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Dear reader,

Imagine a place where early career researchers are fully able to concentrate on their research projects. Just think how it would be if they were given the freedom to implement their own research ideas independently, if they were not dependent on a single professor. What if they were also financially independent and provided with enough funds for their research? What if they were able to plan their careers reliably and put energy into their research instead of their next job application? This is the vision we have been pursuing over the course of the last few years.

Our 5i strategy guides our steps as fellows are encouraged to achieve independence early on without having to forego the benefits of being embedded in their respective university departments or cluster of excellence (intra-university), all the while profiting from an intergenerational and international community of researchers from all academic disciplines (interdisciplinary). This strategy was just officially commended in the May evaluation of the Zukunftskolleg. The evaluation details: “All sub-objectives of the 5i strategy have been achieved: The possibility to conduct independent research has been identified as a core and major strength of the Zukunftskolleg”.

The evaluation was performed at the close of the EU Marie Curie COFUND Programme. In the context of this programme, we co-funded fellowships over a course of six years with one unique characteristic: Applicants were only accepted if they had been working and living outside Germany for two of the last three years prior to applying. The EU COFUND Programme was essential to increasing the attractiveness of the Zukunftskolleg for international researchers and expanding the institution’s internationality. This year we took this development even further and joined both the UBIAS, a global network of University-based Institutes for Advanced Study, and the NetIAS, Network of European Institutes for Advanced Study. In addition, we introduced a Research Visits Programme that offers our fellows the opportunity to visit institutes abroad while providing early career researchers from around the world the same chance at the Zukunftskolleg. As we begin these new activities, we also work to maintain our existing, long-standing partnerships. I am especially proud that we are now organizing our third workshop with the Martin Buber Society of Fellows in the Humanities (Hebrew University of Jerusalem) this year. The first part of the workshop took place in Konstanz this June; the second part is set in Jerusalem for November.

The field of internationalization demonstrates what runs like a golden thread through the Zukunftskolleg. More than ten years after our inception, we continue to develop our formats and experiment with new ideas while holding fast to proven concepts and learning from our experiences. We trust we have found a good balance between stability and flexibility, continuity and change. This is a task we really enjoy, but that always keeps us on our toes: For this reason, I would especially like to thank the entire Central Office team for the dedication, creativity and motivation with which they seek to put our vision into practice – our fellows truly benefit from your work.

The evaluation confirms we are indeed making our vision a reality: “[T]he Zukunftskolleg is successful in the promotion of young researchers.” This conclusion is based on 54 percent of all the Zukunftskolleg’s former 5-year fellows subsequently being appointed to full professorships. There are, however, other ways of measuring our success. We aspire to create a place where early career researchers can completely concentrate on their research projects. Why not let our fellows evaluate the realization of our vision? Our 2017|2018 Zukunftskolleg fellows let their experiences speak for themselves as they report on their research projects (highlighted light blue) and the influence the Zukunftskolleg has had on their scientific and personal development (highlighted dark blue).

I hope you enjoy and are inspired by their stories.

Yours sincerely
Giovanni Galizia
The fellows present at the Zukunftskolleg during the academic year 2017|2018 report on their research projects (highlighted light blue) or the influence the Zukunftskolleg has had on their scientific and personal development (highlighted dark blue).
Can mathematics change at its fundamental basis? This long-standing question has to be reconsidered when studying the mathematical technique of forcing. With forcing one can build an infinite plurality of mathematical worlds and study the differing mathematical truths in them. But forcing is not only a mathematical technique, it can also be used philosophically to explore the foundations of mathematics.

My research project will show that the practice of forcing has led to a conceptual change that introduces a pluralistic understanding of the foundations of mathematics. This change exhibits unique characteristics like its timelessness and the way it came about, namely through the practice, and not merely through the introduction, of a new technique. Both give rise to a conceptual discrepancy in set theory between a pre-forcing self-image and a post-forcing practice. As a result, a lack of awareness and acceptance of this change has arisen. Approaching forcing by studying its historical development, broadening its philosophical uses and focusing on its mathematical varieties opens up an interdisciplinary framework that uses mathematical practice to advocate for such a conceptual change.

Forcing: Conceptual change in the foundations of mathematics

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Tailoring the electronic structure of semiconductor nanocrystals

Semiconductor nanocrystals are tiny particles, only several nanometers in size. They are so small that their optical and electronic properties differ from those of larger particles. Recently, we investigated the electronic transport of such nanocrystals made of silicon. To that end, we used scanning tunneling microscopy operated at an extremely low temperature (near to zero Kelvin). We observed that the single-particle transport characteristic of silicon nanocrystals obeys the rules of quantum physics. By applying a moderate magnetic field, we noticed a field-dependence of the electronic states. The outcome suggests that, in the future, these nanocrystals can be utilized as magnetic-field-driven switches at the atomic scale. The results have been published in Basu, Tuhin Shuvra; Diesch, Simon; Scheer, Elke. Single-electron transport through stabilised silicon nanocrystals. Nanoscale 10, 13949 (2018).

These findings are part of my research project “Size-controlled luminescent semiconductor-metal hybrid nanostructures: Interplay between size, optical, and transport properties explored on the single object level”. Briefly, our ultimate aim is to probe (individually) the electronic states of hybrid nanostructures consisting of silicon nanocrystals and gold nanoparticles by using scanning tunneling microscopy.

Tailoring the electronic structure of semiconductor nanocrystals

Ethnic groups that are politically or economically disadvantaged have been found to be more likely to be involved in armed conflicts with the government. In this project, I use quantitative data and statistical methods to understand ethnic groups’ circumstances and the role governments play in them. Together with Carl Müller-Crepon and Yannick Pengl (both ETH Zurich), I analyse how child mortality in 22 African states depends on ethnic identities as well as local ethnic demography. We find that child mortality is both lower in areas where many people have the same ethnicity as the government and amongst members of the government’s ethnic group in areas with few inhabitants who do not share the government’s ethnicity. With Nils Metternich (University College London), I investigate how powerful groups in autocratic states decide to share power with other ethnic groups. We find that power-sharing is more likely to occur between groups with similar power but also that the effect of similarities in power depends on the specific type of autocratic institutions. The project also analyses how governments in states with different ethnic groups treat the media. Preliminary results suggest that autocratic governments constrain media freedom more when they face larger numbers of groups that are discriminated against based on the basis of their ethnicity, which is likely to prevent the development of grievances and subsequent collective mobilisation. On the other hand, in autocracies, the media are allowed more freedom when different ethnic groups that form a government coalition differ considerably in power, arguably because media freedom serves as a commitment device to reassure weaker coalition partners.

Grievance and collective violence: Opening up the black box
Semiconductors play an important role in many technological processes, including solar energy production, photo-catalysis, and microelectronics. In addition, semiconductors show interesting quantum effects if they take the form of particles with sizes of only a few nanometres. To make use of nanoparticles in the above-mentioned technologies, it is necessary to combine two or more materials in a single particle, and to have good control over both particle shape and the way in which two semiconductors are joined together.

In my group, we made two important advances in this field: first, we identified a reaction intermediate in the reaction from molecular compounds to semiconductor nanocrystals which play a central role in the emergence of anisotropy. The intermediate takes the form of polymeric fibres that contain all elements of the reaction product (Cd, Se, alkylphosphonates). The fibres align in parallel and thus template their own reaction with a preferential growth direction.

In a second project, we investigated a nanorod with an interface between CdTe and CdS. This electronic contact leads to the separation of positive and negative charges upon excitation with light. However, high strain between the crystal lattices causes problems that mitigate the use of this interesting material combination. By using ultrafast pump-probe spectroscopy in collaboration with Zukunftskolleg Fellow and physicist Daniele Brida, we were able to show that excited charges localise at the interface. We were able to demonstrate full charge separation by chemically extracting the positive charge carrier. These findings will have a significant impact on the development of photo-active nanomaterials.

Small molecules and bacterial pathogens

Antibiotic resistant bacteria pose a major threat to human health. To infect the human host, pathogenic bacteria coordinate their behaviour via chemical signals and thereby simultaneously produce virulence factors such as life-threatening toxins or proteins that protect the bacteria from the human immune response. Some bacteria also engage in social population behaviours like biofilm formation or swarming motility, which aid the infection process and lead to increased antibiotic tolerance. In my research group, we develop chemical tools that help dissect these mechanisms as well as customized inhibitors that block pathogenesis-related processes, which may in the future lead to novel drugs against antibiotic resistant bacteria. During the last year, we made progress in many subprojects. We investigated compounds produced by the human pathogen Pseudomonas aeruginosa, which are potent antibiotics against competing strains of Staphylococcus aureus and also inhibit the growth of multiresistant MRSA strains. In addition, we reported the chemical structure of a new resuscitation factor that reactivates dormant bacteria and developed compounds blocking bacterial swarming behaviour. Next, we will use and apply our chemical tools to develop potential leads for future antibiotics and unlock the secrets of bacterial interactions.

Anisotropic nano-heterostructures for functional materials

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Nanoscale control of currents with single-cycle pulses

Recently, we demonstrated that single-cycle pulses of minute energy content may result in extremely nonlinear optical phenomena at the nanoscale by exploiting an electronic circuit with a few-nanometer gap between the tips of an optical antenna. The strong electrical bias provided by the field contained in ultrashort optical pulses was harnessed to drive tunneling and ballistic acceleration of electrons to generate a current through the free-space gap with PHz bandwidth. This non-perturbative process is fully coherent with the driving radiation and occurs within a half-cycle of the near-IR carrier wavelength. In addition, we further explore this concept by gaining direct temporal information via interferometric autocorrelation measurements with two identical replicas of truly single-cycle driving pulses. Remarkably, we were able to perform interferometric autocorrelation measurements with single-cycle pulses with minute pJ energies. The full width at half maximum of the current autocorrelation amounts to less than one femtosecond, which goes to show that we can transfer individual electrons between the two contacts on an attosecond time scale. In the future, we are aiming at a regime where the Coulomb interaction between electrons becomes important at truly atomic time and length scales.

Thinking through theatre: The bare life and the stage

My main project focuses on the theatrical representation of a taboo figure called the bare life (Agamben). This figure often appears as a victim of conflict or as someone who has been legally ostracised from or has never been part of the polis (the community of citizens with civil rights). Other examples are asylum seekers or illegal immigrants. Agamben argues that Western society is founded on a ritual by which the boundaries of the polis are marked by those included and excluded, and that the taboo status of the bare life shields it from the public. I will argue, however, that this taboo emerges on the theatrical stage. By analysing plays from diverse backgrounds, I will trace patterns of the depiction of the bare life across the Western sphere to come to conclusions about the parallels between the Western realm and the ancient polis as to their mutual consolidation of borders, exclusion-based citizenships, and a shared consensus on the human value of those excluded. I also want to explore whether the theatre is a public space where one can watch the relationship between the bare life and the community as an ethical and political question.

In a side project I focus on questions of ethics in the recent depiction of science in literature. In the past, questions of ethics and science were often addressed in speculative fiction where science and its practitioners were off stage, so to speak, or present in the abstract. In this study, I turn to works that allow me to examine what happens when the silent scientist acquires a voice, or a research subject is given a human face, that lead to question the nature of choice and the reach of responsibility for the other. I work comparatively, applying critical theory to novels, drama, poetry, and non-fiction prose.
Thank you!

María Cruz Berrocal
Fellow
09/2013–01/2018,
now Associated Fellow
Dept. of History and Sociology

Machine men, machine minds, machine hearts: Technology, masculinity and fascist modernities

My research is broadly concerned with the convergence of ideology, masculinity, and technology within literary and artistic culture in twentieth-century Modernism. There are several different facets to my research project, comprising analysis of four different writers: Louis Ferdinand Celine, Pierre Drieu La Rochelle, Julius Evola and Wyndham Lewis, with the latter being the central figure of my research project. I have so far written one journal article on national allegory in Lewis’s first novel Tarr and I am currently preparing two others on the ‘Sublime Horror of Technological War’, shedding light on Lewis’s experience of technological warfare whilst serving as an artillery officer during the First World War, and how this encounter left an indelible mark upon all of Lewis’s subsequent work. I have been appointed as the editor of a new critical edition of Lewis’s book Left Wings Over Europe, which will be released through Oxford University Press around 2020. In May 2018, I was a visiting scholar at Cornell University, where I examined primary source material related to the edition. Other work has been preparatory – sourcing, collating and organising primary text materials by Celine, Drieu La Rochelle and Evola.

Udith Dematagoda
Fellow
since 23/01/2017
Dept. of Literature

Groups definable in tame expansions of o-minimal structures

This project belongs to tame geometry, an area of mathematics concerned with geometric objects satisfying certain tameness conditions imposed by logic. Consider, for example, the line $y=x+1$ and the curve $y=x^2$. We know that such objects are tame, and they are the objects of study of semi-algebraic geometry. Their basic properties, such as volume and dimension, are easy to calculate. On the other hand, a fractal, such as the Koch snowflake, is known to have peculiar and abnormal properties which exhibit a rather wild and non-tame behaviour. To study these properties, one has to appeal to a whole new branch of mathematics called fractal geometry. Tame geometry strives to identify exactly those geometric objects which, although large in scope, still exhibit tame behaviour.

Earlier in my project, I established structure theorems for tame sets. In more recent work, those theorems have been put into practice and two applications were obtained: First, an extension of the influential Pila-Wilkie theorem from o-minimality to the general tame setting, and second, a characterization of tame groups that are o-minimal as groups that have maximal dimension. These developments will be presented during a workshop on tame expansions of o-minimal structures that we are organizing in Konstanz. It will take place from 1-4 October 2018, following up on the “Summer School in Tame Geometry” that we hosted in July 2016.

Panteleimon Eleftheriou
Fellow
since 08/2013
Dept. of Mathematics and Statistics

Bridge Fellowship and beyond

My Bridge Fellowship allowed me to move forward with a project on social power and cultural norms in political networks, meet a number of scholars and develop new collaborations.

Since 1 November 2017, I have been working as a postdoctoral researcher on the interdisciplinary ERC-funded project NEXUS 1492, which brings together archaeologists, geochemists, and network scientists. I contribute to the study through network visualisation, to show how exchange networks evolved in the Caribbean across the arrival of Europeans.

It is thanks to the interdisciplinarity and openness of the Zukunftskolleg and the advice of people associated with it that I found my current position in the Social Networks group led by Ulrik Brandes, who was, at the time, in Konstanz in the Department of Computer & Information Science, and is now at ETH Zurich in the Department of Humanities, Social and Political Sciences.
Our fellows have a double affiliation:

They enjoy a high level of freedom at the Zukunftskolleg and are still securely anchored within their respective research departments where they are connected to the scholarly community and have the opportunity to teach.

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The restitution of looted cultural property in Austria, the German Federal Republic and Italy, 1945-1998

The looting and restitution of artworks have captured the attention of the media and the public alike for decades through a range of popular recollections that include novels, exhibitions, documentaries and two recent blockbuster movies. Yet very little attention has so far been paid to how the process of restitution evolved in post-fascist Europe and the role that restitution played in the (re)construction of national cultural identities since the end of the Second World War.

This 5-year project analyses the process of restitution of looted cultural property in post-war Austria, the German Federal Republic and Italy from the end of the Second World War to the signing of the Washington Declaration on Nazi-confiscated Art in 1998. Conceived as a transnational history of restitution practices as they unfolded in the three main post-fascist countries, the project investigates the impact of restitution (or lack thereof) along three main lines of enquiry: First, the (re)construction of local, national and later European communities in the postwar period; second, the process of coming to terms with Europe’s fascist past; and third, the institutionalisation of supranational policies for the protection of cultural heritage during and after the Cold War.

The restitution of looted cultural property in Austria, the German Federal Republic and Italy, 1945-1998

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Pre-nucleation clusters in crystallization – relevance to bio- and biomimetic mineralisation

Precipitation from solution is an everyday phenomenon. A prime example is the formation of incrustations from hard water, affecting e.g. washing machines. Nature demonstrates that precipitation processes can be controlled in sophisticated ways, yielding biominerals like human bones and teeth that exhibit outstanding material properties. Key to the biominerals’ properties are hierarchical structures that are difficult to realize in artificial materials, because the basic processes underlying their formation remain poorly understood. An improved understanding of the mechanisms guiding precipitation from solution may thus not only be used to develop effective strategies to inhibit such deposits. There is also the great promise of the development of new materials for advanced applications – such as earthquake-safe concrete. During 2017/18, we have made important progress in achieving a better understanding of how organic molecules mechanistically influence the early stages of crystallisation for the most important biominerals. This foundational research will advance the various connected scientific fields. Another major objective for the future is, therefore, to demonstrate how these insights are useful for developing advanced functional materials.
During and following the financial crisis in 2007-2008, numerous financial institutions experienced extreme losses or even went bankrupt (e.g. Lehman Brothers). These financial losses have revealed serious pitfalls in the existing financial risk measures. Although the theoretical research and empirical work on these measures have been continuously developed, their performance during the periods when they are needed most, such as during financial crises, has proven to be quite poor. During the last academic year, my research has mainly focused on developing methodologies to predict financial risks by exploiting the rich information content of high-frequency financial data. In particular, I have been working (1) on developing a latent dynamic factor model with conditional heteroskedasticity to capture the long memory and common dynamics of large panels of realized volatilities, which are high-frequency-based volatility estimates; (2) on developing a latent factor model with underlying Wishart distribution to capture the long memory and common dynamics of the components of high-dimensional realized covariance matrices and (3) on developing tail-based measures of risk (Value at Risk and Expected Shortfall) directly from high-frequency data. For the latter focus, the high frequency data is sampled in an intrinsic time dimension, which aims at capturing the real “heartbeat” of the market’s activity, thus providing more valuable information about extreme risks than data sampled in classic calendar time (e.g. every five minutes). This intrinsic time dimension is driven by various market intensity measures, such as intraday volatility patterns or the number of transactions. For estimation purposes, we implement maximum likelihood with the Kitagawa filtering technique as well as simulation-based estimation methods.

Fragments of discourse

If a speaker wishes to discard redundant words in her utterance, she often can. This use of ellipsis, which occurs in the previous sentence (the phrase ‘discard redundant words’ is elided after ‘can’), is governed by interacting grammatical and discursive constraints. By examining different elliptical phenomena across languages, my research refines our understanding of what these constraints are and how they interact.

From August 2017 to October 2017, I completed my research on the "MaxElide" dataset. It contains utterances like "John kissed someone, but I don’t know who [he did kiss]." Here, the ellipsis site (in italics) is contained within a larger elidable phrase (bracketed). Because such utterances are judged as unacceptable, previous scholars suggest that this sentence disobey the MaxElide constraint, which requires maximal elision whenever possible. Two journal articles based on this research have now been published in Linguistic Inquiry and Nordlyd. I have shown that, aside from being ad hoc, the MaxElide constraint makes incorrect predictions. I analyse the dataset as violating a well-known semantic constraint, which makes MaxElide redundant.

Until July 2018, I have continued my research on reprise fragments such as “John should have been given sedatives.” – “Been given what?”, the latter being a clarification fragment. In collaboration with linguists from Leiden University, I demonstrated that these fragments are the elliptical counterparts to echo questions like “He should have been given what?” This is an important conclusion because it shows that such fragments cannot be treated as a metalinguistic phenomenon beyond the purview of formal linguistics. An article on this topic will be submitted to the renowned journal Language in winter 2018.
In November 2017 I left the Zukunftskolleg and started my current position as an independent group leader at the University of Leipzig. The project is funded by the DFG and includes my own position. In Leipzig, I joined Andreas Thum, another former Zukunftskolleg fellow and now a professor in Leipzig, who offered to host me there. But I remain connected to Konstanz and the Zukunftskolleg: together with Elizabeth Yohannes from Limnology, I successfully applied for a Zukunftskolleg Interdisciplinary Collaborative Project Grant. The project runs until October 2018 and I regularly return to Konstanz to discuss our next steps with Elizabeth and our student assistant.

In our experiments, we feed the fruit fly Drosophila a special sugar, so-called 13C-labelled glucose. This sugar has the advantage that we can detect it easily with mass spectrometry. Using this method, we analyse the flies right after they have been fed. That way, we can examine how fast the sugar reaches crucial organs such as the gut, fat, muscles, and the brain. What is really special about our experimental set-up: We lyse the flies right after they have been fed. That way, we can examine how fast the sugar reaches crucial organs such as the gut, fat, muscles, and the brain. What is really special about our experimental set-up: We take the challenge to resolve glucose distribution within a few minutes. Most studies wait for hours or days before looking at the induced changes.

Preliminary results with 13C glucose are promising, and we intend to write a DFG grant proposal based on the data we managed to gather so far, where we plan to expand our experiments to labelled amino acids as well. Without the generous and unbureaucratic funding opportunities available at the Zukunftskolleg, I certainly would not have been able to advance so many of my research ideas at this speed.

Revealing the role of individual differences in collective animal behaviour

Fascinated by how animals live and move together in groups, I focus on unravelling the role of individual differences in collective animal behaviour in my research. Computational and theoretical work has shown that many seemingly complex coordinated behaviours, such as the synchronous movements of schooling fish and flocking birds, can be explained by very simple interaction rules. However, grouping animals differ from one another at a wide range of levels, from their sex, age, and size to their personality and physiology. This raises the important question of whether such individual differences among animals constitute a fundamental organisational principle within animal groups that may drive collective behaviour and group functioning and in turn affect individual performance. My work is dedicated to answering this question and I use a strong interdisciplinary approach in my research, combining laboratory experiments, sophisticated animal tracking and field surveys, with computational modelling. In this way, I have recently been able to show that individual personality differences in fish strongly drive the spatial positioning and leadership within groups, determine the movement dynamics, coordination, and functioning of groups, and in turn affect individual foraging performance. This research provides crucial new insights which expand our understanding and ability to predict the emergence of collective behavioural patterns across social and ecological scales.

Sociality and evolution

I am currently investigating the relationship between behaviour and genetics and its impact on speciation. Quite a lot is known about the influence that various ecological niches exert on the development of a species, but what remains largely unknown is how different behaviours impact diversification. Why and how do closely related species develop different social systems? How can these behaviours influence the evolution of a population? These questions will be addressed by using approaches from different biological disciplines, including remote and automated collection of behavioural data in wild animal populations using novel tracking technologies, social network analysis of animal societies, comparative analysis of georeferenced DNA sequences, non-invasive population genomics, estimation of trait-dependent diversification rates and phylogenetic comparative methods. The research project will result in a better understanding of the role of interspecific behavioural differences in population dynamics and speciation processes. The force of behavioural variation in evolution has been largely ignored and its appreciation will substantially complement classical views on the causes of speciation. This will constitute an essential step towards understanding the complex interplay between ecology, social behaviour and adaptive evolution as well as the underlying genomic processes.
Fighting for equal opportunities in academia

During the last year I continued my research on climate variability and velocity. Recent climate change is one of the major threats to biodiversity. Although the threat is global, climate change effects on biodiversity will differ locally and regionally. I analysed climate variability and velocity over the 20th and 21st century across Germany using instrumental weather records. I presented the findings of my research at the BES Symposium in Durham (UK) and at the meeting of the American Association of Geographers (AAG) in New Orleans.

At the same meeting and in relation to my endeavours to promote positions of disabled researchers in academia, I was invited by the AAG to organise and chair a panel on "Researchers with disabilities and the obstacles they face in academia". Researchers with disabilities are still a very much underrepresented group in academia worldwide. Although some laws and policies prohibiting discrimination on the basis of disability do exist, they are still rarely followed or implemented. Any direct comparison with non-disabled applicants in the job screening process is a presentation of inequality and unfortunately just illusion of equality. Academia is a very competitive place, and this might be part of the reason why non-disabled academics still do not fully understand that the academic path of disabled researchers may differ from theirs. For example, can they do fieldwork in the same 'way' or 'speed' as non-disabled scientists or researchers? Should we expect their research output (i.e. papers, books) to be of the same quantity as those of able-bodied researchers? The slower pace of research sometimes impacts the quantity, but not necessarily the quality.
Uncovering the molecular mechanisms underlying the repeated evolution of adaptive colour patterns in cichlid fish

Biologists have always been fascinated by the variation in colour patterns found in nature. Coloussation is an important feature in the biology of an organism and plays a key role in several fundamental ecological and evolutionary processes such as adaptation, sexual selection and speciation. Fish are well known for this diversity of colour patterns and cichlids are a particular colourful family of fishes, which is well-captured by their German common name "Buntbarsche", or colourful perches. Here, horizontal stripe patterns have occurred and evolved repeatedly in different lakes in the African Rift Valley. I focus on the genetic and molecular basis for understanding how adaptive colour patterns evolved repeatedly within short evolutionary timespans. Recently, we discovered that a single gene which we call stripeless was involved in the loss and gain of evolutionary timespans. Recently, we discovered that a single gene which we call stripeless triggered the loss and gain of adaptation. In the lab, if we disrupt this stripe-inhibiting gene, stripes are re-revealed in normally non-striped cichlid fish, unveiling how a single gene can affect the evolution of a complex colour pattern.

Quantitative analysis of linker histones ubiquitylation based on molecular simulation data

In every cell, DNA is folded in an organised way creating chromatin structures that form the chromosomes. The folding is coordinated by histones, large biological molecules. There are various ways to modify histones, for example by attaching an ubiquitin molecule to them (monoubiquitylation). My project focuses on the development and application of computational methods and mathematical tools to study the influence of monoubiquitylation on histones and subsequently on the ability of DNA to form chromatin structures. Investigation of biological systems of this size with classical molecular dynamics simulations is limited because the simulation of a vast amount of processes in such complex molecules requires significant computational resources and drastically slows the simulation speed. Consequently, the number and frequency of observed events required for reliable analysis is reduced. The use of different resolution levels (multiscale models) in combination with novel machine learning techniques can help to efficiently simulate changes of the ubiquitinated histone and to characterize its phase space. Furthermore, I use kinetic and thermodynamic information to model the behaviour of ubiquitinated histones. Comprehensive information of this kind will be of fundamental importance to the interpretation of experimental data and the planning of future experiments. In addition, the theoretical methods developed and modified during this project will be used to investigate other multi-body systems.

Listening to ultrafast noises in magnets

The properties of any solid materials that we see in our daily lives – the shape of stones, the colour of metals, the strength of magnets – look very still and changeless to our eyes. However, quantum physics tells us that such a view is actually not correct on the microscopic scale. Nothing in the world can stop completely, everything is ceaselessly moving at the quantum level. This phenomenon is commonly known as quantum fluctuation. While it sounds like it may be relevant only in special cases, it is actually the fundamental basis of many exciting phenomena in nature, such as phase transition in magnets. In my study, I am trying to observe the quantum fluctuation of magnetization in the time domain by using a new stroboscopic technique. The key idea is that although the fluctuation is random and fast, if you use ultrafast optical pulses that have much shorter temporal duration than the characteristic time scale of fluctuation, you can record such fluctuations in the time domain by carefully measuring the noise pattern present in the optical probe pulses. To kick off the project, I started designing and constructing the proof-of-principle experimental setup. So far, we have successfully fabricated a high-stability laser source that can realize the abovementioned vision.

Talking about what causes what

In the past year, I worked on better understanding verbs like "cause", "make", "let", and the German "lassen". These are called "causative verbs", because they are used to talk about what causes what. From the perspective of English, "lassen" is a strange causative verb, because it can be understood in two ways: If I say "Hans hat die Kinder tanzen lassen", this can be taken to mean that Hans commanded or forced the children to dance (in this case, the sentence is best translated as "Hans had the children dance"). But it can also be interpreted as saying that Hans gave the children permission to dance (in this case, the sentence is best translated as "Hans let the children dance").

With Prerna Nadathur (Stanford University), I developed a new analysis of causative verbs that is built on the idea that there are two kinds of causal relations that such verbs can express. "Necessity causatives" talk about causes that enable an effect: If I say "The earthquake caused the table to collapse", I am saying (roughly) that the table would not have collapsed if the earthquake had not happened. "Sufficiency causatives" instead talk about causes that ensure an effect: If I say "The joke makes the children laugh", I am saying that the joke made it so that the children could not but laugh. In two papers (under review) we formalize this idea, and show how the often puzzling behavior of causative verbs can be explained.
There are moments in life in which one has to make decisions that will affect one’s own future self. Should I go to university or should I apply for an apprenticeship instead? Is this a good time to start a family? Whatever the outcome of this deliberation might be, one’s future self has to deal with the consequences. However, there is an intriguing philosophical puzzle attached to this. How does one know what this future person wants, believes and fears? I am arguing that we gain knowledge of our future self via imagination. ‘Imagination’ can be defined as vividly representing something (before the mind’s eye) that is not present to the senses and that may or may not be true or even existent. Of course, one can imagine pink elephants sitting on the couch (not true and not existing!), but one can also imagine what it would be like to go to the university or to have a family and this might help to make the appropriate decision. Hence, even if the future selves are just imagined they will have an effect on our current self-view. In contrast to the pink elephant case, however, imagination that presents the future self must be realistic. Imagination as a means for knowledge should therefore be constrained, which means that it should be embedded in a number of justified beliefs about the world. My research focuses on the question whether we can gain knowledge by imagination. More specifically, I am asking about the conditions that must be met for imagination to ground knowledge of the world and ourselves. During the international conference “Imagination and Knowledge” at the University of Konstanz in September 2017 which I organized together with Margherita Arcangeli I gained extremely valuable ideas to further explore my idea.

Internationality is part of the everyday life at the Zukunftskolleg and the University of Konstanz.

59% of our fellows have a nationality other than German.

Fellows come from many regions of the world, and they go to many regions in the world.

The self in imagination

There are moments in life in which one has to make decisions that will affect one’s own future self. Should I go to university or should I apply for an apprenticeship instead? Is this a good time to start a family? Whatever the outcome of this deliberation might be, one’s future self has to deal with the consequences. However, there is an intriguing philosophical puzzle attached to this. How does one know what this future person wants, believes and fears? I am arguing that we gain knowledge of our future self via imagination. ‘Imagination’ can be defined as vividly representing something (before the mind’s eye) that is not present to the senses and that may or may not be true or even existent. Of course, one can imagine pink elephants sitting on the couch (not true and not existing!), but one can also imagine what it would be like to go to the university or to have a family and this might help to make the appropriate decision. Hence, even if the future selves are just imagined they will have an effect on our current self-view. In contrast to the pink elephant case, however, imagination that presents the future self must be realistic. Imagination as a means for knowledge should therefore be constrained, which means that it should be embedded in a number of justified beliefs about the world. My research focuses on the question whether we can gain knowledge by imagination. More specifically, I am asking about the conditions that must be met for imagination to ground knowledge of the world and ourselves. During the international conference “Imagination and Knowledge” at the University of Konstanz in September 2017 which I organized together with Margherita Arcangeli I gained extremely valuable ideas to further explore my idea.
Photoprotection in diatoms

Diatoms are unicellular algae inhabiting all aquatic habitats. With a contribution to 15% of global primary productivity, they belong to the most important primary producers on earth. One reason for the diatoms’ success is their capacity to grow in turbulent waters (e.g. coasts, intertidal mudflats, upwelling regions), where they can exploit the huge amount of available nutrients. However, here light intensity changes over several orders of magnitude within minutes. Hence, the photosynthetic apparatus needs to harvest as much light as possible under low light conditions, but also to dissipate too much harvested light under high light conditions. Otherwise, the diatoms would literally be burned. A major mechanism employed by diatoms to get rid of excess light energy is to dissipate it as heat radiation via NPQ (non-photochemical fluorescence quenching). By knocking out a special antenna protein, Lhcx1, in the diatom Phaeodactylum tricornutum, we show that NPQ is completely absent, demonstrating the essential role of Lhcx1 for NPQ. Furthermore, we reveal that the related antenna proteins Lhcx3 and Lhcx2 provide additional NPQ capacity under prolonged high light stress, and the latter even under iron starvation. Finally, Lhcx2 and Lhcx3 can rescue NPQ capacity in the Lhcx1 knockout strain.

Our findings provide new insights into the molecular mechanism of NPQ in diatoms and in algae in general and demonstrate the algae’s capacity for adapting the NPQ capacity depending on the environmental constraints. Some of these findings were implemented in the workshop Unlocking the mysteries of non-photochemical quenching parameters in Sydney, Australia (2017), to demonstrate the potential of fluorescence-based methods to elucidate the physiological state of microalgae.

Microvariation in the expression of meaning

My research is concerned with the question how natural languages encode meaning. One way to approach this question is to look at the variation found between different languages with respect to the means that are used to express the same meaning. While research of this kind has tended to focus on contrasting typologically unrelated languages such as English and Chinese, the investigation of semantic variation between closely related languages like English and German can also be fruitfully applied to identify the building blocks of certain aspects of meaning.

In my work I am particularly interested in the differences between English and German to express two kinds of meaning. The first concerns the different interpretations of at least in English. In the scalar use of at least (e.g., John owns at least 100 books) the speaker conveys that she is ignorant about the precise value in question. In the concessive use (e.g., At least, it is cheap) the speaker indicates that she is willing to settle for less. In the qualifying use (e.g., At least, he said so) at least is used to restrict the truth of a previous statement. I investigate how these different meaning are mapped onto the three German expressions mindestens, wenigstens and zumindest. My second strand of research investigates subtle differences in the way English and German express so called equatives, which are constructions used to convey that two individuals have a certain property to the same degree, e.g. Bob is as tall as Sue.

Dynamically driven supercurrents in ferromagnetic Josephson junctions

Over the past decade, hybrid superconducting nanostructures attracted tremendous interest in condensed matter physics due to their great potential in dissipationless spintronic devices with unprecedented switching rates. While the demand for such conceptually new devices is enormous, their practical realization requires a detailed understanding of the underlying physics as well as the mastery of the creation and manipulation of spin-polarized supercurrents.

My research focuses on understanding the transfer and dynamics of spin- and charge currents between superconducting (S) and ferromagnetic (F) circuit elements, as well as the coupling between spin- and charge degrees of freedom in these systems. Our DFG-funded research project that started in April 2017 investigates specifically the possibility of creating a Josephson coupling between two superconductors across a ferromagnetic barrier by resonantly exciting a precessing magnetization in the ferromagnet. We launch spin-waves in the ferromagnet and then convert singlet cooper pairs in the superconductor to spin-carrying triplet pairs in the ferromagnet. If we succeed, the dynamic excitation of spin-supercurrents in S-F heterostructures, a core aspect of the vision of superconducting spintronics, comes within reach.
In general, my group aims to foster applied studies based on clinical needs to tackle central problems of our aging society. The focus of our research is on something we use all the time in daily life, the planning and production of movements and actions, especially when these involve tools or objects (motor cognition). We are interested in unraveling the underlying behavioural and neuronal mechanisms. For example, in a recent multi-centre study (Konstanz, Munich, Vienna and USA) including patients with brain damage due to stroke, we showed that for pantomiming tool use movements (e.g. gesturing someone to iron a shirt) two major players in a left brain network are essential: communication as well as motor cognition. The group also develops neuro-rehabilitative methods. Many stroke patients don't know how to appropriately apply tools and objects (limb apraxia), e.g. they may confuse soap for toothpaste to brush their teeth. We recently demonstrated that some of these patients have a lack of insight into their deficit (anosognosia), which makes it difficult to motivate patients to actively participate in their rehabilitation. We are now working on a training approach that aims to improve both, the difficulties patients experience with regard to common tool use as well as the potential lack of insight into this impairment. We are grateful for the close collaboration with the Kliniken Schmieder, which makes our work possible.

Motor cognition: Behavioral and neural principles as well as clinical implications

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Microalgae derived oils as resource for chemical building blocks

Microalgae offer a unique range of fatty acids of long carbon chains. In the research conducted here, we were able to show that these oils serve as an excellent resource for a broad variety of chemicals. From (multi-)unsaturated fatty acids, for instance, diesters up to 12 carbons can be produced via cross-metathesis with butene, followed by alkoxy carbonylation. Multi-unsaturated fatty acids specifically can be converted to the important industrial building block benzene, previously only available from fossil oil. In addition, the use of biomass from algae was optimized. The extraction of the fatty acids from the algae, however, is a major drawback. Often, large amounts of solvents are required. Two methods have been developed where the biomass is suspended in either methanol or supercritical CO₂. In the first case, extraction takes place in combination with alkoxy carbonylation in a single step, whereas the second provides the opportunity to perform the metathesis reaction at the same time as the extraction. The products can be obtained in pure form after recrystallization. The diesters can be used as monomers in polycondensation reactions, but were also subjected to catalytic hydrogenation to alcohols, followed by direct catalytic amination towards diamines, suitable for polyamides.
The rise of populist radical right parties (PRRPs) can be witnessed across most European democracies. Political and social scientists possess powerful theoretical elaborations on the causes of this electoral shift, but we still know very little about its consequences for the largest part of government activity: the welfare state. This is what my current research project studies. Its principal objective is to identify and explain how European PRRPs influence social policy outputs when they are in government, i.e. their social policy impact.

With this agenda, I aim to address a substantial literature gap and contribute to an informed public debate about how the perhaps most dynamic partisan force of our time connects citizens to the exercise of political power. I will continue this project as part of a Visiting Fellowship at the Minda de Gunzburg Center for European Studies at Harvard University with the support of a three-year research grant by the German Research Foundation (DFG).

My previous doctoral studies explored why some countries protect precarious workers from economic uncertainty better than others (so-called labour market ‘outsiders’). This research is forthcoming as a monograph to be published by Cornell University Press (expected date of publication: 15 December 2018).

Other parts of my doctoral research have appeared in Comparative European Politics, the European Journal of Industrial Relations, and the Austrian Journal of Political Science. You can find more information about my research and teaching here: www.philiprathgeb.com.

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Heisenberg’s uncertainty frustration: Is a dissipative quantum system a liquid or solid?

A famous example for phase transition is melting: when increasing the temperature, atoms abruptly move more freely so that the solid becomes a liquid. Such phase transitions also exist in quantum physics, but they are not observable in everyday life. At absolute zero, there are no thermal movements, only quantum fluctuations. Quantum fluctuations are changes that occur, for example, with regard to the position or velocity of a particle. They trigger a transition that is similar to what happens during melting. Furthermore, the phase transitions of a quantum system can be determined by its interaction with the rest of the universe, generally referred to as dissipation. In common wisdom, dissipation suppresses some quantum fluctuations, e.g. regarding position, favouring an ordered “solid” state instead of a disordered “liquid” state. Following Heisenberg’s uncertainty principle, a decrease in the fluctuation of the position must lead to an increase of the fluctuation of the velocity. Now imagine that the system interacts with two environments simultaneously: one tries to suppress the fluctuation of the position and the other tries to suppress the fluctuation of the velocity, which contradicts Heisenberg’s principle. Thus, the system becomes frustrated, because it cannot satisfy Heisenberg’s principle and dissipation at the same time.

As a consequence, we can report a peculiar behaviour that can be traced back to the frustration induced by Heisenberg’s uncertainty principle. This represents a genuine quantum effect and paves the way for the study of novel dissipative quantum phase transitions with engineered dissipation.


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When populism meets government: The social policy impact of the radical right in Europe

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In some recent cases of civil conflict – such as Libya, Egypt, and Syria – revolutionary uprisings have given way to ethnic and religious conflicts. The overall goal of my research project is to test a theory of how this transition happens. Why do some episodes of political violence cause large-scale civil wars between groups while others do not? This research is complicated by a number of factors: civil wars are luckily very rare. More importantly, getting reliable data on what happens during these conflicts is really difficult. Finally, neither researchers nor civilians must be exposed to risks during the research.

I have built a system for electronic surveys that can be used to interview respondents before, during, and after predictable escalations in violence. Over the last year, I worked closely with Constantin Ruhe to collect data in India and Kenya. What we found to be true for most conflicts is that individual-level experiences of fear and violence strongly affect attitudes towards entire groups. This insight is important, as theories of political violence often focus on the actions of governments and rebel organizations, rather than paying attention to the experiences of individuals. We believe that violence against civilians across group boundaries contributes strongly to escalations.
The role of syllabic rhythm for understanding speech in noise

Listening to speech might be challenging especially with regard to hearing loss or the huge variety of environmental noise in our everyday life. Recent advances in cognitive neuroscience show that the neural activity in auditory cortex oscillates at the syllable rhythm (~4Hz) in order to achieve speech comprehension. However, it is still unclear whether these slow neural oscillations, the waxing and waning of neural excitability, are just an acoustic byproduct or whether they constitute higher-level linguistic processes. We conducted a study using Electroencephalography (EEG) and transcranial alternating current stimulation (tACS) while participants listened to speech with different rhythms in noise. Preliminary results point towards beneficial effects of brain stimulation occurring only when speech was presented with its natural rhythm. Data analysis is still in progress because the investigator was on maternity leave during the last year. The results might be important for the development of future therapeutic interventions for clinical populations with linguistic deficits such as dyslexia as well as for elderly persons with hearing loss.

Hierarchical self-organized nanostructured materials are a focus of attention in today’s nano- and materials science and are important not only for basic research, but also for a number of recent and desirable applications in the fields of building materials, medical implants, sensors and many more. The basic driving force of my research is to obtain deeper insights into the fundamental principles of the structure, organisation and formation of nanocomposite materials from self-assembly of nanoparticles to biological and biomimetic/bioinspired systems in order to understand how these complex and unique systems form and function. My research topics are usually very interdisciplinary and therefore naturally include a lot of collaboration with researchers in the fields of chemistry, physics and biology. In the past years, we have synthesized and structurally characterized self-assembled mesocrystals based on metallic and magnetic nanoparticles. We also study a complex structure of teeth of snail-crushing cichlid fish that have been found to be made of mechanically highly durable and fracture-resistant materials. This knowledge inspires the development of new approaches to the biomimetic design of new materials, especially for biomedical application.

Does side matter?
Evolution of genital asymmetry in live-bearing fishes

I aim to understand the selective advantages that favoured the evolution of biodiversity and promote its maintenance. I address this question in a group of small live-bearing fishes from South America. Females carry their developing embryos in their abdominal cavity, providing nutrition to them through a structure analogous to the mammalian placenta. This requires that the eggs are internally fertilized; and to do so, males use a modified fin called gonopodium as an intromittent organ. Using whole genome data, I recently reconstructed the evolutionary relationship between the different species in this group. This has allowed me to determine how these fish diversified. More interesting for my project, this comprehensive phylogenetic tree allowed me to determine that a particular trait – the selective pressures that favoured this pattern. Interestingly, I am finding evidence that the control for paternity evolved independently in these three species. This is very interesting as it opens the door to questions about the selective pressures that favoured this pattern. Interestingly, I am finding evidence that the control for paternity might be one of the most relevant drivers in the evolution of this intriguing trait.
A place with an interdisciplinary and international mindset

When I was planning to return to Germany after several years in the United States, I was looking for places with an interdisciplinary and international mindset. In the US, I had been a post-doc at the Howard Hughes Medical Institute (HHMI) Janelia Research Campus. My colleagues there came from a wide variety of different backgrounds and disciplines (biology, chemistry, physics, computer science, etc.) and from (almost) all over the world. I had learned that I thrive in this environment and the Zukunftskolleg in Konstanz turned out to be the perfect place. In our weekly gatherings I met with experts from my area of expertise but also with historians, linguists and philosophers. In the usual university setting you rarely get the opportunity to intermingle with colleagues outside your institute. This provided me with insights into other areas and also presented me with the chance to view my own field in a different light.

My own area of research is neurobiology with a focus on complex locomotion behaviour using the fruit fly Drosophila melanogaster as a model organism. In Konstanz, I started collaborations with two of my Zukunftskolleg colleagues (Andreas Thum and Wolf Hütteroth). These collaborations are continuing in my current position in Leipzig.

The two years I spent at the Zukunftskolleg were very productive and formative for me. I really enjoyed my time in Konstanz, not least because of the beautiful Bodensee landscape.
During the academic year 2017–2018, I worked on the new improved version of the group research initiative Electrified Image: Discourses and Poetics of Television in Literature, Film and Drama in Soviet and Post-Soviet Russia (1950s–2010s). The application was submitted to the DFG in April 2018. My own subproject Soviet television between ideological use and mediological exploration in literature and film (1950s to 1991) seeks to understand and contextualise TV in late Soviet culture. The project is divided into two main areas of inquiry, or research questions. The first one compares two TV discourses: an official print media discourse propagating TV as a “powerful tool of communist education” on the one hand, and an artistic (film, literature) discourse that essentially deconstructed this statement on the other. The common grist shared by these two (antagonistic) discourses is nevertheless a set of metaphors used to define the television medium, or so I shall argue. The aim of the project is to investigate how metaphors, such as the TV as mirror, window, icon, water, fire or drug (among others), circulating in artistic production of the time might reveal an underlying incompatibility between the aesthetic and communicative qualities of TV and the socialist ideology of Soviet Russia. The second question concentrates on the impact of television on other media. It explores how, in the Soviet period from the 1950s to the 1990s, literature and film seismographically register and comment upon the cultural effects of the expanding TV medium – not only via thematic references, but also by applying its formal structures and aesthetic features.

Zukunftskolleg wisdom for the job hunt

I took part in dozens of job interviews during the academic year 2017–2018. Job-hunting was competitive, but fruitful as well. So far I have received three offers from China: for an associate professorship at Qingdao University, an associate professorship at Gannan Normal University and an assistant professorship at Yangzhou University.

Some experiences and wisdom gained during my time at the Zukunftskolleg inspired and strengthened my efforts during my job-hunt. The Zukunftskolleg is a unique institution which welcomes scholars from around the world and hosts researchers from almost every discipline. All fellows come together in the weekly Jour Fixe meetings, which were the best ones I ever attended. Although some topics were hard to follow, I was inspired by the presentations from different disciplinary backgrounds. The research committees in my job interviews were also from different research fields, but I was prepared for such situations because of my experiences at the Zukunftskolleg.

The Jour Fixe also taught me to prepare myself for situations in which the audience knows little or even nothing about my research topic. I gave presentations and attended many presentations with different topics at the Zukunftskolleg in the last two years. This helped me to learn how to present my research topic in a way that even people from outside my research field can understand. This was extremely helpful for my job interviews. Another thing that I have learned at the Zukunftskolleg is that presentations with a clear structure and brief content are always more desirable. This helped me to make my points and provide convincing arguments in tight time constraints and competitive environments.
The Jour Fixe is the weekly interdisciplinary session for fellows from all departments. The meeting focuses on presentations of new projects and results of current projects, introduction of new junior research groups, as well as topical discussions and debates concerning higher education policies. The fellows discuss the progress of their work, present results, share and encounter questions from other disciplines, and explore the possibilities of interdisciplinary collaboration.
Winter term 2017 | 2018

November 15, 2017
Opening event winter term 2017|2018
Election of a new member to the Executive Committee

November 22, 2017
Local archaeology in Heping Dao, a global history of Taiwan
María Cruz Berrocal, Fellow
Dept. of History and Sociology

November 29, 2017
On consciousness and attention, or the making of scientific psychology: Wilhelm Wundt.
Andrea Lailach-Hennrich, Fellow
Dept. of Philosophy

December 6, 2017
Nature and culture – a false dichotomy?
Tilman Triphan, Fellow
Dept. of Biology

December 13, 2017
Greenhouse gases... and beyond
Dennis Pingen, Fellow
Dept. of Chemistry

December 20, 2017
Jour Fixe Christmas session

January 10, 2018
Absolute zero: Cryogenics and the mastery of cold – the coolest science ever
Torsten Pietsch, Fellow
Dept. of Physics

January 17, 2018
Special Jour Fixe: How international is academia? (Part I)

January 24, 2018
Special Jour Fixe: How international is academia? (Part II)

January 31, 2018
Understanding party politics using feeling barometers and generalized unfolding models
Konstantin Kämpner, Associated Fellow
Dept. of Politics and Public Administration

Summer term 2018

April 18, 2018
Opening event summer term 2018
Election of a new member to the Executive Committee

April 25, 2018
Reading: The need for better regulation of outer space
Pippa Goldschmidt, guest speaker

May 2, 2018
Special Jour Fixe: Size There is plenty of room at the bottom: Size effects on the small scale in chemistry and physics
Klaus Boldt, Fellow
Dept. of Chemistry

May 9, 2018
Special Jour Fixe: Size How we (don’t) understand mathematical infinities
Carolin Antos, Fellow
Dept. of Philosophy

May 16, 2018
Special Jour Fixe: Size in political science: Ethnic groups, power and distributional politics
Janina Beiser-McGrath, Fellow
Dept. of Politics and Public Administration

May 23, 2018
Individual differences in collective behaviour: From proximate mechanisms to ecological and evolutionary consequences
Jolle W. Jolles, Fellow
Dept. of Biology

May 30, 2018
Social decisions as signal detection: The case of forgiveness
Jolene Tan, Fellow
Dept. of Psychology

June 6, 2018
Theoretical study of nonlinear phenomena in nanomechanical resonators in classical and quantum regime
Mark Dykman, Senior Fellow
Dept. of Physics

June 13, 2018
Terahertz spectroscopy – filling up the gap of optical frequency
Takayuki Kurihara, Fellow
Dept. of Physics

June 20, 2018
Public Lecture: Intended uncertainty – moral and institutional issues
Prof. Wolfgang Seibel, guest speaker
Dept. of Politics and Public Administration

July 4, 2018
Hunted with howitzers: Wyndham Lewis and the sublime horror of technological war
Udith Dematagoda, Fellow
Dept. of Literature

July 11, 2018
The Galilean first thing
Jeff Kochan, Associated Fellow
Dept. of Philosophy

July 18, 2018
Presentation of the results of the evaluation
Election of a new member to the Executive Committee
Facts and Figures
Transdepartmental Collaborative Teaching

This programme aims to promote the development of new teaching courses and expand departmental syllabi. It gives grant holders the opportunity to explore new, innovative topics in teaching and to further develop their teaching skills and teaching approach across disciplines.

Alex Jordan, Julián Torres-Dowdall and Ariana Strandburg-Peshkin (all: Dept. of Biology) as well as Karsten Klein and Bjorn Sommer (both: Dept. of Information and Computer Science): Quantitative methods in marine behavioural ecology (summer term 2018).

Dennis Pingen (Dept. of Chemistry), Ioanna Salvarina and Elizabeth Yohannes (both: Dept. of Biology): Controversial and Critical Vistas on Global Environmental Changes.

Fellows and postdoctoral scientific careers. Some support measures are also open to Senior Fellows, Associated Fellows, and postdoctoral researchers at the University of Konstanz.

Intersectoral Cooperation Programme

The Intersectoral Cooperation Programme aims to develop cooperation between Zukunftskolleg Fellows and the non-academic sector. Grants are given to support cooperation projects that foster joint research projects with industrial partners, companies, social institutions, cultural institutions, archives, public bodies, or non-profit organisations.

Moritz von Bresciani (Dept. of History and Sociology) and the Alpine Museum (Munich): The art of expeditionary science: Asia in the images of the Schlagintweit Brothers.

Jolle W. Jolles (Dept. of Biology) and the Toer Art-Design Studio (Netherlands): Animal collective—a compendium of interactive projects that showcase the fascinating spectacle of collective animal behavior.

Dennis Pingen (Dept. of Chemistry) and Desiree Wevers (designer/MA-DE Design & Education): The art of chemistry: Colouring with nanoparticles.

Co-Funding

This programme offers financial support to co-fund the human and material resources needed for projects at the Zukunftskolleg, e.g. for student or research assistants, conferences, equipment, research trips or consumables. Listed are some examples for granted Co-Funding applications.

Udith Dematagoda (Dept. of Literature): Funding for a research trip to Cornell University in Ithaca NY (USA) to consult the Wyndham Lewis Archive. Funding for a film project “Across the Atlantic”, a passage on a ship from Hamburg to New York.

Denis Gebauer (Dept. of Chemistry): Funding of experimental fees resulting from the research stay of his PhD student, Ms. Yu-Chieh Huang, at the University of York.

Rosana Halbleib (Dept. of Economics): Funding to participate in four conferences from June to December 2018.

Claudius Kratoshwill (Dept. of Biology): Funding for hiring a student assistant.

Oleksandra Kukharenko (Dept. of Chemistry): Funding to finance the mutual visits of her colleague Dr. Volodymyr Shvadchak and her to conduct a joint project on mathematical modeling of fibril kinetics.


Philip Rathgeb (Dept. of Politics and Public Administration): Funding for a visiting fellowship at the Center for European Studies (CES) at Harvard University for a period of four months from September to December 2018.

Jennifer Randerauth (Dept. of Psychology): Funding for hiring student assistants.

Leila Whitley (Dept. of Literature): Funding to attend a workshop at the Simone de Beauvoir Institute at Concordia University in Montreal in July 2018.

Interdisciplinary Collaborative Projects

This programme aims to promote research collaborations between junior researchers. An interdisciplinary research project gives grant holders the opportunity to identify and explore new, innovative and/or risky research perspectives with neighbouring disciplines and across disciplines.

Bela Gipp (Dept. of Computer and Information Science) and Karsten Donnay (Dept. of Politics and Public Administration): Identification of media bias in news articles using automated frame analysis.

Michael Kovermann (Dept. of Chemistry) and Bela Gipp (Dept. of Computer and Information Science): Conceiving an electronic lab notebook using blockchain technology to promote data integrity and reproducibility in scientific research.

Dennis Pingen (Dept. of Chemistry) and Elizabeth Yohannes (Dept. of Biology/Limnology): Local lakes as resources for fatty acids.

Eliza Sturm (Dept. of Chemistry) and Claudius Kratoshwill (Dept. of Biology): Cracking the structural and genetic basis of tooth biomineralization in snail-crushing cichlid fishes.

Tuhin Basu (Dept. of Physics): Funding to attend the conference ‘Nano today 2017’ at Hawaii, USA.

Thomas Böttcher (Dept. of Chemistry): Funding to cover chemicals for experiments and to hire student assistants.

Udith Dematagoda (Dept. of Literature): Funding for a research trip to Cornell University in Ithaca NY (USA) to consult the Wyndham Lewis Archive. Funding for a film project “Across the Atlantic”, a passage on a ship from Hamburg to New York.

Denis Gebauer (Dept. of Chemistry): Funding of experimental fees resulting from the research stay of his PhD student, Ms. Yu-Chieh Huang, at the University of York.

Rosana Halbleib (Dept. of Economics): Funding to participate in four conferences from June to December 2018.

Claudius Kratoshwill (Dept. of Biology): Funding for hiring a student assistant.

Oleksandra Kukharenko (Dept. of Chemistry): Funding to finance the mutual visits of her colleague Dr. Volodymyr Shvadchak and her to conduct a joint project on mathematical modeling of fibril kinetics.


Philip Rathgeb (Dept. of Politics and Public Administration): Funding for a visiting fellowship at the Center for European Studies (CES) at Harvard University for a period of four months from September to December 2018.

Jennifer Randerauth (Dept. of Psychology): Funding for hiring student assistants.

Leila Whitley (Dept. of Literature): Funding to attend a workshop at the Simone de Beauvoir Institute at Concordia University in Montreal in July 2018.

Bela Gipp (Dept. of Computer and Information Science) and Karsten Donnay (Dept. of Politics and Public Administration): Identification of media bias in news articles using automated frame analysis.
Independent Research Grant

The Independent Research Grant aims to promote independent research by researchers who are in the early stages of their postdoctoral work. The Zukunftskolleg invites applications for financial support of up to 3,000 EUR for projects that help the individual applicant attain scientific independence. This funding instrument is open to postdoctoral researchers at the University of Konstanz.

Ariane Bertogg (Dept. of History and Sociology): Spousal influence on retirement timing in Europe
Caroline Bonnes (Dept. of Economics): Approaches to teaching of workplace trainees – A video study
Taniesha Burke (Dept. of Psychology): Children’s perspectives of their covert and overt resistance strategies to parental overtrust strategies to parental
Hanhe Lin (Dept. of Computer and Information Science): Paired comparison for subjective IQA via crowdsourcing

Alumni Cooperation Programme

This programme aims to support cooperations between a current and a former fellow of the Zukunftskolleg. Grants will be given to support cooperations that foster joint research projects. The programme comes out of the credo “once a fellow, always a fellow” and aims at strengthening the links to our international community of fellows. Furthermore, the Alumni are actively encouraged to act as mentors for the younger generations of fellows of the Zukunftskolleg.

Julia Boll and Leila Whiteley (both Dept. of Literature) in collaboration with Kate Fama (Alumna/University College Dublin), Elliott Lash (Alumna/University of Maynooth) and Emily Petermann (Dept. of Literature): Funding to support the continuation and expansion of their Konstanz-based advanced training and discussion workshop series “The Humanities Pedagogy Workshop”

Research Visit

New to the network of support measures, this programme seeks to enhance international research cooperation and to support international mobility of our fellows. It funds temporary research stays both at the Zukunftskolleg and abroad for intercultural exchange among peers.

Yonatan N. Gez (Dept. of History and Sociology): Incoming Research Visit from the Martin Buber Society, Jerusalem/Israel
Jolle W. Jolles (Dept. of Biology): Outgoing Research Visit to University of Grona, Institute of Aquatic Ecology, Grona/Spain

Mentorship

The Mentorship Programme enables fellows and postdoctoral researchers at the University of Konstanz to network with distinguished colleagues both in Germany and abroad, and to maintain these contacts.

Tina Bögel (Dept. of Linguistics) and Mentor Alice Turk (University of Edinburgh, UK)
Kathrin Breuing (Dept. of Economics) and Mentor Sabine Seufert (University of St. Gallen, Switzerland)
Anselm Crombach (Dept. of Psychology) and Mentor Patrick McGrath (Dalhousie University, Canada)
Udith Dematagoda (Dept. of Literature) and Mentor Nathan Waddell (University of Birmingham, UK)

Giulia Fabrini (Dept. of Mathematics and Statistics) and Mentor Tommaso Lorenzo (University of St. Andrews, UK)
Jolle W. Jolles (Dept. of Biology) and Mentor Shaun Steven Killen (University of Glasgow, UK)
Gisela Kopp (Dept. of Biology) and Mentor Luca Pozzi (University of Texas, San Antonio, USA)
Michael Kovermann (Dept. of Chemistry) and Mentor Pernilla Wittung-Stafshede (Chalmers University of Technology, Gothenburg, Sweden)
Andrea Lailach-Hennrich (Dept. of Philosophy) and Mentor Dominique Gervais (University of Sheffield, UK)
Sven Lauer (Dept. of Linguistics) and Mentor Kjell Johann Sæbe (University of Oslo, Norway)
Sandro Lininger (Dept. of History and Sociology) and Mentor Yair Mintzker (Princeton University, USA)

Carliotta Martelli (Dept. of Biology) and Mentor Toshihide Higashi (Howard Hughes Medical Institute, Virginia, USA)
Morgane Touan (Dept. of Biology) and Mentor Alison R. Mercier (University of Otago, New Zealand)
Antje Rumberg (Dept. of Philosophy) and Mentor Patrick Blackburn (Roskilde University, Denmark)
Inga Schalinski (Dept. of Psychology) and Mentor Martin Harsch Teicher (Harvard Medical School, Boston, USA)
Michael L. Smith (Dept. of Biology) and Mentor Tim Landgraf (FUB Berlin, Germany)
Julian Torres-Dowdall (Dept. of Biology) and Mentor Cameron Ghalambor (Colorado State University, USA)
Andreas Tzotze (Dept. of Linguistics) and Mentor Anastasia Giannakidou (University of Chicago, USA)

Funding Programmes
Events

Events organised by the Zukunftskolleg and its fellows.

2017

14–16 September
Questioning speech acts workshop co-organised by the Emmy Noether Group of Sven Lauer (Fellow/Dept. of Linguistics) and the research unit “Questions at the interfaces” (Dept. of Linguistics)

20 September
The future of neuropsychology at universities satellite symposium with Cornelia Exner (Leipzig University, Germany) and Lutz Jäncke (University of Zurich, Switzerland) in the framework of the annual conference of the German Society of Neuropsychology, organised by Jennifer Randerath (Fellow/Dept. of Psychology)

21–22 September
New perspectives on the micro-dynamics of political violence workshop co-organised by Sebastian Schütte (Fellow/Dept. of Politics and Public Administration) and Constantin Ruhe (Associated Fellow/Dept. of Politics and Public Administration)

21–23 September
Yearly conference of the German Society of Neuropsychology hosted and co-organised by Jennifer Randerath (Fellow/Dept. of Psychology) and Thomas Elbert (Dept. of Psychology)

28 September
Imagination and knowledge workshop co-organised by Andrea Lai (Fellow/Dept. of Philosophy) and Margharita Arcangeli (Humboldt University Berlin, Germany)

18 October
Psychological determinants of endurance performance symposium in the context of one of the Zukunftskolleg’s interdisciplinary collaborative projects, co-organised by Maik Bieleke (Department of Psychology) and Wanja Wolf (Department of History and Sociology)

20 October
Material culture pedagogies workshop led by Zara Anishanslin (University of Delaware, USA), organised by Julia Boll (Fellow/Dept. of Literature) and Kate Fama (University College Dublin) within “The Humanity Pedagogy Workshop” of the Zukunftskolleg

2–3 November
Meeting of the Scientific Advisory Board

5150
Keshun Zhang

Marbach (Germany), 18 October 2017
Müller-Stahl, Christa Wolf, Sarah Kirsch
hen als Grenzfall in der DDR-Literatur (Armin
ination at the slavic colloquium, University of
Post-Soviet Russian film, theatre and art
Transgressive TV-poetics in Soviet and

Yuan, Gangcheng, Daniel E. Gómez, Nicho-
spiration in nature. In: ACS Nano. 12(4), pp. 3397-

Julia Boll

Thomas Böttcher
Böttcher, Thomas, David Szamovári, Jan Clar-
ly in 2018. A repeating sulfated galacton
mate quantum dots. In: ACS Nano. 12(4), pp. 3379-

Carolin Antos
Antos, Carolin, 2018. Class forcing in class

Tuhin Basu
Basu, Tuhin Shuvra, Jure Demsar, Elke Scher-
transistor in semiconductor-metal hybrid nanostructure

Maria Zhukova
A mirror for the hero or a window to the other world?

Klaus Boldt
Kunkel, Marius, Stefan Schildknecht, Klaus Boldt, Lukas Zeyerfert, David Schle-

Thomas Böttcher
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Emotion and decision making

The differential effects of anger on trust:

Biochemistry of anisotropic nanoparticles:

Normal University, Ganzhou (China),

Fuel in the fire: The effects of anger on

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Teaching

Carolin Antos
SS 2018: Platon’s Theaetet, seminar
SS 2018: Genauer gesagt: Formale Methoden in der Philosophie, seminar
WS 2017|18: Descartes Meditationen, seminar
WS 2017|18: Formale Logik, seminar
WS 2017|18: Mathematische Logik, Mengerlehre und Modelltheorie, seminar

Klaus Boldt
SS 2018: Neuere Arbeiten auf dem Gebiet der Synthese und der Physikalischen Chemie von Nanokristallen, seminar
SS 2018: Synthese und Physikalische Chemie von Nanokristallen, academic supervision
WS 2017|18: Current issues and methods in nanoscience, lecture and practical course
WS 2017|18: Neuere Arbeiten auf dem Gebiet der Synthese und der Physikalischen Chemie von Nanokristallen, seminar
WS 2017|18: Synthese und Physikalische Chemie von Nanokristallen, academic supervision

Julia Boll
WS 2017|18: Theatre/Theory, seminar

Thomas Böttcher
SS 2018: Naturstoffisolation und Strukturaufklärung, academic supervision
SS 2018: Organische Chemie für Biologen, lecture and tutorial
SS 2018: Neuere Arbeiten aus dem Gebiet der Naturstoffisolation und Strukturaufklärung, seminar
WS 2017|18: Naturstoffisolation und Strukturaufklärung, academic supervision
WS 2017|18: Neuere Arbeiten aus dem Gebiet der Naturstoffisolation und Strukturaufklärung, seminar

Panteleimon Eleftheriou
WS 2017|18: Modelltheorie, doctoral seminar

Denis Gebauer
SS 2018: Auf dem Gebiet der Physikalischen Chemie: Phasenumwandlung und Kristallisation, academic supervision
SS 2018: Kolloquium Physikalische Chemie arbeitsgruppenübergreifendes Seminar über neuere Forschungsergebnisse, research colloquium
WS 2017|18: Kolloquium Physikalische Chemie arbeitsgruppenübergreifendes Seminar über neuere Forschungsergebnisse, research colloquium
WS 2017|18: Physikalische Chemie IV, lecture and tutorial

James Griffiths
SS 2018: Ellipsis and related topics, seminar
SS 2018: Morphology II, seminar
WS 2017|18: Syntax II, seminar
WS 2018|17: Syntax III: Topics in ellipsis, seminar

Roxana Halbleib
SS 2018: Econometrics colloquium, doctoral seminar
WS 2017|18: Big data in economics and finance, seminar
WS 2017|18: Econometrics colloquium, doctoral seminar
WS 2017|18: Financial econometrics, lecture

Claudius Kratochwil
SS 2018: Journal club: Evolution and zoology, seminar
WS 2017|18: Journal club: Evolution and zoology, seminar
WS 2017|18: Methods in biology, lecture

Oleksandra Kukharenko
WS 2017|18: Python block course, lecture

Andrea Lailach-Henrich
SS 2018: G.W.F. Hegels Phänomenologie des Geistes, seminar
SS 2018: Lüge und Täuschung, seminar

WS 2017|18: Grundfragen der Ethik, seminar
WS 2017|18: Jason Stanley: How propaganda works, seminar
WS 2017|18: Kants Philosophie des Geistes, seminar

Sven Lauer
WS 2017|18: Einführung in die Linguistik, lecture
WS 2017|18: Semantics III: The meaning of conditional structures, seminar

Bernard Lepetit
SS 2018: Meeresbiologisch/Botanische Exkursion in die Bretagne, excursion
WS 2017|18: Modern methods in photosynthesis research, lecture and practical course

Doris Penka
WS 2017|18: Einführung in die Linguistik, lecture
WS 2017|18: Semantik II, seminar

Ezgi Pınar
SS 2018: Selected topics in European Union and EU-Turkey relations, seminar

WS 2017|18: Comparative Political Economy, research workshop

SS 2018: Comparative Political Economy, research workshop

Gianluca Rastelli
SS 2018: Quantentransport, lecture and tutorial

Elena Sturm
SS 2018: Materialanalytik, lecture and tutorial
WS 2017|18: Nanochemistry and -analytics, lecture and practical course

Margaret Thomas
WS 2017|18: Modelltheorie, doctoral seminar

Julián Torres-Dowdall
SS 2018: Advanced course: Qualitative methods in marine behavioural ecology, lecture with colloquium
SS 2018: Advanced Course: Quantitative methods in marine behavioural ecology, practical course
WS 2017|18: Eco-Evolutionary dynamics, seminar

Leila Whitley
WS 2017|18: Race, nation, gender, seminar
People and Connections
The Scientific Advisory Board consists of internationally renowned scholars from Germany and abroad. It is appointed by the University Executive of the University of Konstanz.

**Scientific Advisory Board**

Alexandra Brand  
Chief Sustainability Officer of Syngenta, Basel, Switzerland. Member of the University Council, University of Konstanz.  

Michael Hannon  
Professor and chairholder of Chemical Biology, University of Birmingham, UK. Director of the Institute of Advanced Studies, University of Birmingham, UK. Director of the EPSRC Research and Training Centre in Physical Sciences for Health, University of Birmingham, UK. President of the Society of Biological Inorganic Chemistry, USA.

Henrike Hartmann  
Member of the Executive Management and head of funding at the Volkswagen Foundation, Hannover. Membership in the board of trustees at the Max-Planck-Institute for Biology of Aging (Munich), for Metabolism Research (Cologne) and Plant Breeding Research (Cologne).

Thomas Hengartner  
Director of Collegium Helveticum, Zürich, Switzerland. Professor of Ethnology, University of Zürich, Switzerland. Vice Dean of Research of the Philosophical Faculty, University of Zürich, Switzerland.

Dagmar Schmieder  
President of Kliniken Schmieder, Konstanz. Founder of the Lurija Institute, University of Konstanz. Senator of Honour, University of Konstanz.

Jean-Baptiste Joly  
Former director of the Akademie Schloss Solitude, Stuttgart. Honorary Professor at the School of Art Weissensee, College of Design, Berlin.

Rainer Maria Kiesow  
Professor of Law at École des hautes études en sciences sociales (EHESS), Paris, France. Director of the Centre Georg Simmel. Franco German research in the social sciences.

Manuela Nocker  
Senior Lecturer in Management Science and Entrepreneurship, Essex Business School, University of Essex, UK.

Dorothea Wagner  
Professor for Computer Sciences, Institute of Theoretical Informatics, Karlsruhe Institute of Technology (KIT). Member of the German Council of Science and Humanities (Wissenschaftsrat), Cologne. Member of the Committee for Strategic Planning, Leibniz Gemeinschaft, Berlin.

Hans Adler  
Dept. of German University of Wisconsin-Madison, USA. nominated by Gunhild Berg

Irene Albers  
Dept. of Psychology University of Georgia, USA. nominated by Johanna Kiffler

Brett Clementz  
Dept. of Psychology Stanford University, USA. nominated by Karsten Lambers

Jeffrey-Adrian Barrett  
Dept. of Logic and Philosophy of Science University of California, USA nominated by Franz Huber

Cleo Condoravdi  
Natural Language Theory and Technology Group Stanford University, USA. nominated by Gerhart von Graevenitz

Gyorgy Buzsáki  
Langone Medical Center, Neuroscience Institute New York University, USA. nominated by Nathan Weisz

Mark Dykman  
Dept. of Physics and Astronomy Michigan State University, USA. nominated by Gianluca Rastelli

Marcia Esparza  
Dept. of Criminal Justice JJAY College, New York, USA. nominated by Nina Schneider

Dimitri Giné  
Dept. of Philosophy

Yoram Carmeli  
Dept. of Sociology and Anthropology University of Haifa, Israel. nominated by Anna Lipphardt

Bernard Frischer  
Dept. of Informatics Indiana University, Bloomington, USA. nominated by Malte Drescher

Peter Gärdenfors  
Dept. of Philosophy Lund University, Sweden. nominated by Brendan Balcerak Jackson

Julian D. Gale  
Dept. of Chemistry Curtin University, Perth, Australia. nominated by Denis Geisber

Daniel R. Gamelin  
Dept. of Physics and Technology Group Institute for Philosophy Saarland University, Germany. nominated by Jeff Kechin

Christoph Fehige  
Institute for Philosophy Saarland University, Germany. nominated by Attila Tanyi

Leonid Glazman  
Dept. of Physics Yale University, USA. nominated by Gianluca Rastelli

Adelheid Godt  
Dept. of Chemistry University of Bielefeld, Germany. nominated by Malte Drescher

Joachim Gross  
Institute of Neuroscience & Psychology University of Glasgow, UK. nominated by Nathan Weisz

Marcella Grassucci  
Langone Medical Center, Neuroscience Institute New York University, USA. nominated by Nathan Weisz

Arnaud de Pater  
Dept. of Physics and Astronomy Michigan State University, USA. nominated by Gianluca Rastelli

Alex Byrne  
Dept. of Linguistics and Philosophy Massachusetts Institute of Technology, Cambridge, USA. nominated by Julia Langkau and Magdalena Balcerak Jackson

Joseph Y. Halpern  
Dept. of Computer Science Cornell University, USA. nominated by Gianluca Rastelli

University of Sofia, Bulgaria. nominated by Jeff Kechin

University of Washington, USA. nominated by Malte Drescher

Cornell University, USA. nominated by Attila Tanyi

ETH Zurich, Switzerland. nominated by Gerhart von Graevenitz

Institute for History ETH Zurich, Switzerland. nominated by Gerhart von Graevenitz

Institute of the Young Scholars Young Researchers and Academics.

The senior fellows profit from the impulses provided by the younger generation and vice versa.

**Senior Fellows**

Senior Fellows are established guest scholars from the natural sciences, humanities or social sciences who join the Zukunftskolleg for a research stay and work with the fellows. This support and inspiration is a mutual advantage, the Senior Fellows profit from the impulses provided by the younger generation and vice versa.
<table>
<thead>
<tr>
<th>Senior Fellows</th>
<th>Associated Fellows</th>
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<tbody>
<tr>
<td>Irene Heim (Dept. of Linguistics and Philosophy, Massachusetts Institute of Technology, Cambridge, USA) nominated by Doris Penka</td>
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<tr>
<td>Giora Hon (Dept. of Philosophy, University of Haifa, Israel) nominated by Samuel Schindler, Helen Gunter, and Julia Jones</td>
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<td>Gunnar Jeschke (Dept. of Chemistry and Applied Biosciences, ETH Zurich, Switzerland) nominated by Malte Drescher</td>
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<td>Viktor V. Kabanov (Dept. for Complex Matter, Jozef Stefan Institute, Ljubljana, Slovenia) nominated by Jure Demsar</td>
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<td>Paul Kipersky (Dept. of Linguistics, Stanford University, USA) nominated by Chiara Gianollo</td>
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<td>Arthur Kramer (Dept. Psychology, University of Illinois Urbana-Champaign, USA) nominated by Iris-Tatjana Kolassa</td>
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<td>David Leep (Dept. of Mathematics, University of Kentucky, USA) nominated by Karim Becher</td>
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<td>Yaron Matras (School of Languages, Linguistics and Cultures, University of Manchester, UK) nominated by Eleanor Coghill</td>
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<td>Jennifer McDowell (Dept. of Neuroscience, Biomedical Research Center, University of Georgia, Athens, USA) nominated by Johanna Kißler</td>
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<td>Randolf Menzel (Dept. of Neurobiology, Free University of Berlin, Germany) nominated by Andreas Thum</td>
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<td>Gregory A. Miller (Dept. of Psychology, University of Illinois Urbana-Champaign, USA) nominated by Johanna Kißler, Iris-Tatjana Kolassa, and Nathan Weisz</td>
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<td>Frank Moorhouse (Freelance Author, Sydney, Australia) nominated by Gerhart von Graevenitz</td>
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<td>David Solé (Dept. of Philosophy, Syracuse University, New York, USA) nominated by Attila Tanyi</td>
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<td>Patrick Speissegger (Dept. of Mathematics and Statistics, Western University, Ontario, Canada) nominated by Margaret Thomas</td>
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<td>Vinod Subramaniam (Rector Magnificus, Free University of Amsterdam, Netherlands) nominated by Malte Drescher</td>
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<td>Wilson Poon (School of Physics and Astronomy, University of Edinburgh, UK) nominated by Thomas Voigtmann</td>
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<td>Paul Rozin (Dept. of Psychology, University of Pennsylvania, USA) nominated by Gudrun Spörser</td>
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<td>Alexander Schellow (Freelance Artist, Berlin, Germany) nominated by Giovanni Galizia</td>
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<td>Sandeep Verma (Dept. of Chemistry, Indian Institute of Technology Kanpur, India) nominated by Jörg S. Hartig</td>
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<td>Klaus von Heusinger (Dept. of German Language and Literature, University of Cologne, Germany) nominated by Gerhart von Graevenitz</td>
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<td>Sabine von Heusinger (Dept. of History, University of Cologne, Germany) nominated by Gerhart von Graevenitz</td>
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<td>Heike Schmoll (Journalist, Frankfurter Allgemeine Zeitung (FAZ), Germany) nominated by Gerhart von Graevenitz</td>
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<td>Valerie Shafer (The Graduate School, Speech and Hearing Sciences, The City University of New York, USA) nominated by Tanja Rinker</td>
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<td>Brian Smith (School of Life Sciences, Arizona State University, USA) nominated by Andreas Thum</td>
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<td>Jean-Pierre Tignol (Dept. of Mathematics, University of Louvain, Belgium) nominated by Karim Becher</td>
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Martin Elff (2013–2015) Professor and Chair of the Dept. of Political Sociology Zeppelin University, Friedrichshafen, Germany
Katherine Fama (2015–2016) Assistant Professor at the School of English, Drama & Film University College, Dublin, Ireland
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Alumni
Network Memberships

In 2018, the Zukunftskolleg joined two international networks of Institutes for Advanced Studies: NetIAS and UBIAS. These memberships offer new links to partners around Europe and the whole world – they foster networking between similar institutes for new ideas and best practices. For the fellows of the Zukunftskolleg, it provides first-hand contact to renowned institutes around the world and encourages collaborations with international research partners.

NetIAS
(Network of European Institutes for Advanced Study)

NetIAS brings together 23 Institutes for Advanced Study across Europe. It was created in 2004 to stimulate a dialogue on IAS practices and possible forms of cooperation. NetIAS members share the objective of creating international and multidisciplinary learning communities. This openness and the freedom the fellows enjoy for their researches serve to promote scientific and intellectual exchanges. IAS tend to break from the intellectual routines, thus fostering the emergence of new perspectives, approaches and paradigms. While sharing a common vision concerning the freedom of research, and representing an alternative to the national institutions of higher education and research, the IAS offer a considerable diversity in terms of fellowship conditions. Furthermore, their scientific policies are characterized by different thematic or geographical orientations, a diverse openness to natural and hard sciences, or a special commitment to promoting early career researchers.

UBIAS
(University-Based Institutes for Advanced Study)

UBIAS is a network of 44 university-based Institutes for Advanced Study worldwide. Initiated in 2010, the network was established to enable structured forms of exchange in this growing segment, including bilateral conferences and joint programmes between partner institutes. Unlike traditional Institutes for Advanced Study, UBIAS institutes are associated with or embedded within a university, and actively contribute to the academic culture and the scientific achievements of their home university. UBIAS is committed to equality, inclusivity and diversity.
The Zukunftskolleg cooperates with different institutions from Germany and abroad. These collaborations advance the scientific dialogue on the academic level, but also strengthen knowledge communication with the public. Exchange in matters of organization helps to further develop the concept of the Zukunftskolleg continuously. The cooperation with major academic institutions, who offer to host the Zukunftskolleg fellows, serves networking and exchange of experience. Therefore, the foundation of collaborative projects and international research partnerships can be initiated.

National Cooperation Partners

Akademie Schloss Solitude
(Stuttgart)
With its international programmes, the Akademie Schloss Solitude supports young and particularly gifted artists. Apart from these, also scientists of such disciplines as Music or Arts are welcome to apply for scholarships. The Schloss Solitude is not only a place for artistic and scientific exchange, but also a possibility for young scientists and artists to retire from their daily life. This way Zukunftskolleg Fellows are given the opportunity to attend a retreat from one up to three months’ time.

Hector Foundation
(Wiesbaden)
The foundation supports medical research, provides assistance to social programmes – especially in regard to disabled persons – and funds artistic and cultural projects. A further focus is the support of gifted young people, especially in the natural sciences and mathematics. In this context, the Hector Foundation II finances the Hector Pioneer Fellowship of the Zukunftskolleg.

Hegau-Bodensee-Seminar
(Konstanz)
The Hegau-Bodensee-Seminar offers interested high school pupils a possibility to take advantage of further education beyond school contents. Supported by lectures, workshops and excursions the pupils tackle chosen topics in collaborating working groups. “University Day” is a fixed part of the Hegau-Bodensee-Seminar, which provides the chance for pupils to do research directly with scientists and experience recent research done at universities at eye level. In the last years, Zukunftskolleg Fellows held lectures and seminars in the framework of the University Day. In 2017, the topic was “Foreseeability”.

Volkswagen Foundation
(Hannover)
Through its funding initiative Postdoctoral Fellowships in the Humanities at Universities and Research Institutes in Germany and the USA, the Volkswagen foundation aims to enable postdoctoral researchers based at academic institutions in the U.S. to spend some time conducting studies at universities or research institutes in Germany. These studies can either be undertaken at a university or research institute of the candidate’s choice or at a cooperating institute. The Zukunftskolleg is one of 14 host institutions for the fellowships.

Lindau Nobel Laureate Meetings
(Lindau)
The yearly held Lindau Nobel Laureate Meetings are a worldwide recognized forum for the exchange between generations and scientists. Young scientists are chosen from a worldwide network of academic partners in order to participate in panel discussions, seminars and other forms of communication connected to the event. This way the aspiring generation receives a unique opportunity to meet and network with Nobel laureates for Physics, Chemistry, Medicine and Economics. The Zukunftskolleg is a partner of this meeting and fellows are regularly nominated to join the event. In 2017, Roxana Halbleib (Research Fellow/ Dept. of Economics) was invited to join the Lindau Nobel Laureate Meeting on Economic Sciences.

International Cooperation Partners

a. Alexandru Ioan Cuza University of Iași
(Romania)
UAIC is the oldest higher education institution in Romania, being ranked in top 3 in national rankings of universities. With over 752 teachers, 23,000 students (among them 850 PhD students), 319 researchers (part-time and full-time researchers including postdoctoral researchers), the university enjoys high prestige at national and international level. UAIC is a member of some of the most important university networks and associations: the Coimbra Group, EUA – European University Association, Utrecht Network, International Association of Universities, University Agency of Francophony and the Balkan University Network. UAIC also has two interdisciplinatory Research Departments: one in the field of science and in social science and humanities.

b. Centre for Liberal Arts and Social Sciences
(Singapore)
The CLASS is a major research centre of the College of Humanities, Arts and Social Sciences at the Nanyang Technological University (Singapore). Established in 2006, CLASS facilitates, coordinates, and encourages interdisciplinary research at Nanyang Technological University, and acts as a platform for interaction among local and international scholars from various disciplines. Some of the activities organised at the centre include presentations for working papers, seminars, CLASS Distinguished Lectures, multi-disciplinary workshops and conferences.

c. Collegium Helveticum
(Switzerland)
The Collegium Helveticum (Zurich, Switzer-
strengths, academic communities that cross the disciplines. Darwin College has 65 fellows who hold faculty or research positions in the university and associated institutes, and about 650 students who come from the UK and some 70 other countries. Darwin College fosters an informal and egalitarian atmosphere for this multi-disciplinary, international community. Students and fellows meet and talk at academic get-togethers and seminars, over meals and at social and sporting events and in running the annual Darwin College lecture series (a major public event with luminary speakers every week of the Lent Term). Unlike most other colleges their students and fellows are not segregated and students are members of many of the college’s governing committees.

e. Israel Institute for Advanced Study (Israel)

Israel Institute for Advanced Studies (IIAS) of Jerusalem is a national institution devoted to academic research. Located at The Hebrew University of Jerusalem, the IIAS is a self-governing body, both in its administrative function as well as its academic pursuit. The primary function of the institute is to encourage and support collaborative research. Along with collaborative research groups, the institute annually hosts six advanced schools as well as many conferences. The institute is similar in concept to several existing Institutes of Advanced Study, yet also unique in its sponsoring unrestricted academic research and hosting collaborative teams throughout the more than forty years since its establishment.

f. Martin Buber Society of Fellows in the Humanities (Israel)

The Martin Buber Society of Fellows in the Humanities and Social Sciences at the Hebrew University of Jerusalem (Israel) aims to offer young and outstanding scientists of Humanities and Social Sciences a creative and vivid research landscape. Its fellowship programme fosters the German-Israeli dialogue within the society and beyond, and with the vital academic and intellectual connections that the fellows have created in the encounters the programme facilitates. Just like the Zukunftskolleg the Martin Buber Society is interdisciplinary oriented and supports excellent research. Therefore, collaboration and exchange between the two institutions bears high potential and proved to be fruitful. A “Memorandum of Understanding – To Establish a Program of Scholarly Exchange and Cooperation” has been signed in 2011 and renewed in 2015. Moreover, workshops for larger groups are being held in Jerusalem and Konstanz. Most recently, a symposium entitled Uncertainty has taken its first round in Konstanz in June 2018, its second part will be held from 27-30 November 2018 in Jerusalem.

g. Waseda Institute for Advanced Study (Japan)

The Waseda Institute for Advanced Study (WIAS) in Tokyo (Japan) was established in 2006 as a research institute to provide young researchers with opportunities to dedicate themselves to their research. WIAS offers an independent research environment for young researchers and fosters them to be next-generation researchers. Currently, about 40 researchers are working in the fields of natural sciences, humanities, social sciences and interdisciplinary areas at WIAS. They are engaged in leading research activities that fully demonstrate their flexible thinking and abilities. WIAS also accepts overseas distinguished researchers who stay at Waseda for a short-term to engage in cooperative research with Waseda faculty members or WIAS researchers.

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The Zukunftskolleg is an Institute for Advanced Study at the University of Konstanz promoting early independence for postdoctoral researchers. With its 2-year and 5-year Fellowships as well as a diverse network of support, scholars in the humanities, social and natural sciences come to Konstanz from across the world to perform first-class research.