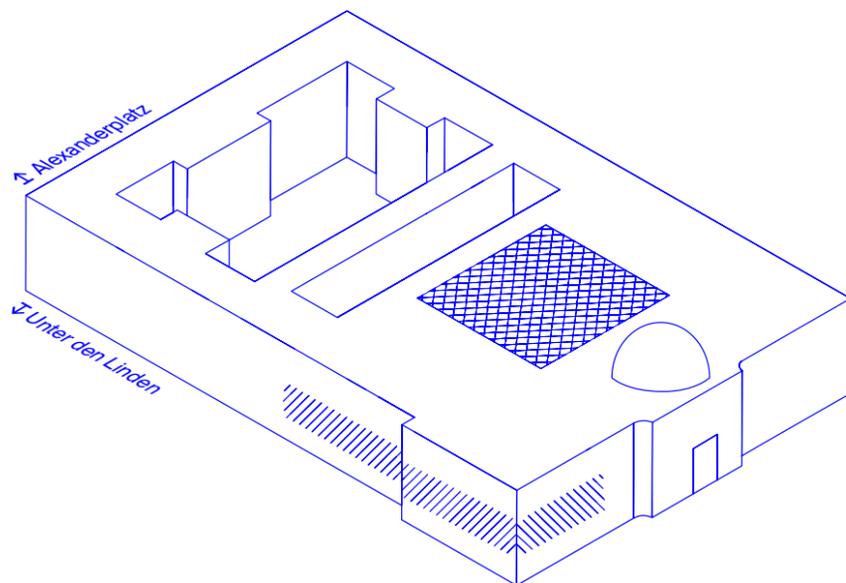
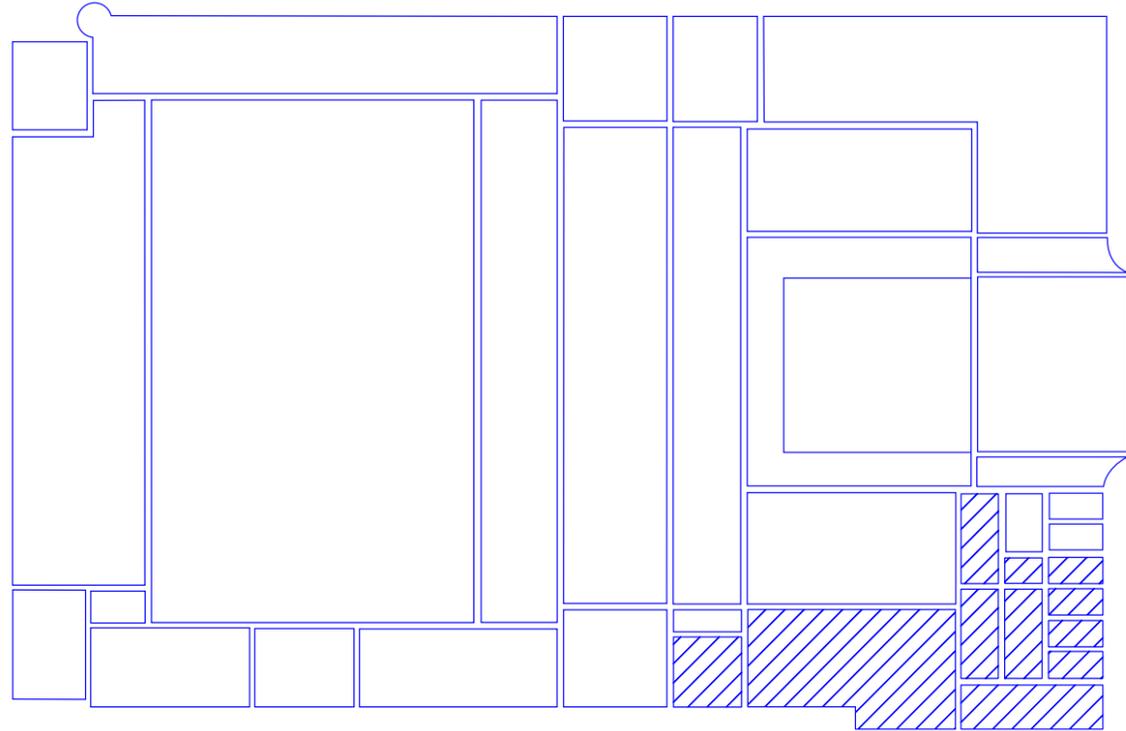
The Humboldt-Labor  
Science in Motion

Thoughts and Approaches  
November 2017



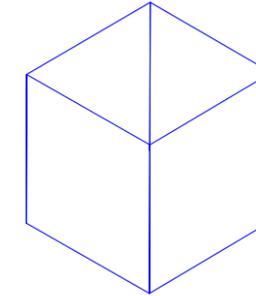
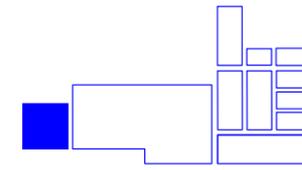
**HUMBOLDT  
FORUM**  
IM BERLINER SCHLOSS

# The Humboldt-Labor is located on the first floor of the Humboldt Forum in the Berlin Palace.



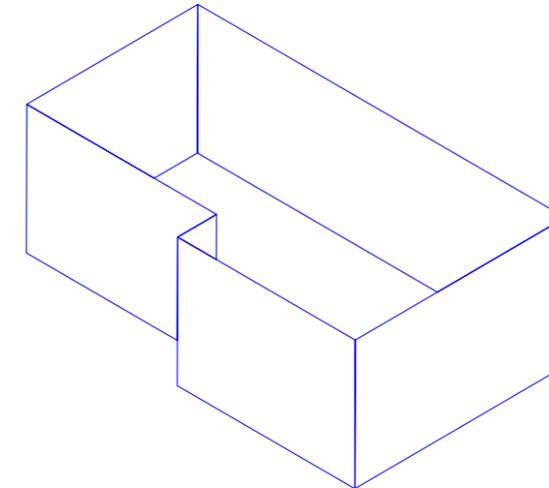
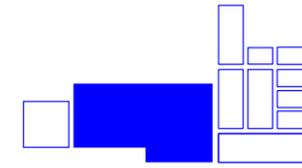
## Humboldt Forum

When the Humboldt Forum opens its doors in late 2019 it will mark the establishment of a whole new cultural quarter in the very heart of Berlin. The participating actors are the Stiftung Preußischer Kulturbesitz (SPK) with the Ethnologisches Museum and the Museum für Asiatische Kunst of the Staatliche Museen zu Berlin, Kulturprojekte Berlin with Stadtmuseum Berlin, the Humboldt-Universität zu Berlin and the Stiftung Humboldt Forum im Berliner Schloss. In viewing the unique concentration of everyday objects, spiritual items, and works of art in the reconstructed Berlin Palace from the twin perspectives of science and art, these institutions are aiming to devise entirely innovative approaches to topical themes such as culture and nature, politics and religion, research and history.



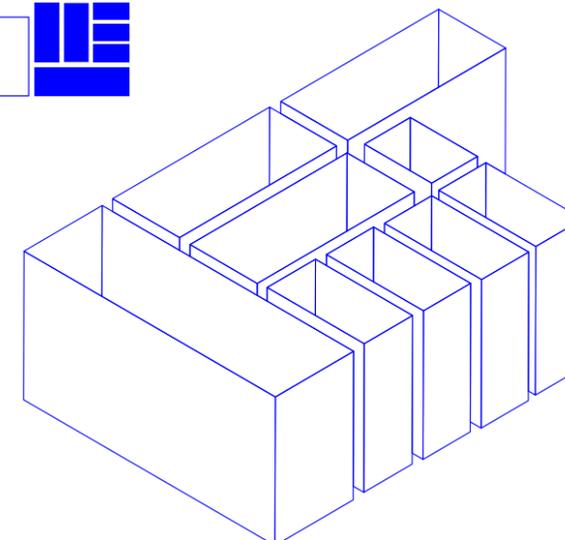
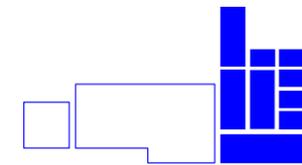
### 1. Foyer

The foyer is both the entrance and exit to the Humboldt-Labor. Its various views into the Palace and out onto the Lustgarten lend it its distinctive atmosphere. The foyer will attract visitors with a spatial installation, greet and guide them on their way around the Humboldt-Labor, and bid them farewell.



### 2. Main Hall

The adjacent main hall is the Humboldt-Labor's centerpiece. Its physical dimensions alone are impressive. This represents the confluence of the Humboldt-Labor's activities, an encounter zone for presentations, discussions, discovery, reflection and production. To wit, the main hall will be the Humboldt-Labor's "engine room".



### 3. Further Rooms

The holdings of the Sound Archive are located at the rear in the west part of the Humboldt-Labor, alongside several offices and semi-public workspaces, storage and service areas.



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# Preface

**Sabine Kunst**  
President of the Humboldt-  
Universität zu Berlin

Dear Readers, the Humboldt-Labor opens up tremendous opportunities for science in Berlin. It will be a place where we can fulfil our social responsibility and share academic research with the public in an accessible format. The Humboldt-Universität is extraordinarily lucky to be able to take up a place in the Humboldt Forum. We could not imagine a more thrilling showcase for our excellent scientists and researchers and are looking forward with great excitement to showing a wide and diverse public how fascinating scientific work can be – in the Humboldt-Labor and in the teamwork with our partners in the Humboldt Forum. In this brochure we are presenting a challenging idea for the future Humboldt-Labor. It will take on a more palpable shape as the opening approaches and will be transported into a fascinating programme. We would like to extend a warm invitation to you all to share your thoughts with us and visit the Humboldt-Labor as often as you can, starting in 2019.

**Neil MacGregor**  
Chairman of the  
Steering Committee

Dear Readers, “Process” is one of the key concepts in this brochure, and processuality is science’s defining feature as it always approaches the world with a questioning attitude and an open mind in order to interpret and change it. With the Humboldt-Labor, the Humboldt-Universität zu Berlin will make its work “public” in the true sense of the term. It will share its questions, findings and passion with a wide audience and the other partners in the Humboldt Forum. The engagement between science and the public, the collections and the arts in the Humboldt Forum will constantly intensify, and it is this interaction that sets the Humboldt Forum apart as a new kind of institution. We are all looking forward to seeing it in action!

**Lavinia Frey**  
Chief Culture Officer of the Stiftung  
Humboldt Forum im Berliner Schloss

Dear Readers, what other public cultural institution is privileged to count a university among the bodies that guide and inspire it? You’ve already guessed it – the constellation of partners in the Humboldt Forum is unique worldwide. As Chief Culture Officer of the Stiftung Humboldt Forum im Berliner Schloss, I am thrilled that now, as the construction work is visibly nearing completion, the Humboldt-Universität zu Berlin is presenting its plans for the Humboldt Forum. The Humboldt Forum is where the sciences will be accessible to a broad-based public with its truly encyclopaedic abundance of themes. As members of the foundation, we anticipate the opening with a delight that is just as great as our curiosity!

# Voices from the University

#humboldtlabor

Silvy Chakkalakal  
Junior Professor of  
European Ethnology

A place of uncompromising imagination!  
Researching and designing social futures  
together, in and with the Lab.  
#futureresearch

Sharon Macdonald  
Director of the Centre  
for Anthropological Research  
on Museums and Heritage

The Humboldt-Labor offers the exciting  
opportunity to engage the public in science  
in dynamic new ways.

Horst Bredekamp  
Professor Emeritus of the HU and  
member of the steering committee  
of the Humboldt Forum; involved in  
the Schloss project from the very  
beginning.

The Humboldt-Labor is a dream come  
true; it was born in the 1990s with the  
opening up of the university collections.  
The university as living museum: the  
dream was to reanimate the original impulse  
of 1810, to combine scholarship,  
academic studies and research, and to  
involve the public.

Lin Hierse  
Research Assistant,  
Chair of Applied Geography

Scope for collective critical investigation,  
understanding and change. A co-working  
space for the sciences and (urban) society.

Kristoph Schumann  
Physics Student

A living experience of phenomena:  
puzzling out, trying out, being amazed.  
At the same time an inside view of current  
research – that's what I hope for from the  
Humboldt-Labor

Jochen Hennig  
Commissioner of Collections to the  
Presidium

The Humboldt-Labor will be courageous  
and cosmopolitan, so that diversity of  
opinion and discussions are manifest as  
essential social values.

Wolfgang Schäffner  
Director of the Hermann von Helm-  
holtz Centre for Cultural Techniques,  
to which the Humboldt-Labor project  
is affiliated

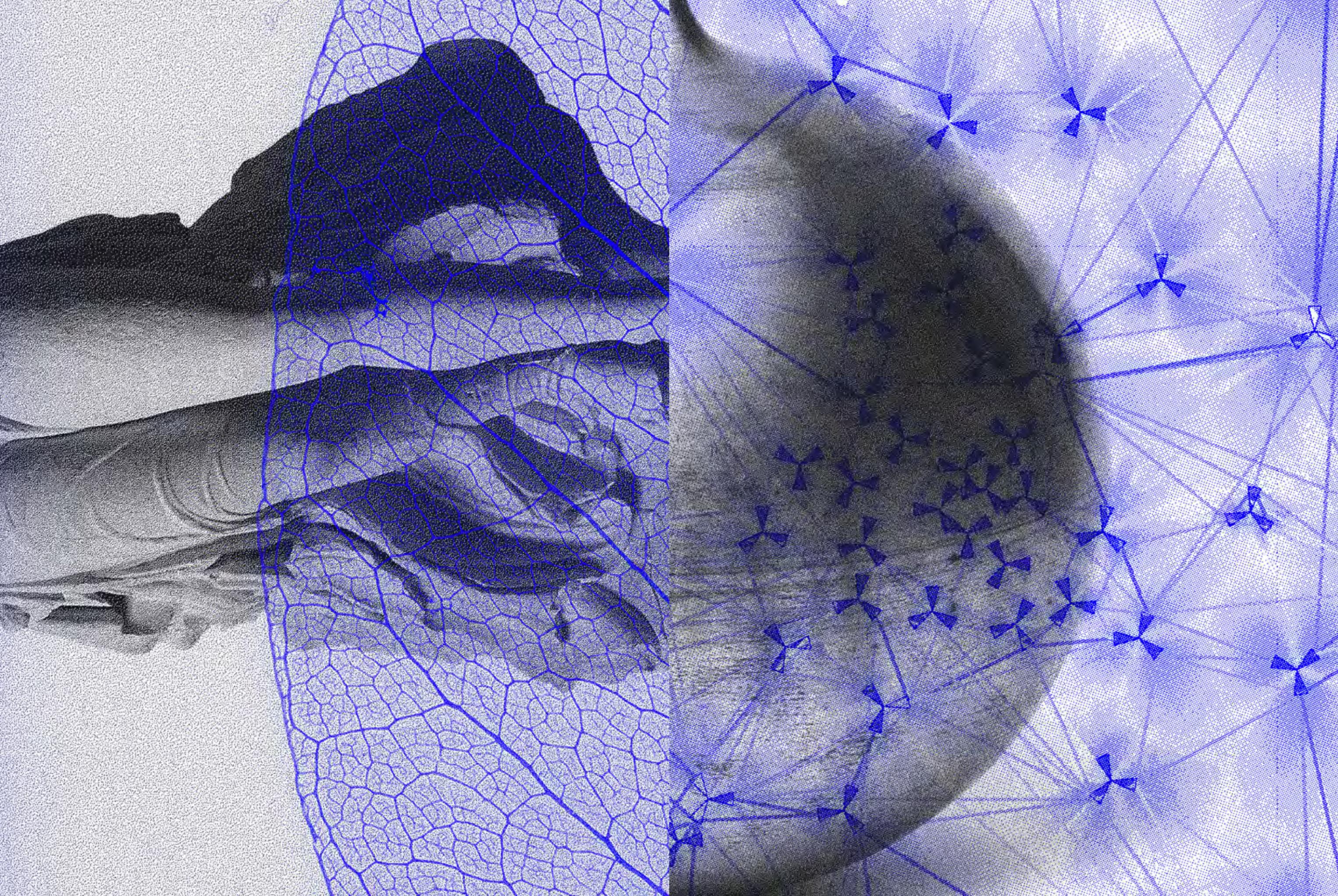
For the university of the future, the  
Humboldt-Labor will act as an exemplary  
unit of research, academic studies and  
interaction with society

Burkhard Priemer  
Director of the UniLab Schülerlabor  
for schoolgoers

Gripping questions transform every  
visitor into a scientific explorer – what can  
I deduce from my observations, from  
measurements and data?

Eva Inés Obergfell  
Vice President for Academic Affairs

To conceive the unity of research and  
academic studies as vital also for the social  
dimension – this is what the Humboldt-  
Labor and our university stand for.



# Science in the Humboldt Forum

At the end of 2019, a new place for the sciences will open its doors – the Humboldt-Labor on the first floor of the Humboldt Forum. With an area covering roughly 1,000 m<sup>2</sup> at their disposal, researchers from the Humboldt-Universität zu Berlin will bring the latest scientific developments to life for the public. Their enthusiasm and passion for science will enthrall visitors to the Humboldt Forum – this grandiose cultural project, a venue where the Humboldt-Universität under the programmatic control of the Steering Committee and later the Director General can act as a creative, vital and productive workshop of ideas in which the public is invited to participate in its research.

The aim of all the partners in the Humboldt Forum is to debate the pressing issues of today and jointly take up their positions on them. The Humboldt-Universität will contribute to this undertaking from across the spectrum of its excellent research. It can explore the themes in depth from disciplinary perspectives and put forward unconventional, complementary points of view. And, of course, it can also address issues that do not arise directly from the collections of the main players. The guiding principle here is careful reflection and controversial debate.

The Humboldt-Labor aims to be a showcase and resonance chamber for academic research in Berlin. Public engagement with all sections of our society has become a central objective for universities. They are increasingly fulfilling socially relevant functions, beyond research and teaching, that are known as their “third mission”, part of which is the communication of research. Given its tradition as a “Reformuniversität”, the Humboldt-Universität sees itself as occupying a key position in the context of current political and social debates. It sets out to engage society in a debate on current research issues such as the new understanding of matter and space, debates on migration and integration, or machine learning and artificial intelligence. The fruits of this exchange can later be fed into future scientific enquiries.

We want to adopt a robust position with respect to social conflicts, opportunities and problems, whether from a historical, contemporary or future standpoint, or from the perspective of the natural sciences, humanities, social sciences and so forth. Meanwhile, the Humboldt-Labor will specifically supplement and enhance Berlin’s cultural offer. In conveying scientific, historical and political

contexts in the Humboldt-Labor, the Humboldt-Universität actively seeks exchange and cooperation with other organisations, individuals and specialists.

The Humboldt-Labor will give the public an idea of the immense spectrum of scientific work. A central element of its concept is to visualise the processes of knowledge generation in scientific practice in the past and present – far more than to present a dazzling showcase of the sciences. The process of generating new knowledge always involves people with their stories, controversies, speculations and mistakes, not to mention an awareness of the limits of knowledge, reflection and critical discernment.

Science and research in Berlin are tremendously diverse, with four universities, several universities of applied sciences and numerous non-university research institutes. The interdisciplinary clusters of excellence that will involve the Humboldt-Universität deserve special mention, for they create an immense pool of ideas for the Humboldt-Labor to draw on. Added to this are initiatives from the faculties and centres at the Humboldt-Universität and its many partners in Berlin and across the world.

The Humboldt-Universität holds numerous collections in the fields of the natural sciences, humanities, social sciences and medicine. Their origins can be traced back to the 18th-century Brandenburg-Prussian cabinet of curiosities, which was housed in the Royal Palace. The objects were transferred to the university when it was founded in 1810. Today they are preserved, developed and used in diverse forms in teaching, research and exhibitions by different institutions – institutes, faculties and the library. The Sound Archive, one out of the more than forty scientific

collections held by the Humboldt-Universität, will permanently move into the Humboldt Forum and be housed directly in the Humboldt-Labor.

The Sound Archive contains historical sound recordings in many foreign languages and German dialects spanning the period between 1900 and the 1980s. These recordings are early evidence or even the first recordings of many of the languages and dialects it documents. The collection also includes voice portraits of famous figures, such as Kaiser Wilhelm II and Paul von Hindenburg.

The Sound Archive is significant both as historical documentation of particular languages and as a manifestation of European scientific practices. The first major collection of sound recordings – 1,650 gramophone records with examples of speech and singing in a large number of foreign languages and dialects gathered from prisoners of war – was produced by the Royal Prussian Phonographic Commission between 1915 and 1918. This collection, like others in the archive that were made in camps and prisons, is considered a “sensitive collection” owing to its origins in situations of duress, and they are accordingly handled with care. The Sound Archive will be accessible for research and exhibition activities in the Humboldt-Labor and in the wider context of the Humboldt Forum.

## Permanently in Motion

The Humboldt-Labor's main offer for the public will consist of a series of regularly changing exhibitions, which will be augmented and supplemented with interactive media installations, workshops, experiments, discussion series and performances. With these exhibitions and accompanying activities, the Humboldt-Labor aims to communicate the fascination, diversity and relevance of science and research and to generate public feedback into the university itself. To this end, the Humboldt-Labor will never cease to question the prerequisites, conditions and opportunities of its own knowledge production. By simultaneously presenting, reflecting, researching and designing, the Humboldt-Labor will break new ground in the university and also in the wider museum landscape.

Science never comes to an end; it is a continuous process, and this is reflected in the Humboldt-Labor's open-ended, multi-vocal approach. The Humboldt-Labor will not merely be a forum where knowledge is showcased and stories are told. Rather, knowledge will be actively generated through interactions between different actors, objects and architecture. The scientific process of discovery, the experiment, is its central focus, and it is reflected in the exhibition and communication formats and in the design of the space itself.

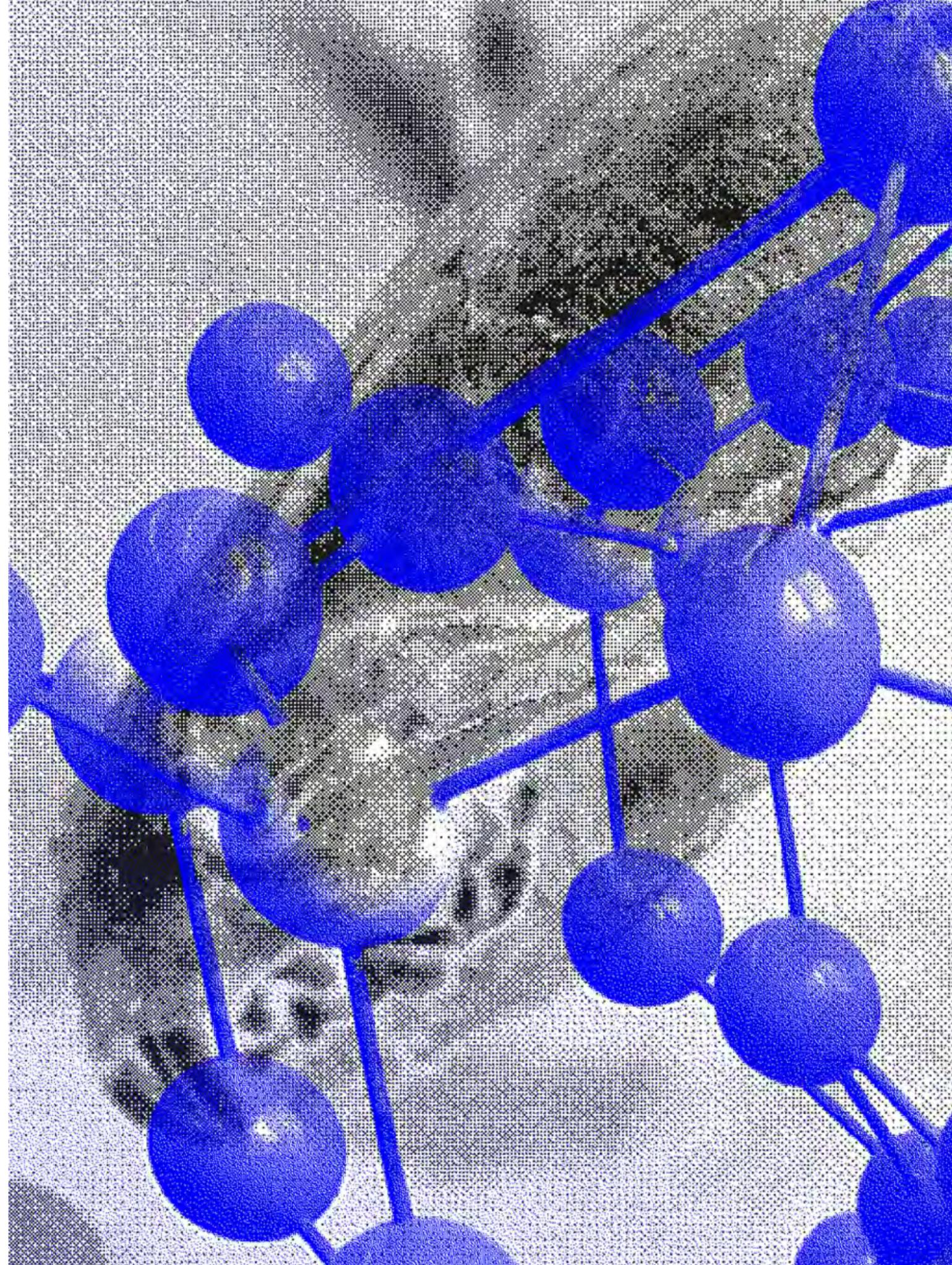
## Physical Location and Surroundings

The Humboldt-Labor is located on the first floor of the Humboldt Forum on the north-west side of the Palace. It occupies a total area of approximately 1,330 m<sup>2</sup>, of which a maximum of 1,000 m<sup>2</sup> will be used for exhibition and programme activities. The rooms are divided into a foyer (148 m<sup>2</sup>), a main hall (approx. 600 m<sup>2</sup>) and an ensemble of small rooms on the west side (approx. 580 m<sup>2</sup>), only part of which will be publicly accessible.

The foyer is both the entrance and exit to the Humboldt-Labor. Its various views into the Palace and out onto Lustgarten lend it its distinctive atmosphere. The foyer will attract visitors with a spatial installation, greet and guide them on their way around the Humboldt-Labor, and bid them farewell.

The adjacent main hall is the Humboldt-Labor's centrepiece. Its physical dimensions alone are impressive. This represents the confluence of the Laboratory's activities, an encounter zone for presentations, discussions, discovery, reflection and production. To wit, the main hall will be the Humboldt-Labor's "engine room". Finally, the holdings of the Sound Archive are located at the rear in the west part of the Laboratory, alongside several offices and semi-public workspaces, storage and service areas.

On the first floor, the Humboldt-Labor is located adjacent to the workspaces of the Humboldt Forum Academy, which organises the educational activities for the whole Humboldt Forum, and the exhibition "Berlin and the World" organised by the State of Berlin. This physical proximity between the main players is an expression of their conceptual affinity. This is why testing new communications formats and developing participatory activities are seen as central aspects in preparing the themes and programmes, just as the relationship between science in Berlin and its local and social environment is seen as fundamental to the Humboldt-Labor's activities.



# Approach

The Humboldt Laboratory is developed by the Humboldt-Universität. A core team of around ten members overseeing the project is based in the Helmholtz Centre for Cultural Techniques. Its approach is conceptual, thematic and design-based. The Helmholtz Centre for Cultural Techniques also coordinates all the university collections and is responsible for the programme of the [Tier-anatomisches Theater](#).<sup>1</sup> The team is formed of experts with wide-ranging experience in pedagogical, curatorial and museum work and administration. Together, they are preparing for the opening of the Humboldt Laboratory in 2019. They will provide the university's perspective on the changing and special exhibitions in the Humboldt Forum.

The starting point in the curatorial process and regular points of contact are the Excellence Strategy Cluster Initiatives, which represent a broad interdisciplinary spectrum. From neuroscience to mathematics and computer science right the way through to visual studies and materials science, they pursue questions of contemporary and historical relevance, applying innovative research approaches. The Sound Archive will also be a key element. With the Ethnologisches Museum's Phonogram Archive, it introduces a special, auditory dimension to the Humboldt Forum. Additional partners of the Humboldt-Universität include the [Centre for Anthropological Research on Museums and Heritage \(CARMAH\)](#)<sup>2</sup>, the sustainability researchers at [IRI THESys](#)<sup>3</sup>, and representatives of the natural and life sciences from Adlershof and Campus Nord. The more than 40 scientific collections at the Humboldt-Universität (which are held at different institutes and also include the Sound Archive) are also an important resource for the exhibitions. In addition, partners from the diverse scientific landscape in Berlin will be involved.

The Humboldt Laboratory's work is designed to be a collaborative process. Representatives of all age groups and career stages from the fields of study and interdisciplinary centres at the Humboldt-Universität will take part in it. The curators will work closely with them as they develop the exhibitions and programmes. This approach is embedded in the university's very essence. It makes the Humboldt Laboratory a creative and productive platform for the researchers involved in it, and a place where new research ideas can emerge.

Academic study is a progressive, dynamic process; it is therefore only fitting that the Humboldt Laboratory will be a place in motion. With the opening of the Humboldt Forum at the end of 2019, the Humboldt-Universität zu Berlin will celebrate the Laboratory's launch. Together with its partners from the university and in close collaboration with the other partners in the Forum, the curators will continue to work on its content and formats. The objective is to constantly renew the programmes and exhibitions. In this way, the open-ended and processual nature of scientific work will be reflected in the Humboldt Laboratory.

<sup>1</sup> The Tieranatomisches Theater (Veterinary Anatomy Theatre) dating from 1790 is Berlin's oldest teaching building still in use. Based on research and academic studies at the HU, the projects taking place there focus on the interdisciplinary research of material knowledge cultures and new ways of exhibiting objects.

<sup>2</sup> CARMAH ([www.carmah.berlin](http://www.carmah.berlin)) is based in the Institute for European Ethnology and aims to deepen understanding of the dynamics and potential of museums and heritage.

<sup>3</sup> The Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys) is an interdisciplinary and inter-faculty institute that researches the relationship between mankind and the environment.

# Formats and Potential Programmes: The Processes of Scientific Practice

The Humboldt-Labor's activities are designed to involve the visitors themselves in the scientific processes of seeking and discovering by taking an experimental and playful approach. One of the key formats for this takes shape in exhibitions. They are the foundation of the Humboldt-Labor's public offer.

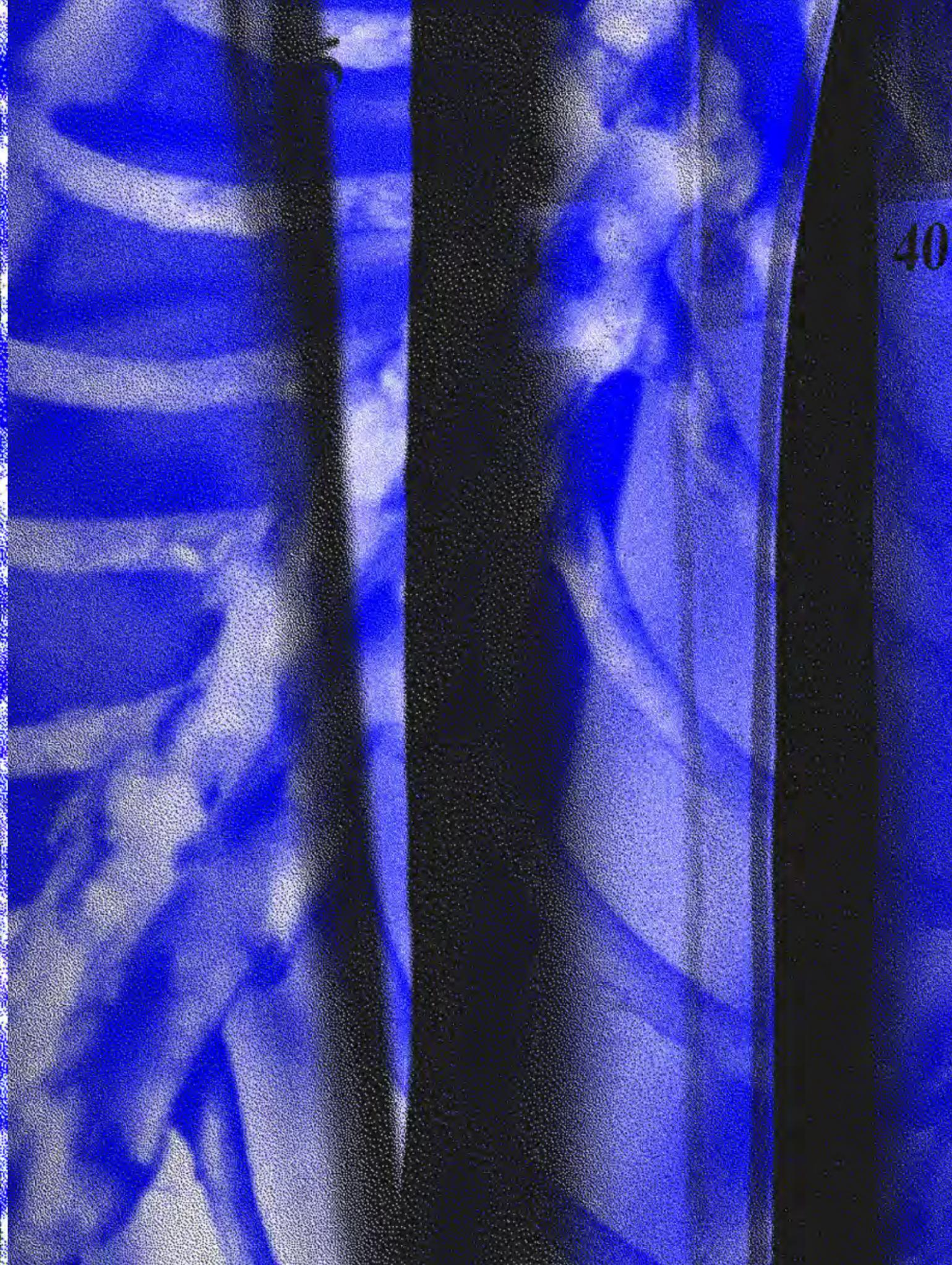
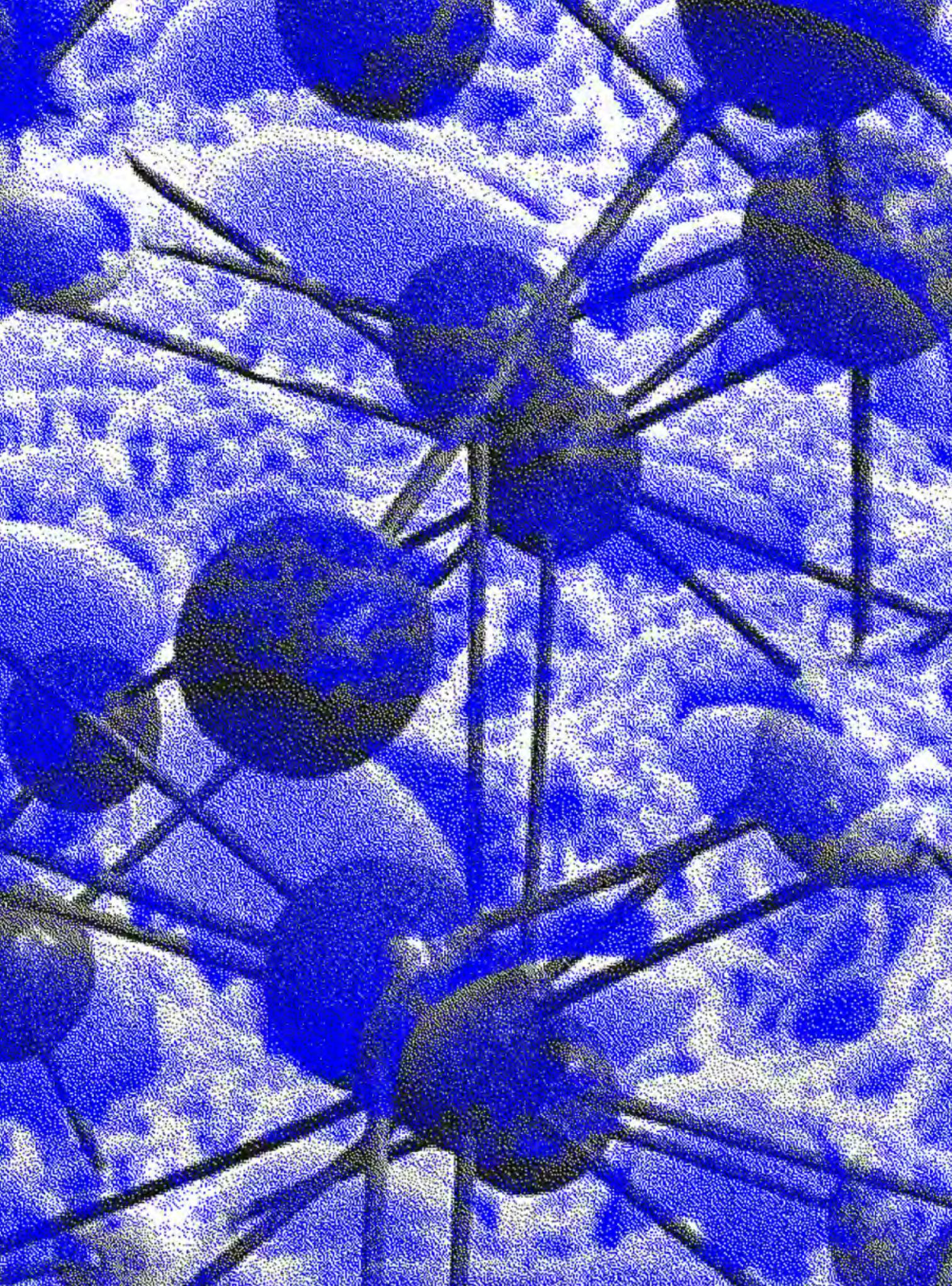
Changing exhibitions will give visitors the opportunity to deepen their understanding of historical and current issues and to form their own opinions on them. Flexible exhibition elements enable organisers to deal successfully with changing requirements and themes.

The Humboldt-Labor's exhibition activities follow the principle of active audience participation because no exhibition is ever "finished". Meaning first dawns at the moment of perception. It is influenced by users' views and interests, and depends on its makers' expertise and perspectives. To underscore this, the exhibition modules will be augmented and supplemented with interactive media installations, artistic interventions and other performative elements. Museum educators will be able to address visitors actively and involve them in discussions about exhibits. Dance and movement artists can be inspired by ideas from an exhibition module and, by interpreting them in the room, open up new perspectives on the exhibition's themes.

In addition, the Humboldt-Labor offers the public the opportunity for discussion with scientists and students from all kinds of disciplines. Whether workshops and talks, teach-ins, or experimental research set-ups, all of which involve the public in the debate, visitors to the Humboldt-Labor will be able to discover a broad spectrum of dialogue-based presentation formats.

Public engagement with a diverse public is a demanding undertaking and an immense challenge in terms of the exhibition modules, media formats, architectures and design elements. The space is therefore designed to provide opportunities for continual further development – in a physical, conceptual and technical sense. Research is not just a show-piece in the Humboldt-Labor. One of the fundamental ideas behind it is that the Laboratory, as a platform for science in Berlin in the Humboldt Forum, is itself an object of research.

Over the coming months the Humboldt-Labor team will be working on the concept. Two specific examples from the range of possible themes are presented in the following section.



# “Measurements and Metrics”

Almost all the sciences involve measuring and weighing, scaling, assessing and evaluating. A central exhibition theme for the Humboldt-Labor is the wide-ranging and crucial role that measurements and metrics play in scientific practice. Measurements are taken in multiple scientific disciplines with all kinds of measuring processes, techniques, appliances and systems. We measure the time, temperature, height, weight, density, volume, area, luminous and sound intensity, attraction and repulsion, the pulse, blood pressure, migration numbers and flows, educational attainment and electoral turnout. Data measurements and mathematical simulations improve transport plans and help us to draw up future scenarios for our energy supply. So-called smart buildings optimise their energy balance by measuring their surrounding conditions.

Measurements and their visualisations help us to understand and illustrate complex interrelationships. It takes no more than a daily glance at the weather map to realise this. Of course, perception and reality can never be identical because measurements and representations are merely aids. With such renderings, there is always the risk of losing or distorting relevant information. Is a slump in a country's population related to an epidemic? A war? A reform of the law on dual citizenship? A large wave of migration? Only additional information can categorise and help assess the measured changes.

One problem with measuring is the interrelationship between experiment, measurement and the theory upon which they are based. Theories often assume that the environment is “pure” and free from external influences. Measurements that are supposed to verify these theories are not able to exclude these external influences completely and are therefore frequently imprecise. Here researchers must decide which degree of approximation is sufficient for them to confirm the theory. But even the most precise measurement has multiple possible meanings. The data gathered has to be interpreted.

A historic example from Berlin illustrates this: in 1934, Enrico Fermi thought that he had discovered new elements that he called “transuranic elements” when he radiated uranium with neutrons. He received the Nobel Prize in 1938 for his discovery. Based on a chemical analysis of Fermi's experiments, at the end of 1938 Otto Hahn and Fritz Strassmann were able to demonstrate that these were not new elements, but the products of fission. Lise Meitner and Otto Frisch provided the theoretical explanation for their findings in 1939.

Measurement also has a political or ideological component. Scientists who can present supposedly objective data or their own classification system secure for themselves the prerogative of interpretation and hence power over the experimental object, without ever needing to formulate this claim to power explicitly.

In the early 19th century, a respected school of thought known as phrenology – also represented at the Friedrich-Wilhelms-Universität in Berlin – held that a person's character could be inferred by measuring the skull. By questioning this view and finding counter evidence, phrenology was exposed as scientific racism. Today it is only of interest in the history of science. What is regarded as scientifically correct or general knowledge in one century is not necessarily considered valid in the next.

Scientists have to negotiate the charged field between the (supposed) objectivity of measurement data and its deliberate interpretation, and assert their position between these two poles.

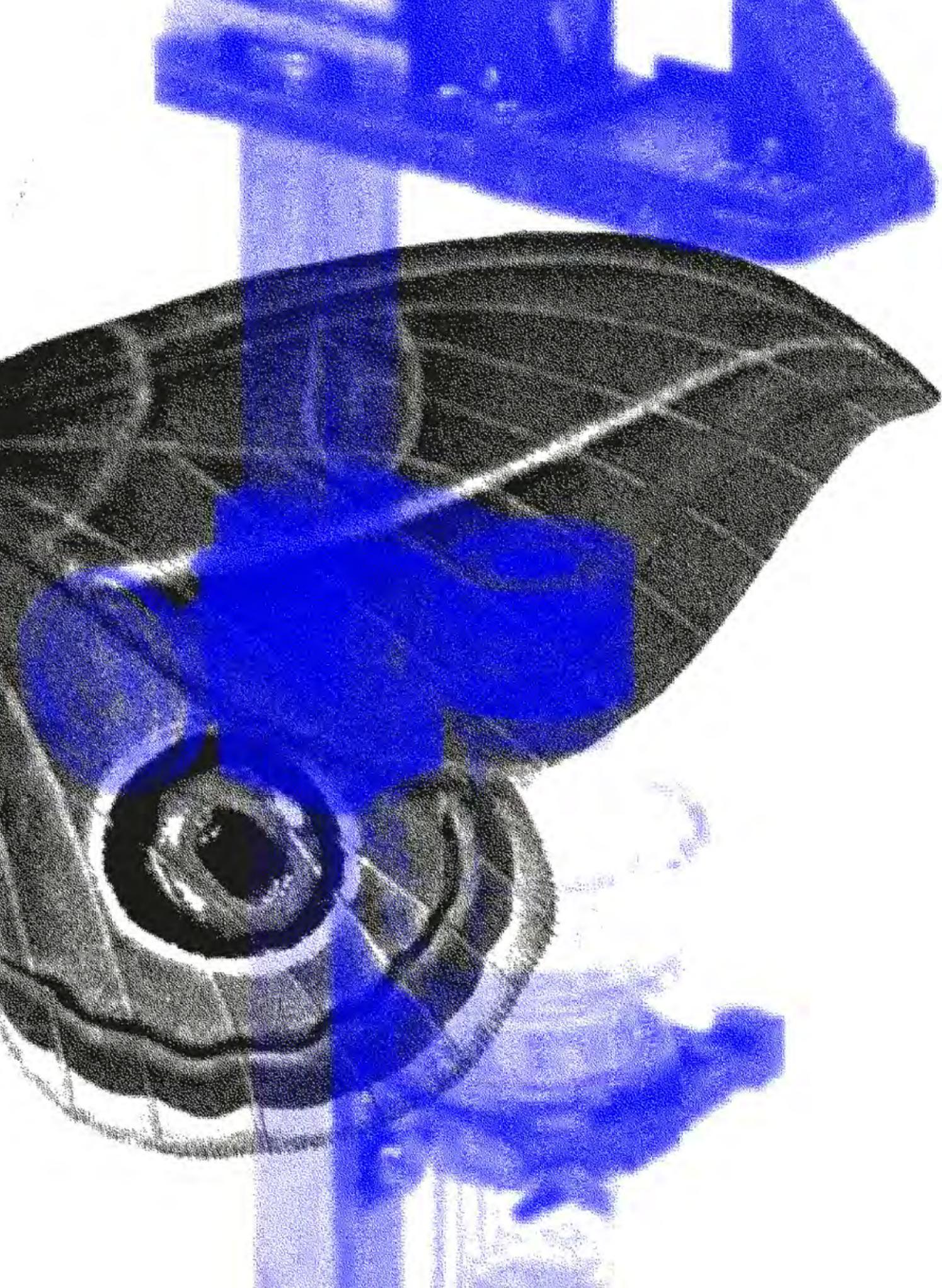
Especially as regards the issue of measurement, the Humboldt-Labor is ideal as a real research laboratory and for involving the public with their expertise. We are measuring ourselves more and more. Fitness trackers record runs, heart rate, calories burnt, elevation gain, and more besides. Sleep apps monitor night-time rest and recommend the ideal time to go to sleep and wake up. E-readers measure average reading speed per page and predict the expected total reading time for the book in question. It is not just data that is collected in a methodically controlled way; conclusions are also drawn as to our state of health and how we can improve ourselves (“the quantified self”). This social tendency for self-improvement is one of the topics addressed in the Humboldt-Labor in the exhibition “Measurements and Metrics” (working title).

This raises the question whether such a quantification of our lives is beneficial. What are the disadvantages? What is not measurable? Which spheres of our daily lives do we want to protect from measuring access? What are the situations in which the acquired data becomes meaningless? How should we approach errors, deviations and fractions? And how can the non-measurable be explored in an exhibition space?

Finally, this topic is an opportunity to examine the Humboldt-Labor itself from the perspective of measurement and to see it as an experiment site for spatial and exhibition research. In the Humboldt-Labor, exhibitions and different formats – performance, workshop, symposium et al. – will create different spatial configurations.

How does spatial configuration affect people and their interactions? What creative influence can be drawn from it? To investigate the relationship between the design of different spatial settings and their use, experimental field research will be conducted, based on the example of the experimental zone in the cluster of excellence Image Knowledge Gestaltung at the Humboldt-Universität.

Visitors' movements and interactions in the space will be digitally recorded and simulated, with their consent. Their experiences and impressions will be captured through surveys and mental maps. In this way, visitors can actively participate in the experiment and become part of an experimental research set-up in which very different measurement methods are applied. By interpreting their own movement profiles, they can be actively involved in considering what conclusions can be drawn from the measurements. As in a game, they can get an idea of how displays, installations and spatial arrangements affect their own movements in the space, and their findings can be fed into the design of future set-ups.



## “Images of Science”

Robert Koch, a doctor and microbiologist who served as Full Professor of Hygiene at Berlin University from 1885, once noted that he considered “the photographic image of a microscopic object [...], under certain circumstances, as more important than the object itself”.<sup>4</sup> This historic quotation opens up the spectrum of what makes the image so interesting as a subject for the Humboldt-Labor: as a knowledge medium it represents and at once creates new knowledge. It is relevant to nearly all domains of, and enables connections to be formed between, such different fields of research as the development of new imaging techniques in medicine and the computation of images in architecture and urban planning, where the use of digital visualisations (renderings) has now belonged for a long time to the basic repertoire of design and communication.

As in many other fields, it is now scarcely possible in this sphere to distinguish between the analogue and the digital. These are pressing questions, not least for the museum itself. The technical possibilities for replicating museum exhibits – whether this is in high-resolution images or true-to-original 3D-printed objects – lend new relevance to the question of the original’s significance. How will the museums of the future tackle these challenges?

Images appear to be unmediated and self-evident in a way that we rarely reflect upon in our daily lives. We are scarcely conscious of the fact that a diagram in climate studies or a health app visualises an abundance of otherwise scarcely understandable data and information. This is particularly interesting for an exhibition programme that encourages visitors to actively engage with the productive, epistemological and emotionally appealing dimension of images in the sciences. The apparatuses, media and forms of reproduction used in different fields of research provide a diverse range of insights into the importance of visual scaling, mapping and modelling in science, both historically and in the present day. Knowledge can’t manage without its design media. And there is scarcely any better place to examine this than the Humboldt-Labor, which is a site of creative communicative practice itself.

For the Humboldt-Labor, there is an additional level to the examination of images in science: how do people conceive of science? What images of science do visitors have when they enter the Humboldt Forum? What preconceptions and clichés about daily work in science and research do they bring with them? What images do they have of the processes of searching for knowledge and reaching discoveries – and of the false turns that scientific practice sometimes takes? These questions are not only of immense social relevance today, given the crisis of legitimacy that seems to be affecting science. They are also an essential point of reference for all the Humboldt-Labor’s activities and programmes, because it is interesting to get a better sense of the images of science visitors have in their heads as they explore the exhibition space in the Humboldt-Labor – this is an important bedrock upon which the Laboratory’s activities and programmes will be developed.

Finally, it is crucial to consider perceptions of science when we are collectively looking for answers to the question of what science should – or must – do today.

<sup>4</sup> Robert Koch: Zur Untersuchung von pathogenen Organismen. In: Mitteilungen des kaiserlichen Gesundheitsamts Bd. 1, 1881, S. 1-48, S. 11.

# Education and Communication

The focus of the Humboldt-Labor's concept is on people and their experiences as visitors. It has the task of elucidating and enlivening the frequently complicated practice of scientific work that the lay person is unaccustomed to, therefore questions of communication are an integral part of planning. The task of communication is for instance to translate abstract knowledge into stimulating experiences, to reflect the social and cultural dovetailing of knowledge and scientific work, and, in conclusion, to put to open discussion the difficulties of representability.

After all, it is not possible to publicly "communicate" every scientific process of search and discovery, and this, too, must be the subject of reflection. If visitors to the Humboldt-Labor are to be taken seriously and actively integrated as participants in these issues, it presumes the consistent allowance for and up-to-date implementation of standards of participation, accessibility and inclusion. It also demands a clearly thought-out attitude, powers of reflection and the readiness to dispense with the prerogative of interpretation. Science lives from sharing.

The Humboldt-Labor invites its visitors to invest their own input and become researchers themselves. Its staff stimulate visitors' curiosity and motivation by offering opportunities for dynamic, motivated learning.

If we are to imbue life into interdisciplinary agendas and international networking, we have to be aware of the limitations and peculiarities of our own knowledge and views. For an exhibition programme, this means always openly displaying the subjective character of knowledge and being unprejudiced and sensitive towards post-

colonial issues, racism and categories of difference such as gender or social status.

Last but not least, it calls for a conscious and critical approach to the different media as central components of the Laboratory's communications activities. The whole range of collection pieces and the material and immaterial dimensions of the objects in the Sound and Phonogram Archive, mobile devices such as smartphones and tablets, the furniture in the exhibition rooms and their architecture, will encourage visitors to engage with the different media used in the Humboldt Forum.

In the context of the entire Forum's communications activities, the Humboldt-Universität sees its role as a key factor in designing the Humboldt Forum Academy, which pools the communications activities of those involved, alongside publicly sharing its extensive expertise in innovative teaching in the Humboldt Forum.

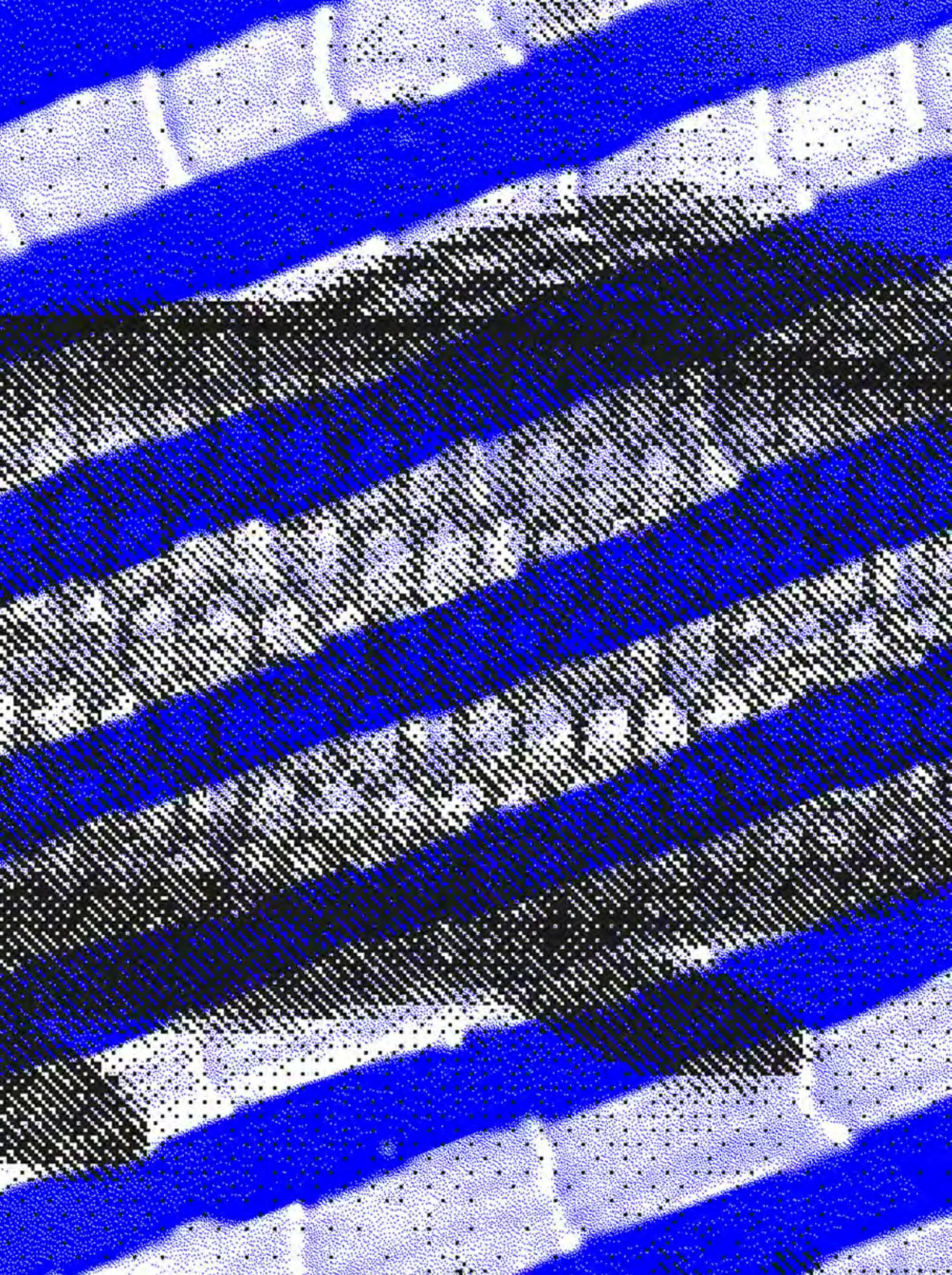
Founded in 1810 as a "Reformuniversität", the Humboldt-Universität can look back on a long tradition of unity in research and teaching. Today, more than ever before, it sees innovative teaching and educational concepts that go far beyond academia as part of its social role. This role is embodied in the Department of Education Studies, the Interdisciplinary Centre for Educational Research and projects such as the [bologna.lab](#)<sup>5</sup>, the [Humboldt Pupil Course of Lectures](#)<sup>6</sup> and the schools' laboratory [UniLab Schülerlabor](#)<sup>7</sup>. Interdisciplinary courses such as the Humboldt Bachelor and "[Diversity of Knowledge](#)"<sup>8</sup> are evidence of the value it places on an interdisciplinary approach. This diversity will also be reflected in the Humboldt-Labor.

<sup>5</sup> The [bologna.lab](#) is a cross-faculty teaching and learning laboratory at the Humboldt-Universität. It aims to promote self-guided, scientific and research-based learning by students.

<sup>6</sup> The Humboldt Pupil Course of Lectures is linked to the Professional School of Education at the Humboldt-Universität. Its objective is to facilitate the transition from school to university and to present studying for a degree, in particular teacher training, as an option for pupils.

<sup>7</sup> The UniLab Schülerlabor is an extracurricular site of learning that builds a viable bridge between school and research. It simultaneously – and this is also its unique feature – enriches students' education with practice- and research-based elements.

<sup>8</sup> "Diversity of Knowledge" is an interdisciplinary study programme for students of all subjects. Work with concrete objects gives students of the natural and social sciences and the humanities a hands-on opportunity of investigating the history of knowledge acquisition and of the sciences.



# Collaboration in the Humboldt Forum

Led by the Steering Committee, the Humboldt-Universität collaborates in the Humboldt Forum with the Prussian Cultural Heritage Foundation with the Ethnologisches Museum and the Museum für Asiatische Kunst of the Staatliche Museen zu Berlin (SMB), Kulturprojekte Berlin, Stadtmuseum Berlin and the Stiftung Humboldt Forum im Berliner Schloss. As a new cultural centre in the heart of Berlin, the Humboldt Forum draws a large extent of its potential from teamwork between these bodies. Using the facilities of the Humboldt-Labor and beyond, the Humboldt-Universität will contribute topical perspectives and projects grounded in its research to the exhibitions that are curated by the other partners, or join forces with them on special exhibitions.

The exhibitions in the Humboldt-Box already provided an opportunity to experiment and rehearse cooperation. Having made selective contributions

to the exhibition “Extremes! Nature, Culture and the Humboldt Current”, the Humboldt-Universität will partner the SMB to produce the forthcoming exhibition “Capturing Sounds” (working title) as equal contributors. Cooperation will become even more intensive also in relation to the programme activities and the arrangement of the central special exhibition areas on the ground floor and in the areas for the temporary exhibitions of the SMB.

For example the HU enriches the concept for the “Windows” on the second and third floors of the Humboldt Forum with perspectives from current research. Taking their cue from the South Sea boats, experts – for instance from the fields of biology or geography – analyse mankind’s destruction of the environment and phenomena such as coral bleaching and reef extinction.

The Humboldt-Universität moreover plays a major role in the

formation of the Humboldt Forum Academy, the central pool for all the Humboldt Forum’s educational and communication programmes. As an institution that has since its very beginnings regarded research and academic studies as inseparable, the HU is integrating itself extensively into the concept and will develop and implement a great number of ideas.

The HU will play an increasing part in the events and special exhibitions of the Humboldt Forum. This will bind the Forum even more tightly to current scientific and socio-political discourses and contribute to consolidating contents and expanding horizons.

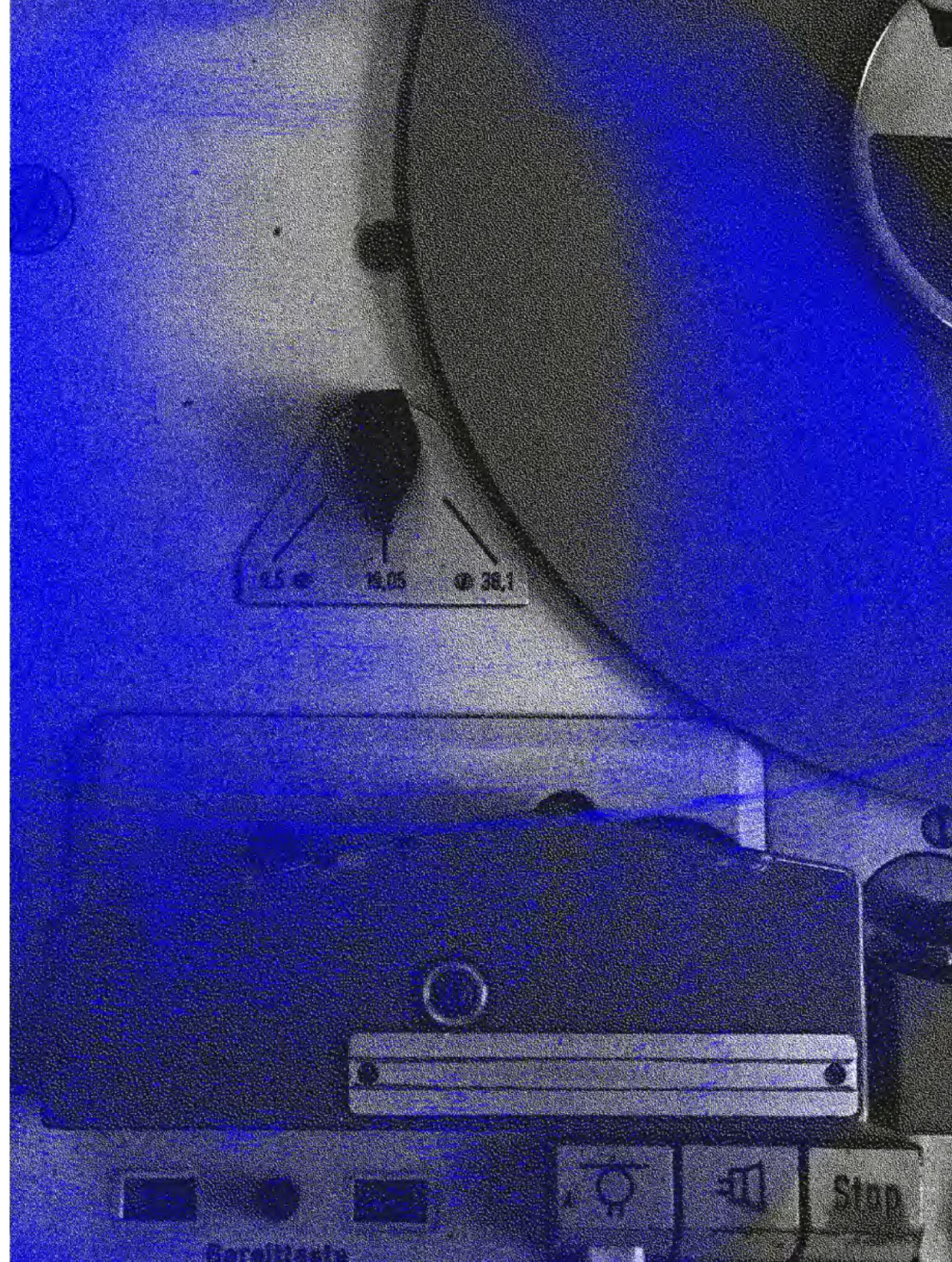
Two examples for in-house networking – the work of the Sound Archive and the development of the digital application “My Object” – are now explained in the following.

# The Sound Archive

The Sound Archive is one of the key hubs in the Humboldt Forum's network. It will be the only one of the Humboldt-Universität's scientific collections to move into the Humboldt Forum with its holdings. It will be present in the Humboldt-Labor as a semi-public teaching and research platform and is to be incorporated in the Humboldt-Labor's exhibition and events programme, meanwhile playing a role in various other areas in the Humboldt Forum – including the Berlin exhibition, the Listening Space in the Ethnologisches Museum and its Phonogram Archive or the sound workshop in the mezzanine of the first floor. With the Ethnologisches Museum's Phonogram Archive, the Sound Archive establishes a link to the recording activities of the Prussian Phonographic Commission in prisoner-of-war camps during the First World War. Under the shared roof of the Humboldt Forum, the holdings of both archives will be open alongside each other to visitors and researchers.

The very essence of a sound collection calls conventional collection categories into question. After all, it consists of tangible media that technically reproduce immaterial voices. As such, they differ from conventional exhibits and reframe the question of provenance: whom does the voice belong to? Who owns the voice recording? What status does a sound recording have for communities of origin? To what extent can sound recordings be considered cultural heritage? How is the history of "sensitive collections" to be handled, a category which undoubtedly covers sound recordings in camps and prisons? How does the status of musical and song recordings in the collection differ from that of speech recordings? How were they related to classifications and knowledge categories in the past, and how are these categories to be examined today? How can the transcultural dimension of musical forms of expression be explored?

The Sound Archive's relocation to the Humboldt Forum and the links that it will form to other collections and archives are an opportunity for it to enter into a dialogue with different institutional partners and visitors, and to share knowledge in this discussion – in the archive and in contributions to exhibitions and events – thereby generating new knowledge. The Sound Archive is a knowledge, research and teaching resource that symbolises the Humboldt-Labor's goals in the best possible way and forms a bridge to the other departments and exhibitions in the Humboldt Forum.





## My Object

The Humboldt-Universität has been commissioned by the Stiftung Humboldt Forum im Berliner Schloss to develop a digital application titled “My Object” as part of the national joint project museum4punkt0. Digital Strategies for the Museum of the Future ([www.museum4punkt0.de](http://www.museum4punkt0.de)), headed by the Stiftung Preußischer Kulturbesitz (Prussian Cultural Heritage Foundation). The project is funded from the budget of the Federal Government Commissioner for Culture and the Media, and its partners include the Deutsches Auswandererhaus (German Emigration Center) in Bremerhaven, the Deutsches Museum in Munich and the Senckenberg Museum for Natural History in Görlitz. It develops innovative digital communications tools for museums, thereby supporting the digital transformation of the partners working on the project.

“My Object” aims to highlight and focus with a game-based approach on the active role played by visitors in ascribing meaning to exhibitions and the exhibited objects. Gamelab.berlin, assigned to the cluster of excellence Image Knowledge Gestaltung, is developing a prototype application for the Humboldt Forum that will enable every user to precisely locate an individual object from the multitude of exhibits in the Humboldt Forum. The interactive tool will suggest a specific object to visitors and will then navigate the way to their “personal” exhibit. This then opens up many opportunities for (inter)action in the Humboldt Forum. Visitors can leave a personal image description or a video message with their impressions. They can add to object descriptions or comment critically on them. They can use a chat function to contact the curator responsible for the exhibit directly. Visitors can also use the application outside the Humboldt Forum and for instance be given access to other objects for them to explore at home, bringing into perspective the relationship between museum and non-museum spaces and between the original and its digital reproduction.

“My Object” is the result of a Humboldt-Universität research project. It is a driver of innovation that stands to benefit the whole Humboldt Forum and the joint project museum4punkt0. The application uses digital media as a tool for intense, personalised engagement with the object. Almost in passing, it motivates reflection on the relationship between physical and virtual spaces. The latest methodologies and findings from serious games will be transferred to a museum context and will enable users and curators to establish new thematic interconnections between analogue and digital spaces. Last but not least, the app employs game methods to intuitively raise central questions for the Humboldt Forum, namely those of how objects are acquired, identified and interpreted.



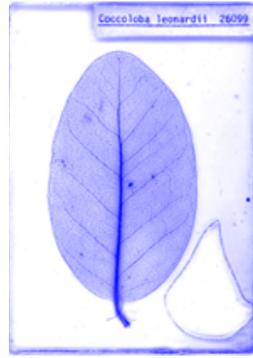
**Fig. 1**

Nike of Paionios of Mende, Olympia, plaster cast, pre-1880, Collection of the Winckelmann Institute, HU Berlin  
Photo: Eberle|Eisfeld, Berlin  
Picture collage page 6



**Fig. 2**

Detail of a plaster cast of a metope in the Zeus Temple in Olympia (480 – 450 BC) with portrayal of Herakles (Hercules) and Kerberos (Cerberus), Collection of the Winckelmann Institute, HU Berlin  
Photo: Heike Zappe  
Picture collage page 12



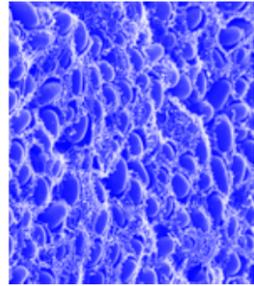
**Fig. 3**

Leaf venation specimen from Cuba, 1970s, Arboretum, HU Berlin  
Photo: Barbara Herrenkind  
Picture collage page 12



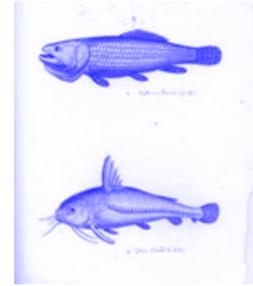
**Fig. 4**

Skeletons of two otters, Institute of Biology, Zoological Study Collection, HU Berlin  
Photo: Heike Zappe  
Picture collage page 11



**Fig. 5**

Scanning electron microscope photo of a bacterial biofilm, © Work group of Prof. Dr. Regine Hengge, Institute of Biology / Microbiology, HU Berlin  
Picture collage page 12, 16



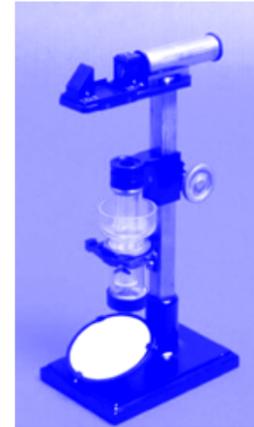
**Fig. 11**

Alexander von Humboldt, Reisewerk, Zoologie, Pl. 48, Teleostei, real tetra, 1821, Historical Collection of the University Library of the HU Berlin  
Picture collage page 24



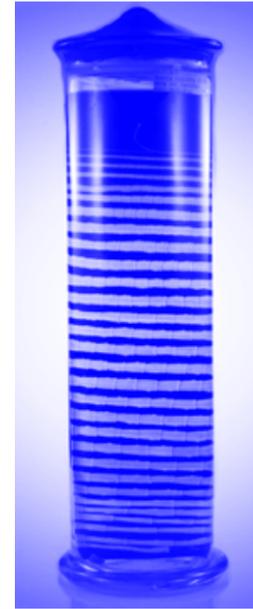
**Fig. 12**

Historical graphic training aid, Institute of Biology, Zoological Study Collection, HU Berlin  
Photo: Heike Zappe  
Picture collage page 17



**Fig. 13**

Projection galvanometer, 1887, Johannes-Müller-Institut für Physiologie, Charité – Universitätsmedizin Berlin  
Photo: Christoph Knoch  
Picture collage page 20



**Fig. 14**

Specimen of a tapeworm (taenia saginata), Institute of Biology, Zoological Study Collection, HU Berlin  
Photo: Gerhard Scholtz  
Picture collage page 24



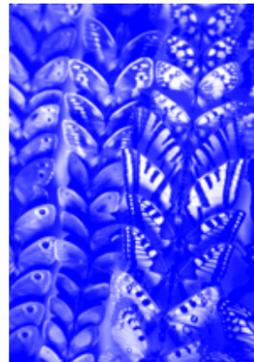
**Fig. 15**

Player for audiotapes, Institute of Musicology, Sound Archive  
Photo: Alexander Stockinger  
Picture collage page 27



**Fig. 6**

Skeleton of a type of hare, Institute of Biology, HU Berlin  
Photo: Heike Zappe  
Picture collage page 17



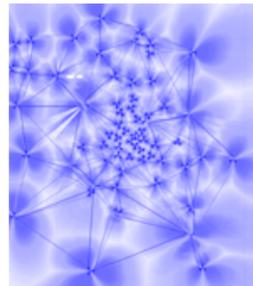
**Fig. 7**

Butterfly specimen, Institute of Biology, Zoological Study Collection, HU Berlin  
Photo: Heike Zappe  
Picture collage page 20



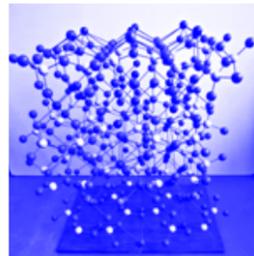
**Fig. 8**

Spherical cavity resonator after Hermann von Helmholtz, pre-1863, Institute of Physiology, Charité – Universitätsmedizin Berlin  
Photo: Eberle|Eisfeld, Berlin  
Picture collage page 7, 27



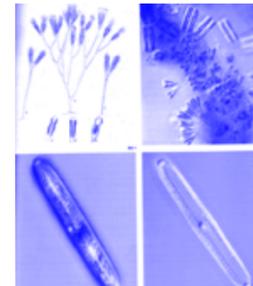
**Fig. 9**

Image of a UMTS network with spatial inhomogeneous data traffic, detail of the coupling matrix of a mobile network  
Illustration: atesio GmbH, Berlin  
Picture collage page 7



**Fig. 10**

Model of the crystalline structure of the mineral Muscovite, Department of Physics, Crystal Study Collection, HU Berlin  
Photo: Oliver Zauzig  
Picture collage page 11, 16



**Fig. 16**

Christian Gottfried Ehrenberg, Kieselalge Gomphonema acuminatum, Copper engraving from the folio "Die Infusionstierchen als vollkommene Organismen" (1838) and light microscopical photos by Oliver Skibbe, March 2000. Collage taken from the exhibition catalogue Theater der Natur und Kunst (Theatre of Nature and Art), ed. Horst Bredekamp, Jochen Brüning and Cornelia Weber, Berlin 2000  
Picture collage page 28



**Fig. 17**

Model of an urban space by students of the Master's course "Open Design" (master-opendesign.org) (master-opendesign.org)  
Photo: Interdisciplinary Laboratory Image Knowledge Gestaltung 2017, HU Berlin  
Picture collage page 2

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