Fellows 2015

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Institute for Advanced Study

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Fellows 2015

Brain

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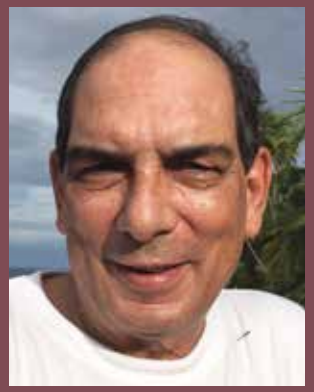



Brain






Prof. Dr. Pedro León Azofeifa

HWK Fellow
Brain

Fellowship period
01.01.15-31.03.15

Home institution
National Academy of Science of Costa Rica
San José
Costa Rica

Cooperation partners
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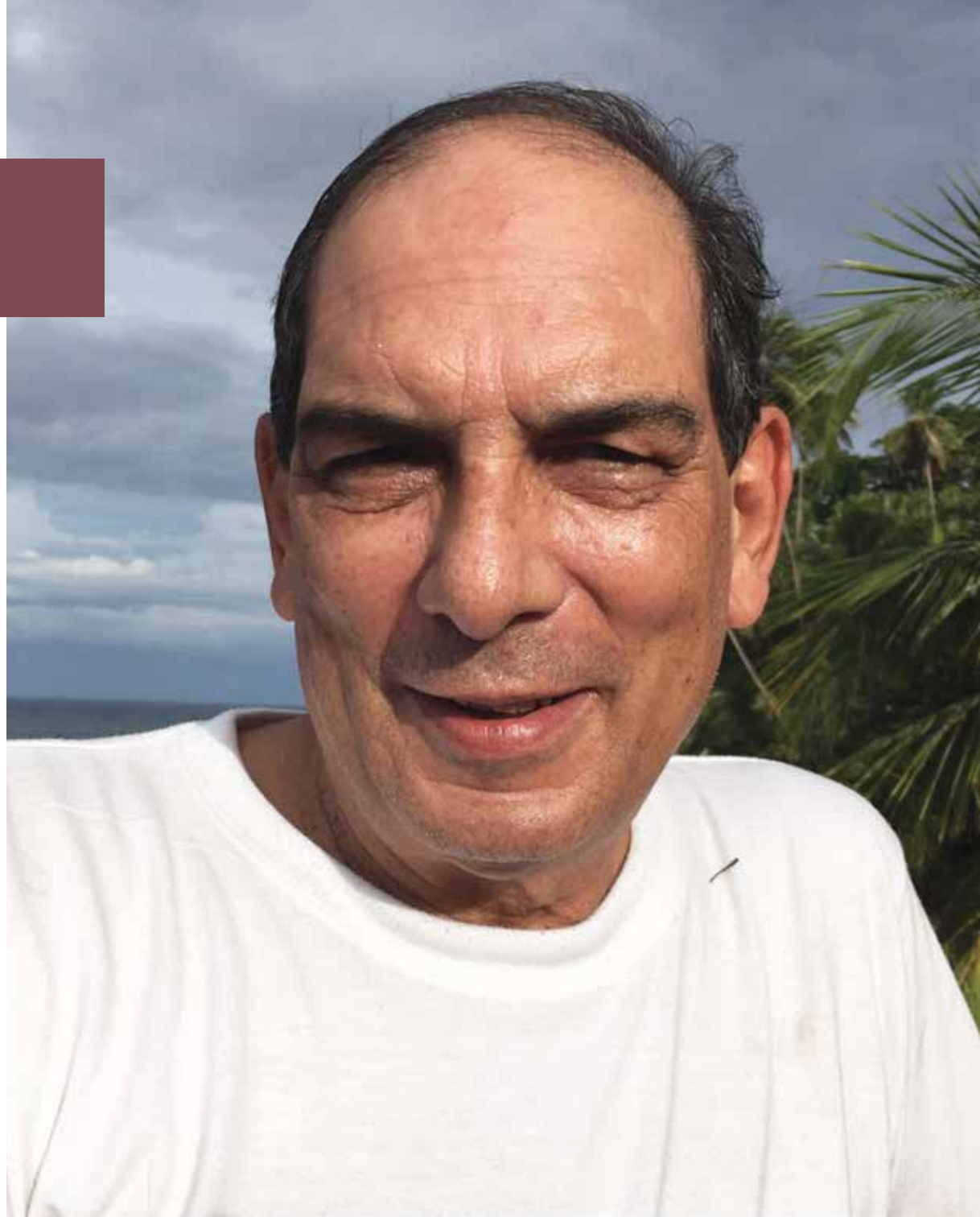
Prof. Dr. Ursula Dicke
University of Bremen



Revisiting the Function of the Right Human Isocortex from Imaging and Other Emerging Data

The human brain is composed of two hemispheres, each topped by a thin, wrinkled, six-layered cortex (in mammals), where long-term memory storage takes place: all types, visual, olfactory, auditory permanent memories are all captured in this same histological architecture. It is well know that the two hemispheric cortices are specialized for different functions in certain regions. The left cerebral cortex is known as the dominant one and is involved in logical reasoning, language and mathematics, while the right hemisphere is more intuitive, musical and emotional. My colleagues and I are interested in understanding: (1) How verbal is the RHC (Right Hemispheric Cortex)? (2) How does the presumably mute RHC participate in »working memory« with the Left Hemispheric Cortex (LHC) in the prefrontal lobes? (3) Since memories for melodies are stored in the RHC, where is the verbal component of songs – the lyrics – stored? Can music memory-recall studies help answer this question? (4) Finally, after spending many years mapping susceptibility genes to bipolar illness, I am naturally interested in understanding the possible role of the more emotional RHC in recurrent mood swings. The new non-invasive imaging technologies (i. e. functional MRI), in many research labs around the world can actually view the brain in action. These are powerful windows that might help resolve some of these queries about the RHC and help explain the highly explosive aspects of human nature.

Prof. Dr. Daniele Dell'Orco

HWK Fellow
Brain

Fellowship period
15.04.15-15.08.15

Home institution
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Seeing the Heat: Temperature Effects on the Organization of the Supramolecular Machinery Operating in Vertebrate Vision

Vision in vertebrates starts in the retina, where specific photoreceptor cells named rods and cones capture photons of light and host the so-called phototransduction cascade, a complex molecular process by which the physical information carried by light is transformed into a biochemical signal. A multidisciplinary analysis integrating in vitro experiments and computer simulations will be performed to investigate the effects of temperature on the dynamics of key supramolecular assemblies in the vertebrate phototransduction cascade (i.e. the formation of protein-protein complexes and the effects on the exchange of metal ions and nucleotides). Assessing the subtle interconnection between the required high velocity in the molecular interactions and the typically fast physiological response of the visual network is important to deeply understand the fastest biochemical pathway known to date. The broad goal of the project is to understand the evolutionary divergence in the same sensory machinery in species having different blood temperature (i.e. amphibians versus mammals) and the basis for species-specific optimization of the visual mechanisms at body temperature. Other sensory systems, for instance olfaction, taste and nociception also share significant biochemical analogies with phototransduction. Finally, the biochemical organization of the phototransduction cascade constitutes a template for many other signaling pathways of pharmacological and biomedical interest.

Prof. Dr. Gerhard Fischer

HWK Fellow
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Fellowship period
01.04.15-30.06.15

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Cultures of Participation and New Media

Cultures are defined in part by their media and their tools for thinking, working, learning, and collaborating. In the past, the design of most media emphasized a clear distinction between producers and consumers. For example: dominated by this paradigm, our current educational institutions often treat learners as consumers, fostering a mindset in students of »consumerism« rather than »ownership of problems« for the rest of their lives. The rise in social computing (based on social production and mass collaboration) has facilitated a shift from consumer cultures (specialized in producing finished artifacts to be consumed passively) to cultures of participation (in which all people are provided with the means to participate and to contribute actively in personally meaningful problems). These developments represent unique and fundamental opportunities, challenges, and transformative changes for innovative research and practice in Cognitive Science, specifically deepening the understanding of the HWK theme »cultural intelligence connecting the brain and the world«. During the proposed fellowship at the HWK, I will further explore (in close collaboration with scientists of the region) initial theoretical foundations and system developments for understanding, fostering, and supporting cultures of participation. A major focus will be to write a book integrating and documenting these developments.

Prof. Dr. Illana Gozes

HWK Fellow
Brain

Fellowship period
14.07.15-30.07.15

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Tel Aviv University
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Cooperation partners
Prof. Dr. Christiane Richter-Landsberg
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Prof. Dr. Peter W. Baas
Hanse-Wissenschaftskolleg

Better Understanding of Tau Pathology, Apoptosis and Stress in Oligodendrocytes: Toward Better Solutions for Neurodegenerative Diseases

The most prevalent neurodegenerative disease is Alzheimer`s disease (AD). It belongs to a group of dementias termed tauopathies, being characterized by pathological inclusions of the microtubule (MT) associated protein tau. MTs are key cytoskeletal elements which provide structural support and are required for intracellular transport processes. Tau binds to MTs and is essential for their stabilization and polymerization. In AD tau deposits are prominent in neurons, while in other tauopathies, such as progressive supranuclear palsy (PSP) and corticobasal degeneration (CBD) they originate in nerve cells and glia, specifically as coiled bodies in oligodendrocytes. Oligodendrocytes, the myelin forming cells of the CNS, are essential for nervous system function and contain an elaborate MT network which is structurally supported by tau proteins. In the present proposal we focus on activity-dependent neuroprotective protein (ADNP). ADNP-deficiency leads to tauopathy which is inhibited by the ADNP derived peptide davunetide (NAP), a pioneer drug candidate targeting tau/MTs thereby providing neuroprotection. Its impact on oligodendrocyte biology has not been studied. Our aim is to investigate whether ADNP and NAP are associated with glia cell protection and glial tau pathology. We will combine our expertise on glial cell research and neuronal translational research, looking at MT properties and functional aspects of tau under control and stressful conditions.

Prof. Dr. Peter W. Baas

Twin Fellow of Prof. Dr. Illana Gozes
Brain

Fellowship period
13.07.15-27.07.15

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Cooperation partner
Prof. Dr. Illana Gozes
Hanse-Wissenschaftskolleg

Better Understanding of Tau Pathology, Apoptosis and Stress in Oligodendrocytes: Toward Better Solutions for Neurodegenerative Disease

The mission of my research program is to elucidate the cellular and molecular mechanisms that establish and regulate the microtubule arrays of the neuron during development, health, and disease. The goals of my program are to: (1) Elucidate the roles that microtubule play in neuronal development, with emphasis on issues including axon development, dendrite differentiation, growth cone turning, neuronal migration, and the branching of axons and dendrites; (2) Elucidate the cellular and molecular mechanisms by which the microtubule arrays of the neuron are established and regulated to carry out their various functional roles, with emphasis on microtubule-based molecular motor proteins and microtubule-severing proteins; (3) Elucidate the contribution of microtubule-based mechanisms to nerve degeneration that accompany disease and injury, with emphasis on Spinal Cord Injury, Alzheimer's Disease, Gulf War Illness and Hereditary Spastic Paraplegia; and (4) Develop novel microtubule-based therapies for treating injured or diseased axons.

Prof. Dr. Dr. Onur Güntürkün

OLB Fellow

Brain

Fellowship period

20.11.15-26.11.15

Home institution

Ruhr University Bochum
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Die Gedanken sind frei - aber werden sie es auch bleiben?

Das Gehirn des Menschen enthält über 100 Milliarden Nervenzellen, die durch 1 Billiarde Synapsen miteinander verbunden sind und pro Sekunde 10 Billiarden synaptische Informationseinheiten erzeugen. Wie entsteht hierbei die Ordnung unseres Denkens und warum ist diese Ordnung bei einigen Erkrankungen gestört? Es ist wahrscheinlich, dass wir eines Tages die Prinzipien dieser Ordnung verstehen werden und vielleicht können wir dann auch Menschen helfen, deren Denkstruktur zusammengebrochen ist. Aber können wir dann auch Gedanken lesen? Wohl kaum. Die Lebenserfahrungen eines Menschen sind in der Billiarde Synapsen gespeichert. Somit ist das synaptische Netzwerk so individuell wie unsere Biographie. Technische Systeme können bereits einige wenige Wahrnehmungen und Entscheidungen aus dem Gehirn lesen. Aber um richtig Gedanken lesen zu können, müsste der größte Teil des neuronalen Netzwerks ausgelesen werden. Dieser (Alp)Traum ist jenseits aller Möglichkeiten, die momentan vorstellbar sind.

Assoc. Prof. Dr. Zili Liu

HWK Fellow
Brain

Fellowship period
07.06.15-25.08.15

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University of Bremen

Specificity and Transfer in Visual Perceptual Learning – Towards a Unified Account in Motion and Form Perceptual Learning

Visual perceptual learning refers to the remarkable capability of the human visual system to improve its performance via practice. Understanding the nature of this learning is an important question in brain research. One way to understand the nature of the learning is to investigate the extent to which the learning can transfer from one stimulus condition to another. In more than a century of research, students have found that perceptual learning is largely specific to the training stimulus, and not transferrable to an untrained stimulus. More recently, however, a number of studies have shown that, with new training techniques, perceptual learning can transfer 100% from a trained stimulus to a seemingly arbitrarily chosen untrained stimulus. This new result, if indeed applicable to general perceptual learning studies, will revolutionize the way perceptual learning has been conceptualized in the entire 20th century, and will have tremendous implications in practical applications such as education, rehabilitation, and sports. The goal of the proposed research is to experimentally apply the new training techniques to traditional studies in both form and motion perceptual learning, in order to resolve the controversies created by opposite predictions. It will be a significant contribution because much understanding will be advanced in this issue.

Prof. Dr. John Middlebrooks

HWK Fellow
Brain

Fellowship period
07.06.15-25.08.15

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University of Oldenburg

Cortical Substrates of Auditory Scene Analysis

Listeners show a remarkable ability to isolate relevant signals in the presence of other competing sounds. Two characteristics of sounds that aid in that task are that all the spectral components from any given sound source have common fluctuations in amplitude (»comodulation«) and that all the components arise from the same location in space. These characteristics help to identify a signal as a discrete auditory object and to release it from masking by other sounds that differ in modulation and location. Comodulation and location are joint properties of any natural sound, but most often are studied in isolation. The two exceptions are the work of one group that suggests that masker comodulation facilitates sound detection on the basis of location (a nonlinear interaction) and the work of another group that finds that modulation and location effects are mutually independent, that they combine linearly. Surprisingly, we have almost no information regarding patterns of neural activity in the auditory cortex that underlie these phenomena. We propose to study cortical response patterns that could account for release from masking by comodulation and by differing signal and masker location cues. Further, we will examine cortical mechanisms by which masker comodulation could facilitate signal detection based on location in some conditions and by which comodulation and location effects could add linearly in others.

Prof. Dr. Mihai Nadin

HWK Honorary Fellow
Brain

Fellowship period
26.09.15-24.10.15

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antÉ - Institute for Research in
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Richardson, Texas
USA

Anticipation Across Disciplines

The Study Group »Anticipation Across Disciplines« was established to investigate the potential of anticipation as a concept of research within a variety of disciplines. Three international conferences focused on the main topics of investigation: The workshop »Learning from the Past: Soviet/ Russian contributions to a science of anticipation« (2014) explored early concepts of anticipation formulated in the early 20th century by Russian/ Soviet scientists mostly in physiology and cybernetics and made those approaches available to modern research. The second conference »Anticipation Across Disciplines« (2014) brought together scientists and scholars from fields as diverse as cognitive science, physiology, computer sciences, politics, economics, energy research, engineering, music, architecture and many others to find both discipline specific and common theoretical concepts of anticipation. The third meeting (2015) focused on anticipatory concepts in medical research and in clinical practice (»Anticipation and Medicine«). Topics included neurological diseases explained as disorders of anticipatory processes, large-scale planning of health care, new technological developments for diagnostics and treatment, and even techniques of prevention in alternative medicine.

Prof. Dr. Marc Schönwiesner

HWK Fellow
Brain

Fellowship period
10.01.15-15.05.15
09.12.15-25.01.16

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In-Ear Brain-Computer Interface / Near-Infrared Spectroscopy of Auditory Cortex

Im Projekt 1 soll ein miniaturisiertes Brain-Computer Interface Geräte zur Messung und Verarbeitung von elektrischen Hirnsignalen im Gehörgang entwickelt werden. Ein solches Gerät ermöglicht Anwendungen im Bereich der personalisierten Medizin (durch kontinuierliche Messung von Hirn- und Körperfunktionen) und der Hörgeräteentwicklung. Das HWK-Fellowship ermöglicht die Testung eines Prototypen und die Optimierung der EEG-Messung im Gehörgang.

In Projekt 2 soll Nahinfrarotspektroskopie (NIRS), ein nicht-invasives bildgebendes Verfahren, zur Messung von Aktivität im menschlichen Hörkortex verwendet werden. NIRS erlaubt die zeitlich hochaufgelöste Messung der durch Nervenaktivität hervorgerufenen Blutzufuhr zum Gehirn. Diese Antwort liegt auch der funktionellen Magnetresonanztomographie zugrunde. Ein besseres Verständnis der Form und Variabilität dieser Antwort im Hörkortex würde die Auswertung von fMRT-Daten deutlich verbessern.

Dr. Kirsten Weber

HWK Fellow
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Fellowship period
01.06.15-31.03.16

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Prof. Dr. Jochem Rieger
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Predictive Influences on Language Processing: An fMRI Connectivity Study

Language is a core part of the human experience. It engulfs our everyday life and enables communication and thought. Language processing is highly complex, we do not process words in isolation, but in rich contexts; words are embedded in sentences, sentences in discourse. All these elements of language have to be understood within the short time frames that the information comes in (be it in the form of speech, signs or text). Consequently, language processing is highly predictive, we use context to form expectations, to predict which type of information will come next, down to the level of specific words. If I say »It was a windy autumn day. The girl went outside to fly her…« you expect the ending to be »kite«. These predictive processes, that enable our quick online processing of language, rely on a broad language network, encompassing frontal and temporal regions of the brain. To accomplish this task these regions have to communicate with each other. However, the exact nature of this interaction is understudied. We therefore propose to investigate the dynamic interactions between frontal and temporal regions in the brain during language processing using connectivity analysis with fMRI, a neuroimaging technique. Understanding these dynamic interplays between brain regions has important implications for understanding what goes wrong in disorders such as schizophrenia where a break-down in predictive processes causes language processing problems.



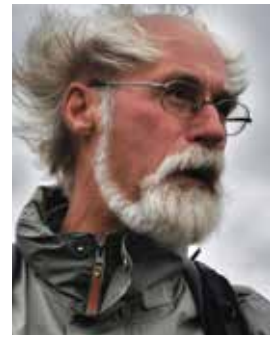




Earth











Prof. Dr. Carol Arnosti

HWK Fellow
Earth

Fellowship period
15.12.15-23.06.16

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University of North Carolina at Chapel Hill
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University of Oldenburg

Prof. Dr. Rudolf Amann
Prof. Dr. Antje Boetius
Max Planck Institute for Marine Microbiology, Bremen

Capabilities: Linking Composition and Extracellular Enzymatic Function Across Diverse Marine Environments

Heterotrophic microbial communities produce extracellular enzymes to hydrolyze substrates to sizes sufficiently small for cellular uptake. The structural specificities of these enzymes thus determine the rate and location of carbon cycling in the ocean. We have recently found that the enzymatic capabilities of surface water communities vary systematically with latitude, with high latitude microbial communities hydrolyzing a narrower range of substrates than their temperate counterparts. We have also found systematic differences between benthic and pelagic microbial communities, with pelagic communities typically hydrolyzing only a subset of substrates compared to their benthic counterparts. We hypothesize that these differences in enzymatic function are linked to differences in microbial community composition, differences that extend to their genetic capabilities to produce specific enzymes. To investigate this hypothesis, we will analyze enzymatic capabilities, microbial community composition, and metagenomic data related to specific hydrolytic enzymes in samples from the water column and sediments of the Arctic Ocean, and in surface waters of the North and South Atlantic Ocean. These investigations will be extended through bioinfomatic searches of metagenomic databases from other regions of the world's oceans. Our interdisciplinary approach will open up a new quantitative understanding of key steps in marine organic matter cycling.

Dr. Hong-yan Bao

HWK Junior Fellow
Earth

Fellowship period
01.08.15-31.05.16

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University of Oldenburg

How do Extreme Events Affect the Riverine Export of Dissolved Organic Matter to the Ocean?

Rivers are important ecosystem to humans as they are the major freshwater and food sources to us. However, rivers are not only important to humans, but also to the organism living in as well as the estuarine and oceanic organisms partly because of the dissolved organic matter (DOM) in the waters. Moreover, the transport of riverine dissolved organic matter to the oceans also plays important roles in the global carbon cycle, e.g., the degradation of terrestrial organic matter could be a source of CO_2 to the atmosphere. The transport of riverine DOM is closely related with the hydrology. Extreme climate, such as typhoon, can not only affect our daily life, but also riverine DOM. However, little is known about how extreme rain events would affect the DOM composition and flux, especially from molecular level. To fills this gap, the challenges are to get river samples during the typhoon and characterize the DOM compositions. The present study aims to understand how extreme events affect the riverine export of DOM to the oceans. Comprehensive sampling in the river and estuary is planned pre-, during and post- typhoon. We will apply state-of-the-art technology – Fourier-transform ion cyclotron resonance mass spectrometry (FT-ICR-MS) – to trace the DOM in a general way and quantify specific molecules, including dissolve black carbon and lignin phenols. Our present study could help us better understanding how the terrestrial ecosystem will response to the future climate change.

Prof. Dr. Marthán Bester

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Fellowship period
06.07.15-24.08.15

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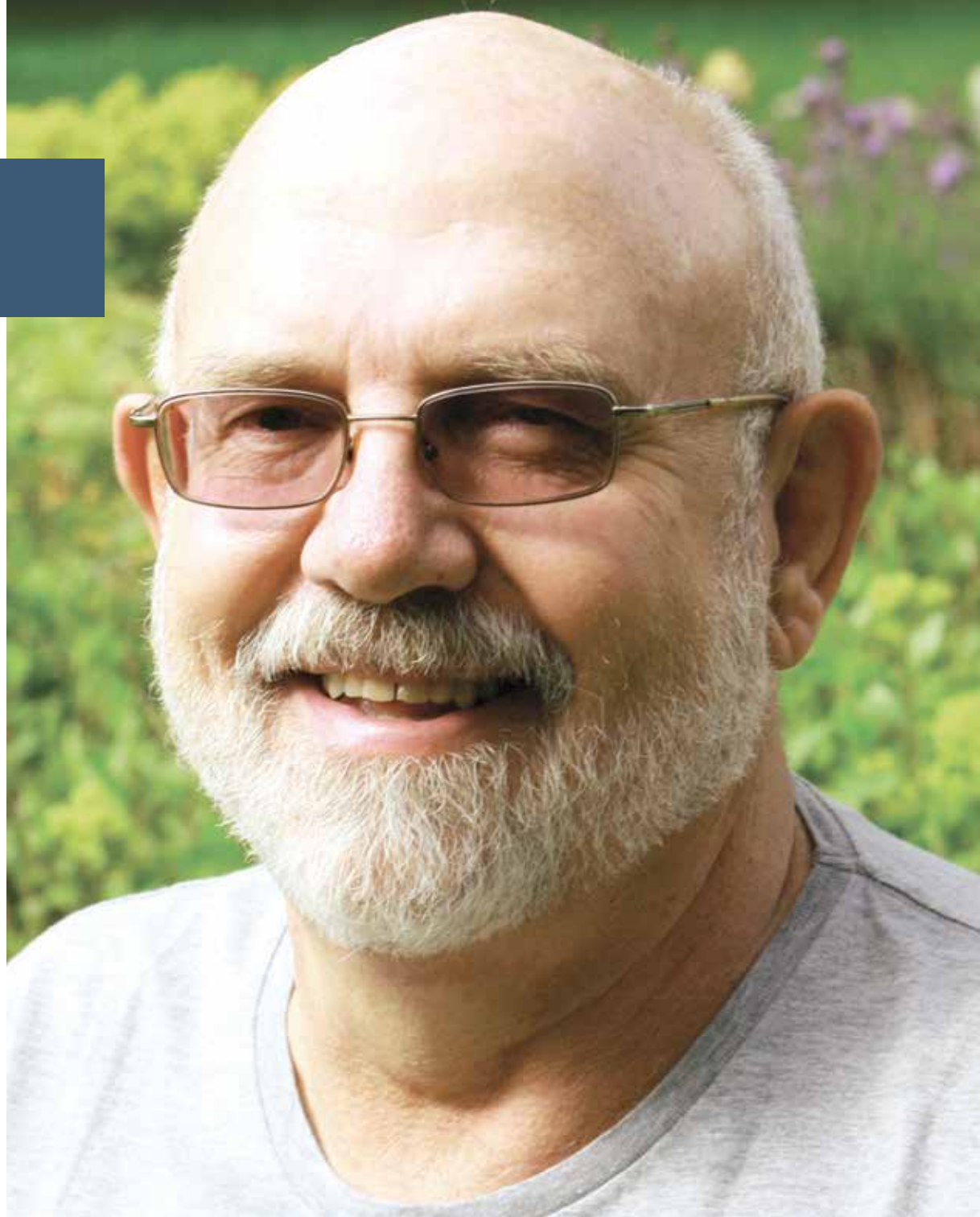

Investigation of Seals at the Filchner Outflow Systems, Antarctica

As highly abundant top predators in the Southern Ocean, seals can be considered indicator species for effects of climate-mediated changes in the Antarctic marine environment. It is predicted that the abundance and distribution of Antarctic seal species will be influenced by changes in their food resources as a result of climate change. To this end the seals' status also indicates potential effects of human-mediated impacts on the marine environment of the Southern Ocean. According to earlier estimates, around half of the population of Antarctic pack ice seals is found in the Atlantic sector of the Southern Ocean - the Weddell Sea. Its southern region, the marine vicinities of the Filchner Ice Shelf, is of major importance for the global ocean circulation. The underlying hydrographical features are supposed to be the primary cause converting this region into a biological »hotspot«, where upper and intermediate trophic level interactions are maximised. The key element of the project is the investigation of the abundance and distribution of pack ice seals in the aforementioned region, with an attempt for further trend detection on the stability or change of the proposed foraging spots.

W. Christiaan Oosthuizen

HWK Twin Fellow of Prof. Dr. Marthán Bester
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Fellowship period
26.10.15-16.11.15

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Hanse-Wissenschaftskolleg

Seal Research at the Filchner Outflow System/SEAFOS

This project forms part of a multidisciplinary investigation of the Filchner Outflow System in the Weddell Sea, Antarctica, a key region for global ocean circulation. The occurrence of large numbers of seals (a »biological hot spot«) would crucially impact on the establishment of a proposed marine protected area within the Weddell Sea. Consequently, one of the aims of the SEAFOS team aboard the PS82 Weddell Sea cruise of the RV Polarstern was to determine the distribution and abundance of seals within this area of the Southern Ocean.

While the objective of estimating abundance of animals seem trivial, it is challenging in practice. In fact, it is impossible to count all the seals in the Weddell Sea: the area is simply too large to survey exhaustively, all seals are not available for detection (e.g., seals may be diving underwater) and even seals that are available for detection may be overlooked. To overcome these challenges, we calculate the density of seals in small areas surveyed by helicopter, accounting for imperfect detection and seal 'availability'. A model-based approach is then used to extrapolate seal densities from the surveyed plots to the entire region, using environmental covariates such as sea ice concentration and bathymetry to predict the distribution and spatially referenced abundance of seals.

Prof. Dr. Gregor P. Eberli

HWK Fellow
Earth

Fellowship period
10.05.15-07.08.15

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University of Miami
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Cooperation partner
Prof. Dr. Dierk Hebbeln
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Processes Controlling Cold-Water Coral Systems from the Gulf of Mexico to the Western Atlantic

Cold water corals (CWC) thrive without sunlight in cold ocean waters in usually several hundred meters of water depth where they form highly diverse ecosystems. Like their shallow water relatives in the tropics, they form large sea floor structures with heights up to 380 m. Only recent advances in ocean technology now allow studying the factors controlling the initiation and growth of these systems. During an expedition in 2012, a formidable data set on the distribution of CWC in the Gulf of Mexico Florida region has been collected. Linking the distribution pattern of CWC in this region to the environmental forcing conditions and to the sea floor topography will be in the focus of the HWK fellowship project »Processes controlling cold water coral systems from the Gulf of Mexico to the western Atlantic« proposed by Gregor Eberli from the University of Miami and to be carried out in close collaboration with Dr. Hebbeln's team at the University of Bremen. It aims to unravel how physical and sedimentological processes influence the development of CWCs and of the large sea floor structures they form. As this expedition was of a rather exploratory nature, the knowledge gained will be analyzed in a workshop at the HWK aiming to develop a proposal for a follow up research cruise to the region. A third and exciting aspect will be to show the general public the beauty of these corals in an exhibition of ultradeep underwater photographs that were collected by remotely operated vehicles.

Assoc. Prof. Dr. Mohamed A. Farag

HWK Fellow
Earth

Fellowship period
14.07.15-15.10.15

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Cairo University
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Cooperation partners
Prof. Dr. Hildegard Westphal
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Dr. Andrea Porzel
Leibniz Institute of Plant Biochemistry, Halle

Soft Coral Biodiversity and the Bleaching Problem in the Egyptian Red Sea: A Comparative MS and NMR Metabolomics Approach

Chemical substances play an important role in the interaction between all living organisms and their environment. The research that considers the impact of naturally occurring substances in the interaction between organisms, is called chemical ecology. Research in chemical ecology in marine environments is still in the beginning of its exploration and it is reasonable to assume that it has a great potential. The Red Sea is an epicenter for marine biodiversity with a high percentage of endemic soft corals. Indeed, of the 180 soft coral species identified world-wide, approximately 40 per cent are native to the Red Sea. Such coral reef ecosystems support enormous biological diversity, including structurally and functionally complex living organism communities. Corals, when exposed to elevated seawater temperatures, will exhibit “bleaching”; i.e., they lose their algal partnership, which provide color to the host coral tissue, leaving the tissue transparent and eventually to die. In this project, we will utilize cutting edge analytical techniques for metabolites analysis (metabolomics) to understand potential chemical aspects of the mechanism of bleaching in soft corals in response to elevated water temperatures and how it occurs in soft corals. In order to better understand this relationship, we plan to examine soft corals specimens from different species and at different locations and depth levels in the Red Sea, by utilizing large scale untargeted chemical analyses.

Dr. Charlotte Havermans

HWK Junior Fellow
Earth

Fellowship period
07.04.15-25.05.15
01.08.15-30.10.15

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Royal Belgian Institute of Natural Sciences
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Themisto gaudichaudii, a Hyperiid Amphipod on the Fast Lane to Take Over a Central Role From Krill in the Southern Ocean?

Antarctica's highly adapted oceanic ecosystems are prone to significant environmental changes over the next decades and major distributional and ecological shifts are likely to occur between its key species. However, species interactions in Southern Ocean waters are too poorly documented to reliably predict these shifts. One major knowledge gap is the role of the predatory amphipod crustacean Themisto gaudichaudii, which, by its abundance and position in the food web, has the potential to critically affect other key players such as krill. Themisto is characterized by a distribution extending from the Antarctic continent to the sub-Tropical Front along a latitudinal gradient of environmental conditions covering three distinct zones: high-Antarctic, sub-Antarctic and temperate waters. Hence, this species may already possess lineages adapted to higher temperatures and is likely to extend its range southward into warming waters near the Antarctic continent where krill currently dominates the food web.
The aim of this research project is to provide comprehensive information on the genetic connectivity of Themisto, which is a prerequisite to further understanding how environmental changes may be translated into potential species shifts. The objective of the proposed project aims to characterize the spatial genetic structure and analyse the level of gene flow between populations over a large geographic scale using newly available molecular tools for p population genetics.

Prof. em. Dr. George A. Jackson

HWK Fellow
Earth

Fellowship period
01.09.15-30.11.2015

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Dr. Morton Iversen
University of Bremen

Predicting the Effects of Marine Organisms on the Size Distributions of Falling Particles

The vertical movement of organic matter in the ocean starts near the surface, where photosynthesis produces organic particles from carbon dioxide and light. The downward motion of this material feeds life deeper in the ocean. How fast the material falls and how much material it carries downward depends on the abundance and size of the particles. These properties are changed as animals and microbes consume and alter the particles on their downward journey. I propose to develop models of the alteration processes that can be tested using observations being made by Dr. Morten Iversen of the HGF Young Investigator Group Seapump at AWI/MARUM/University of Bremen. Particularly useful will be models that describe the effects of feeding by different organisms on the relative sizes of the particles and how it changes with depth. Alternate modes of particle consumption affect particle sizes differently. The models to be developed will be compared to observed changes in particle sizes with depth to test their validity and then, if successful, to infer the mechanisms responsible for the changes. Besides helping us understand how the ocean distributes food into the interior, this research helps us to understand how the ocean removes carbon from the atmosphere and redistributes into the interior, thereby increasing our ability to predict accurately the effects of the changing CO_2 levels on the ocean.

Prof. Dr. Darlene R. Ketten

HWK Fellow
Earth

Fellowship period
15.01.15-01.08.15

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Dr. Olaf Boebel
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Ocean Sustainability: Marine Megafauna and the Potential for Anthropogenic Sound Impacts

Ocean bioacoustics offers the opportunity for extraordinary advances in auditory and cognitive research which, at the same time, are imperative for responsible stewardship of the oceans. However, at the moment, we lack a critical synthesis of the multi-disciplinary data needed to address responsibly marine acoustic issues. The primary goal for this fellowship is to develop a treatise that synthesizes current knowledge on hearing in marine species and noise related hearing loss and to apply that knowledge in the context of risk analyses for potential impacts from human generated sound in the ocean. It is hoped this project will not only provide a landmark document but also facilitate collaborative efforts and encourage scientists to assist and inform regulatory decisions; i.e., to explore transitioning data from the lab to the socio-political arenas for the public, government agencies, the military, and industry, all of which have common environmental concerns. To accomplish this, knowledge from three domains: marine research, auditory physiology, and clinical research on noise impacts, must be brought together. The proposed treatise will provide a crossdisciplinary perspective on what is known about the mechanisms and potential for acoustic impacts in marine systems and how to evaluate the significance of acoustic exposures for the health of not simply single individual exposures but how to determine the prospect for population level consequences.

Prof. Dr. Carina B. Lange

HWK Fellow
Earth

Fellowship period
10.10.15-14.01.16

Home institution
University of Concepcion
Department of Oceanography
COPAS
Concepcion
Chile

Cooperation partners
Dr. Frank Lamy
Prof. Dr. Ralf Tiedemann
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Southern Hemisphere Climate and Ocean Variability from Marine Archives in Southern Chile

The proposal by Dr. Carina Lange (University of Concepción, Chile) aims at reconstructing southeast Pacific natural climate and ocean variability throughout the present Holocene and back into the last glacial, based on high resolution studies of sediment cores from the Chilean fjords and the continental margin around the southern tip of South America. What makes this region so unique and important?: i) It is the only land mass intersecting the core of the Southern Westerly winds which are the drivers of high precipitation and snow accumulation in the western part of the Andes and which also play a crucial role for Drake Passage throughflow and the Antarctic Circumpolar Current; ii) it holds a key position within the global atmospheric and oceanic framework providing insights into key processes including atmospheric CO_2 variations; and iii) it is still considered to be a pristine zone with the largest freshwater reserves of the planet although the region is showing clear signs of environmental/ anthropogenic stress. Because instrumental climate timeseries from the Patagonian region only cover the past few decades, the long term perspective we can acquire from highly resolved marine sediment archives, as proposed here, is crucial for the understanding of Southern Hemisphere climate dynamics. Additionally, the proposed work will strengthen German Chilean academic ties even further since it includes collaboration with researchers from the Alfred Wegener Institut in Bremerhaven.

Dr. Brandi Kiel Reese

HWK Junior Fellow
Earth

Fellowship period
25.04.15-10.08.15

Home institution
Texas A&M University-Corpus Christi
Department of Life Sciences
Corpus Christi, Texas
USA

Cooperation partner
Prof. Dr. Kai-Uwe Hinrichs
University of Bremen

Expanding the Global Carbon Cycle: A Novel Characterization of Fungi Within Sub-Seafloor Sediments

Microbial life is widespread in deep ocean sediments; however limited studies to date have focused on two of the three domains of life: Bacteria and Archaea. Recent discoveries have been made that active Eukarya (i.e., fungi) populations also live in deeply buried marine sediment. The discovery of fungi is unique because it has the potential to provide a source of organic carbon to Bacteria and Archaea populations once they die, and is capable of using degraded carbon as a food source, which Bacteria and Archaea are not able to use. The presence of fungi and their ability to use old carbon can have a significant impact on the current interpretation of the global carbon cycle and other ocean sediment biogeochemical cycles. The proposed research would build on my initial discovery and would characterize the fungal physiology, growth rates and the types of carbon that deep subsurface fungi can use by analyzing their cellular membranes.

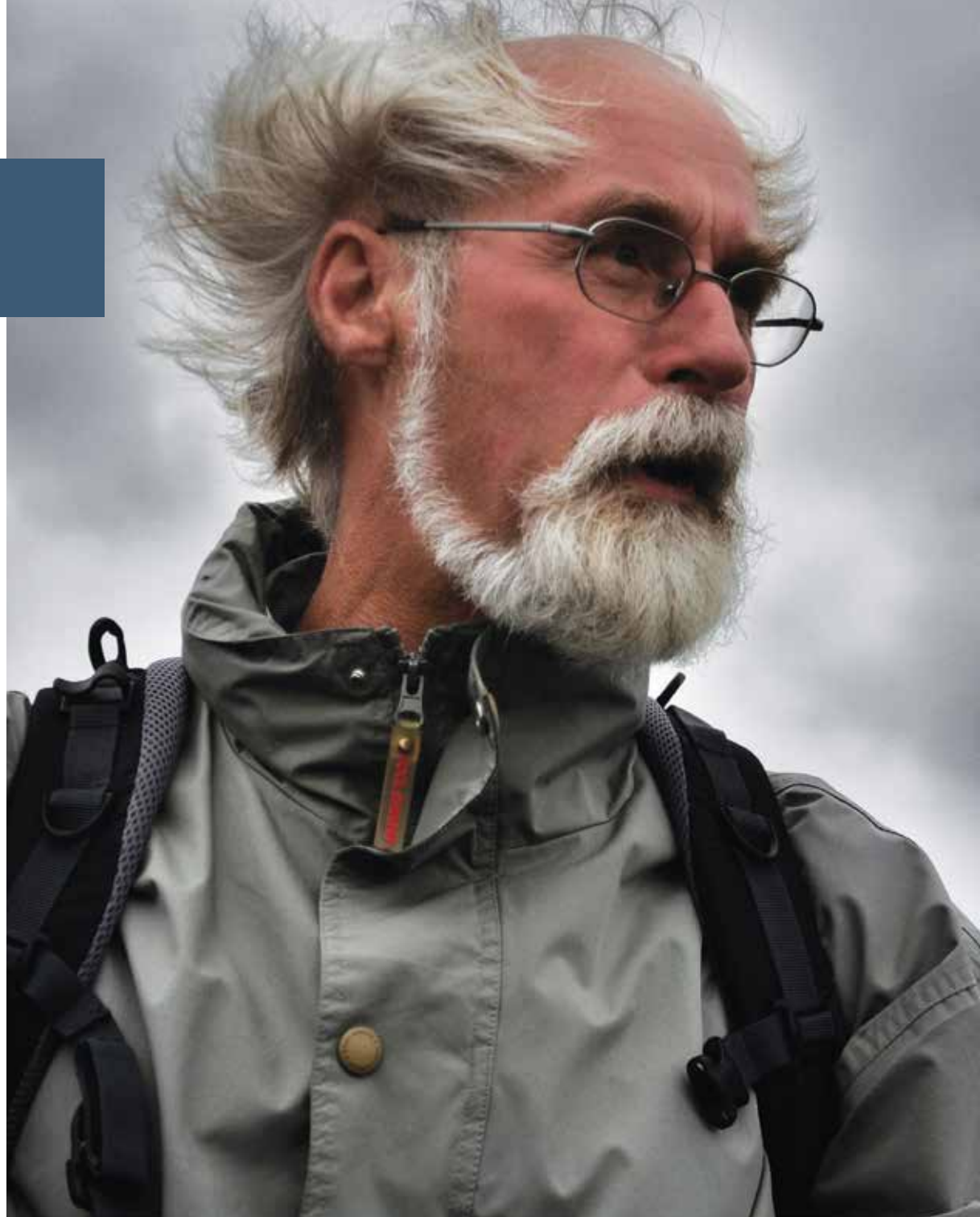
Prof. Dr. Karsten Reise

Associated Fellow
Earth

Fellowship period
01.04.13-31.10.15

Home institution
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven
Sylt
Germany

Cooperation partner
Dr. Doris Meyerdierks
Hanse-Wissenschaftskolleg



Kurswechsel Küste

»Kurswechsel Küste« – so heißt das von dem Hanse-Wissenschaftskolleg (HWK) initiierte und von der Bremer Landesbank über drei Jahre hinweg geförderte Buchprojekt, an dessen Ende jetzt ein Buch mit dem Titel »Kurswechsel Küste – Was tun, wenn die Nordsee steigt?« erscheint.

Idee und Konzept zu dem ambitionierten Buchprojekt, in dem die Sorge um die Zukunft der nordwestdeutschen Küstenlandschaft vor dem Hintergrund des Meeresspiegelanstiegs in Folge des Klimawandels steht, stammt von Dr. Doris Meyerdierks, am Hanse-Wissenschaftskolleg Referentin für den Wissenschaftsbereich Earth. Für die wissenschaftliche Leitung des Projekts war Prof. Dr. Karsten Reise verantwortlich, ehemaliger Leiter der Wattenmeerstation Sylt des Alfred-Wegener Instituts, Helmholtz-Zentrum für Polar- und Meeresforschung, der jetzt als Herausgeber des Buches fungiert.

Assoc. Prof. Dr. Justin B. Ries

HWK Fellow
Earth

Fellowship period
01.12.15-30.08.16

Home institution
Northeastern University
Department of Marine and
Environmental Sciences
Marine Science Center
Nahant, Massachusetts
USA

Cooperation partners
Prof. Dr. Jelle Bijma
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Dr. Dirk de Beer
Max Planck Institute for Marine Microbiology,
Bremen
Prof. Dr. Hildegard Westphal
Leibniz Center for Tropical Marine Ecology
(ZMT), Bremen

Using a Combined Microelectrode/Boron-Isotope Approach to Measuring the pH of Corals' Calcifying Fluids Under Normal and CO_2-Acidified Conditions

Anthropogenic elevation of atmospheric pCO_2 is causing our oceans to acidify. Experiments show that ocean acidification (OA) impairs the ability of some marine calcifiers to build their protective skeletons and shells, while other species appear more resilient. This variability in calcifiers' response to OA is poorly understood. Corals and other marine calcifiers are thought to induce mineralization of $CaCO_3$ by elevating pH of their calcifying fluid, thereby converting HCO_3^- (~90% of seawater carbon) to CO_3^{2-}, the form of carbon used in calcification. Calcifying fluid pH should therefore be a key determinant of how different marine calcifiers respond to OA—yet we have trouble measuring it in most calcifiers. The boron isotopic composition (^{11}B) of non-biological $CaCO_3$ precipitated directly from seawater is controlled by and, thus, reflects seawater pH. However, since corals appear not to precipitate their skeletal aragonite directly from seawater, but rather from a discrete 'calcifying fluid', coral $\delta^{11}B$ may record calcifying fluid pH rather than seawater pH. Our initial measurements of shell/skeletal $\delta^{11}B$ for a range of calcifiers are consistent with microelectrode pH measurements of their calcifying fluids. Here, I propose to combine pH microelectrode measurements (with Prof. Dirk DeBeer at MPI) and coral skeletal $\delta^{11}B$ (with Prof. Jelle Bijma of AWI) to constrain calcifying fluid pH of three coral species cultured under normal and elevated CO_2 (with Prof. Hildegard Westphal at ZMT).

Dr. Gabriel A. Singer

HWK Fellow
Earth

Fellowship period
03.11.15-30.04.16

Home institution
Leibniz-Institute of Freshwater Ecology
and Inland Fisheries, IGB
Department I, Ecohydrology
Berlin
Germany

Cooperation partners
Prof. Dr. Thorsten Dittmar
University of Oldenburg

Dr. Tom J. Battin
University of Vienna

Linking Diversity of Dissolved Organic Matter (DOM) to Ecosystem Functioning - Implications of Network-Induced Resource Mixing and Diversity-Enhancement of DOM for CO_2-Evasion in Fluvial Ecosystems

Fluvial ecosystems (streams, rivers, estuaries) are recognized as important components of the carbon cycle, actively metabolizing terrestrially derived organic matter during downstream transport from the continents to the oceans. The resulting CO_2-evasion fluxes are in stark contrast to the commonly perceived recalcitrance of terrestrial organic matter. The metabolism of dissolved organic matter (DOM), the dominant fraction of fluvial organic matter with tremendous molecular diversity, is controlled by its chemical composition and origin but also depends on the environmental context, which follows distinct geophysical gradients along the fluvial continuum, where mixing of water bodies and contained resources occurs at multiple interfaces. I propose to study the linkages of DOM-diversity to ecosystem functioning given by bacterial production and respiration, which ultimately translate into resource provisioning for the aquatic food web and evasion of climatically active CO_2 to the atmosphere. I propose to use junctions in the fluvial network, where tributaries meet and form a confluence, as prominent situations inducing resource mixing and increasing DOM diversity. By combining bioassays with ultrahigh-resolution mass-spectrometry of DOM and potentially also in-situ, field-based measurements of metabolism, I aim at characterizing DOM diversity and bioavailability at a molecular level and assessing its implications for bacterial production and respiration.

Prof. Dr. Marta E. Torres

HWK Fellow
Earth

Fellowship period
19.06.15-22.08.15

Home institution
Oregon State University
College of Oceanic & Atmospheric Sciences
Corvallis, Oregon
USA

Cooperation partners
Prof. Dr. Hans-Jürgen Brumsack
University of Oldenburg

Prof. Dr. Gerhard Bohrmann
Dr. Verena Heuer
Dr. Heiko Sahling
University of Bremen

PD Dr. Sabine Kasten
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Collaborative Studies on Fluid Migration Through the Oceanic Lithosphere: Role of Flow at Plate Boundaries on Chemical and Biological Change

Fluid transport through the oceanic lithosphere and associated cold seeps play key roles on margin hydrology, chemical cycling and energy transfer between energy and biota. I am applying for a 10 month Hanse-Wissenschaftskolleg Fellowship to conduct geochemical studies in two new projects targeting contrasting regions of marine cold seepage, in close collaboration with researchers from MARUM and AWI Institutes. Cold seeps have been most commonly studied at either passive margins or convergent margins where sediment accretion creates large sediment complexes at the margin toe. The selected areas of study: the South Sandwich Plate (SSP) and the San Clemente Transform Fault (SCTF), exemplify two of the understudied tectonic end members where subsurface flow leads to fluid discharge at cold seeps. The opal rich, interoceanic margin of the SSP represents an unexplored erosive margin; a tectonic regime that has only been studied offshore Costa Rica. We expect that flow in the SSP will carry signatures of very deep sourced fluids with important consequences for margin hydrology and fluidbiota energy coupling. The San Clemente fault provides an excellent environment to study flow through thick turbidite deposits and fluid venting along a transform fault escarpment. This proposed program draws heavily from my previous studies in this region, and will allow us to constrain microbial processes on the natural bioreactor provided by bedded sands of the Navy Fan.

Dr. Maria Vernet

HWK Fellow
Earth

Fellowship period
01.02.15-15.04.15

Home institution
University of California, San Diego
Scripps Institution of Oceanograhy
Integrative Oceanography Division
La Jolla, California
USA

Cooperation partners
Dr. Mario Hoppema
Dr. Ilka Peeken
Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Assoc. Prof. Dr. Tammi Richardson
University of South Carolina, Columbia

Small Might not Mean Less: Phytoplankton Cell Size and Carbon Cycling in Polar Waters

Phytoplankton are single-cell algae that float at the surface of the ocean where well-illuminated, nutrient-rich waters are found. These algae are responsible for making organic carbon, food for animals in the ocean, including those living on the seafloor. The present understanding is that only phytoplankton species with large cells can support the carbon rain to depth. This last statement is not true, as data and models support the idea that small cells can also be involved in loss of carbon from the surface. As small cells are increasing in number and diversity in Arctic waters, it is essential to understand what role they play in polar systems. My idea is that the relationship between cell size and carbon rain to depth depends on who eats the phytoplankton, that is to say, the food web that they support. This project plans to study the role that small cells can have on carbon loss to depth through a critical re-vision of existing data, with the addition of modeling to understand the underlying processes of carbon cycling through polar food webs. Experts from AWI, Dr. Ilka Peeken and Dr. Mario Hoppema, and a modeler, Dr. T. Richardson, will participate in an interdisciplinary team to carry out this project. They will contribute data and their knowledge of polar ecosystems, and will help in construction of the polar food webs. Results will be published in scientific journals of wide distribution to scientists studying carbon cycling and high-latitude marine systems.

Prof. Dr. Alexandra Worden

HWK Fellow
Earth

Fellowship period
27.04.15-20.06.15

Home institution
Monterey Bay Aquarium Research Institute (MBARI)
Moss Landing, California
USA

Cooperation partners
Prof. Dr. Meinhard Simon
University of Oldenburg

Prof. Dr. Antje Boetius
Max Planck Institute for Marine Microbiology, Bremen

Dr. Björn Rost
Alfred Wegener Institute, Helmholtz Center for Polar and Marine Research (AWI), Bremerhaven

Making Connections in the Marine Carbon Cycle: Distributions and Strategies of Eukaryotic Picophytoplankton

Climate change is expected to have major impacts on phytoplankton, the photosynthetic organisms that are responsible for carbon dioxide uptake in the marine biosphere. Key climate change effects on the ocean are warming and increased stratification as well as acidification. It is essential that we gain mechanistic understanding of how phytoplankton will respond, how productivity will change, and downstream consequences for fisheries as well as carbon sequestration in the deep sea. This project will investigate the biodiversity and distributions of small marine phytoplankton in polar seas. Their diversity has only been recognized recently by the use of DNA sequencing. Excessive warming of the Arctic and sea ice retreat has already been implicated in the increase of small phytoplankton in some polar regions. Especially prominent is the replacement of large phytoplankton by the tiny alga Micromonas. However, the overall distributions and relative importance of these plankton are not well understood in high-latitude environments. Through collaborative research with scientists at the Universities of Bremen and Oldenburg, as well as the Alfred Wegener Institute, this project will characterize polar phytoplankton communities and reveal the physiological strategies that make the polar Micromonas species a winner. These studies will greatly enhance understanding of polar plankton diversity and ecology, and provide a baseline against which future change can be assessed.

Prof. Dr. Mikhail V. Zubkov

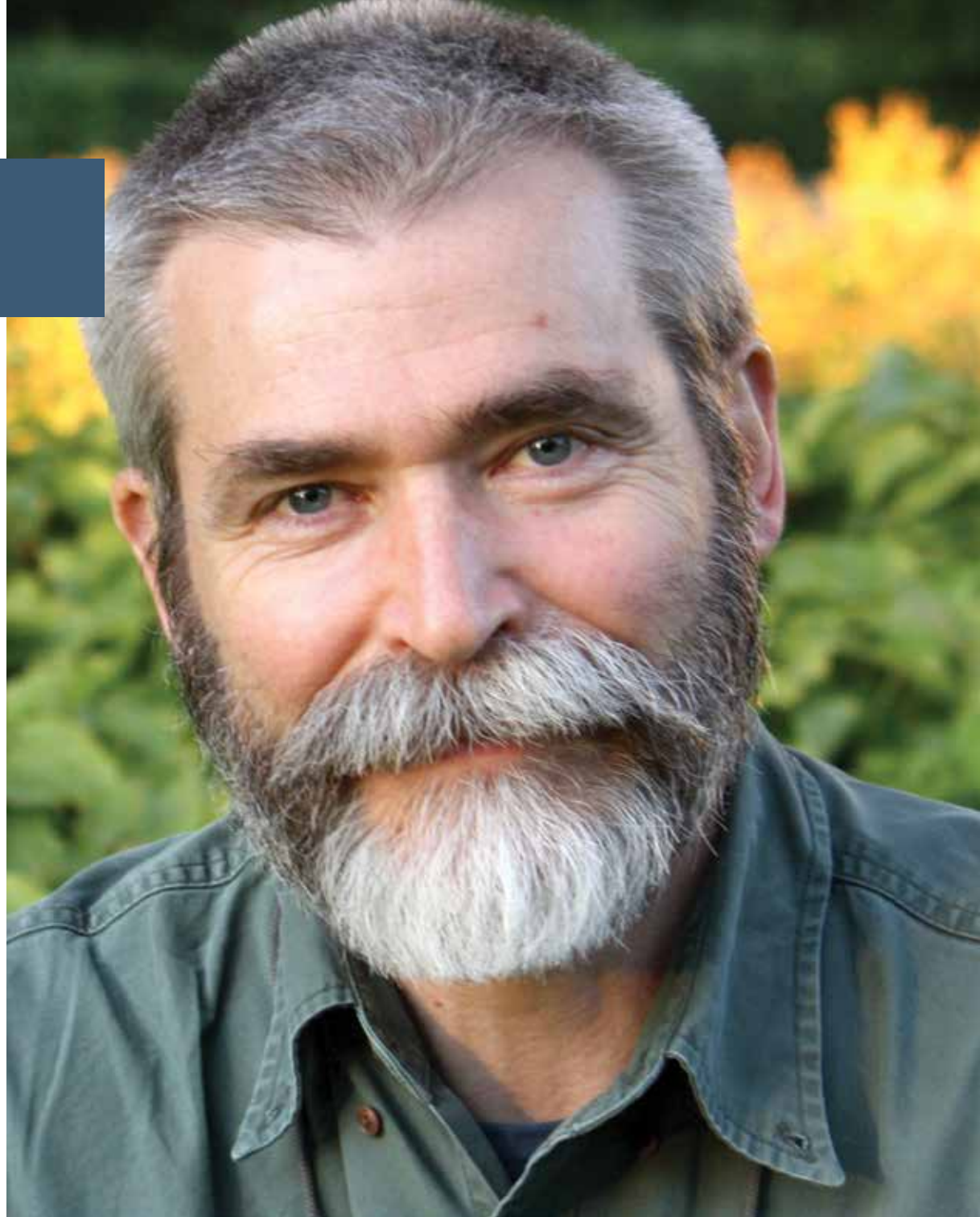
HWK Fellow
Earth

Fellowship period
01.09.15-30.11.15

Home institution
National Oceanography Centre, Southampton
Ocean Biogeochemistry and
Ecosystems Research Group
Southampton
United Kingdom

Cooperation partners
Prof. Dr. Rudolf Amann
Dr. Timothy Ferdelman
PD Dr. Bernhard Fuchs
Max Planck Institute for Marine Microbiology, Bremen

Prof. Dr. Dörte Becher
University of Greifswald



How do Prokaryotic Phototrophs Co-Exist with more Abundant Heterotrophs on the Oligotrophic Ocean Covering 40 % of Earth?

The principal goal is to explain the ecological basis of the most extensive biome on Earth. The paradox is that biomass of bacterial plants (Prochlorococcus) is less than biomass of bacteria (SAR11) consuming organic matter of plant origin. We hypothesise that the two most abundant oceanic microbes co-exist because of slower growth of SAR11. We seek answers to the following questions: What are the growth rates of Prochlorococcus and SAR11? How much is growth of SAR11 enhanced by light? Can selective feeding by protist predators control growth of Prochlorococcus and/or SAR11? We find out how general the answers are by focusing on experimental work in the subtropical gyres of the Pacific and Atlantic Oceans, which comprise ~75% of the total oligotrophic open ocean area.

We will use $^{14}CO_2$ tracer incubations in combination with cell flow sorting to measure Prochlorococcus growth rates. We will use amino acid labelling combined with analyses of proteins of flow sorted cells to compare growth rates of SAR11 and Prochlorococcus. Flow sorted bacteria and bacterial prey inside protist cells will be identified using taxon-specific molecular probes. The experimental evidence will be synthesised to explain the mechanism of Prochlorococcus and SAR11 co-existence in waters of increasing global biogeochemical significance owing to expansion of the oligotrophic ocean under the influence of modern climate changes.

Energy





Dr. Martina Calais

HWK Fellow
Energy

Fellowship period
02.09.14-15.01.15

Home institution
Murdoch University
School of Engineering and Information Technology
Murdoch, Western Australia
Australia

Cooperation partners
Prof. Dr. Jürgen Parisi
Dipl.-Ing. Hans-Gerhard Holtorf
University of Oldenburg

Dr. Thilo Kilper
NEXT ENERGY, Oldenburg

Improving Photovoltaic Systems Integration in Remote Diesel Networks

The last decade has seen a rapid increase in Photovoltaic (PV) penetration in electricity systems worldwide. For small, remote, radial style distribution networks with diesel generation, the integration of PV generation is particularly challenging. For example, PV systems can contribute to a sudden loss of generation on a network (and hence affect its stability) due to rapid cloud movement or through the response of PV inverters to system faults. Measures addressing these impacts include: network operation with sufficient diesel generator spinning reserve, solar resource forecasting for diesel generation scheduling and energy storage for PV generation output smoothing. Some measures significantly increase the cost of PV integration and raise the question whether there are other, more cost effective approaches. This project aims to identify and analyse suitable approaches to increase PV generation (with or without batteries) in networks with diesel generation. The research will review the applicable regulatory framework and existing and proposed control approaches. A simulation scenario will be developed allowing for the technical assessment of the various approaches. The work can then be expanded to include economic analyses. It aims to identify unnecessary constraints limiting the displacement of high-cost diesel fuelled electricity generation and associated greenhouse gas emission savings on remote diesel networks.

Dr. Shokoufeh Rastgarkafshgarkolaei

HWK Junior Fellow
Energy

Fellowship period
01.04.15-31.12.15

Home institution
Sharif University of Technology
Department of Chemistry
Teheran
Iran

Cooperation partners
Prof. Dr. Katharina Al-Shamery
Prof. Dr. Gunther Wittstock
University of Oldenburg

In Situ Sensing of Photo Electro-Generated Intermediates Adsorbed on Catalyst Surfaces by Using of Surface Interrogation Scanning Electrochemical Microscopy Technique: Application on Development of Core/Shell Nano Based Semiconductor Photo-Catalysts

This work presents a new and interesting concept for converting sunlight into a storable fuel. Specifically, a ternary oxide bismuth vanadate ($BiVO_4$) will be used as photocatalysts in water oxidation processes as an upcoming path for storing renewable energy. In this respect, we introduce $BiVO_4$ semiconductor decorated by core/shell X/SiO_2 nanoparticles with X core of Ag, Au and Al and shell of SiO_2 with different thicknesses as photocatalyst in water photo-oxidation process that work under visible-light irradiation to efficiently utilize solar energy. Subsequently, we want to detect the reaction intermediates on the surface of the considered photocatalyst material that critically influence the efficiency of this material. For this purpose a microelectrochemcial technique, the surface interrogation mode of scanning electrochemical microscopy, SI-SECM, will be used to obtain the quantification and kinetics information about the intermediates at the surfaces. Another mode is used for detection of released products. The use of SI-SECM will be extended from its use at solid/liquid to liquid/liquid interfaces that can form the basis of devices able of self-regenerating their catalytcially active interfaces.

Dr. Pang-Chieh Jay Sui

HWK Fellow
Energy

Fellowship period
08.12.14-30.12.15

Home institution
University of Victoria
Institute for Integrated Energy Systems
Victoria, British Columbia
Canada

Cooperation partners
Peter Wagner
Dr. Wiebke Germer
NEXT ENERGY, Oldenburg

Membrane Fuel Cells, Medium-Temperature and High-Temperature Polymer Electrolyte Membrane Fuel Cells

Hydrogen-based polymer electrolyte fuel cells have many advantages over the incumbent technologies, e.g., zero emission, high efficiency and power density, etc. Combining the research capabilities in fuel cell research and development of both NEXT-ENERGY and the Institute for Integrated Energy Systems, a collaborative project aimed to investigate the transport and material characteristics for fuel cells is proposed. The proposed research will focus on two aspects of fuel cells: (i) transport and management of water in low temperature, alkaline anion exchange membrane fuel cells (AAEMFCs); and (ii) interfacial properties of medium-temperature/high-temperature proton exchange membrane fuel cells (MT/HTPEMFCs). The objectives of this project are to investigate issues of water management and material degradation of AAEMFCs, and to gain understanding in the morphology and microstructure of MT/HTPEMFC materials. Both tasks will employ advanced microscopy and diagnostic methods to study these fuel cells. Modeling and numerical simulation will be developed and validated with experimental data. The knowledge generated from this project will inform system design and material screening for fuel cells, which are key factors to successful development of these fuel cells. The outcomes from this project may lead to game-changing energy solutions and support the energy industry in the northwest region of Germany.

Dr. Tania Urmee

HWK Fellow
Energy

Fellowship period
15.05.15-30.09.15

Home institution
Murdoch University
School of Engineering and Information Technology
Murdoch, Western Australia
Australia

Cooperation partners
Dipl.-Ing. Hans-Gerhard Holtorf
University of Oldenburg

1. Rural Electrification in Developing Countries Using Solar Photovoltaic;
2. Monograph. Roadmap of Implementing Solar Home Systems in Develping Countries;
3. Teaching in Cooperation with the Postgraduate Program Renewable Energy

Many Solar Home System (SHS) programs have been implemented in Asia, Africa and Latin America, - but very few of them are successful. While many new SHS projects are being funded continuously, there are still critical weaknesses which project implementers haven't really addressed. The reasons for failure still appear to be not fully understood. Most of the findings are published in scientific journals which are not accessible to the stakeholders. These findings also do not describe the stages, issues and the stakeholders' role in designing a SHS program. A diagnostic tool to determine the likelihood of success of SHS programs both for funders/investors as well as project developers and implementers is developed combining the researches at Murdoch University and University of Oldenburg. This tool is used to evaluate the SHS programs in Asia, the Pacific and Africa. The outcomes of this exercise are used to determine whether the program is successful or not. A roadmap developed in this research will help the planners, donors, governments and implementers to develop sustainable SHS programs which can also be used as a checklist to determine if there is any scope for improving the existing program design. This information will be published in a monograph while staying at HWK which can be readily available to the implementers, donors and other interested stakeholders. Once published, this book will help program implementers, private sectors, policy makers and funding agencies to follow the right path while implementing SHS projects for remote and rural communities. This research collaboration will also bring mutual benefit to both PPRE and Murdoch University lecturing program.

Prof. Dr. Sergey Vasenkov

HWK Fellow
Energy

Fellowship period
03.06.15-13.08.15

Home institution
University of Florida
College of Engineering
Department of Chemical Engineering
Gainesville, Florida
USA

Cooperation partner
Prof. Dr. Marcus Bäumer
University of Bremen

Aerogel Catalysts with a Hierarchy of Pore Sizes: Relationship Between Gas Transport, Structural Properties, and Catalytic Performance

Rare-earth aerogel catalysts are porous materials with a hierarchy of pore sizes where catalytic sites are directly integrated into the porous framework. Such catalysts are quite promising for the oxidative coupling of methane and other energy-related chemistry. Aerogels contain interconnected networks of pores of different sizes where larger pores serve as molecular »highways«, allowing fast access and removal of reactants and products to and from active sites. A fundamental understanding of transport properties of aerogels is important because transport of reactant and product molecules can become a rate-limiting process in catalysis and/or influence a selectivity of catalytic reactions.

Despite its importance for applications, the current level of understanding of the diffusion process and its relationship with structural properties and catalytic performance in porous materials with a hierarchy of pore sizes is not yet satisfactory. In the proposed project this deficiency will be addressed by the development of models that describe the relationship between the transport properties, the structural properties and the catalytic performance of aerogel catalysts. The model development will be based on the NMR diffusion data recently obtained by the applicant's group and on the results of the structural characterization as well as the catalytic activity characterization performed by the group of the applicant's collaborator at Bremen University.

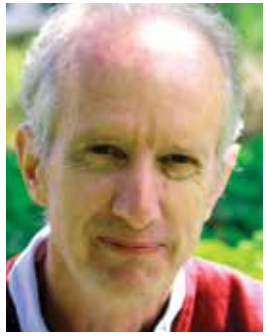

Society










Dr. Berit Bliesemann de Guevara

HWK Fellow
Society

Fellowship period
01.09.14-03.03.15

Home institution
Aberystwyth University
Department of International Politics
Aberystwyth
United Kingdom

Cooperation partner
Prof. Dr. Klaus Schlichte
University of Bremen

The Symbolical Landscapes of War and Peace
Political Navigation, Narratives and Performance in International Politics

The project 'The Symbolical Landscapes of War and Peace' explores the production and strategic use of different forms of knowledge in international policy-making about conflict areas. It departs from the observation that many conflict areas are characterised by situations of 'neither war, nor peace', which open up vast scope for political interpretations of local problems and related policy solutions. Combining insights and methods from interpretive policy analysis with an approach of social theatrical performance, the research focuses on the use of symbols, the construction of narratives and the conveying of meaning through performance in order to establish how knowledge producers, including international policy-makers, experts and policy implementers, navigate the symbolical landscapes of reality construction about war and peace. The project employs a mixed methods approach comprising interpretive text and image analysis, interviews and possibly participatory observation. Case studies include politicians' first-order knowledge through on-site visits in the field; expert knowledge and strategic marketing in the case of the think tank International Crisis Group; the role of policy myths, especially the invocation of 'the international community' as myth-making; the habitus of peacebuilding personnel; and everyday storytelling as meaning making.

Dr. Sergiu Buscaneanu

HWK Junior Fellow
Society

Fellowship period
01.12.15-31.05.16

Home institution
Humboldt-Universität zu Berlin
Berlin Graduate School of Social Sciences
Berlin
Germany

Strategic U-Turns Between the EU and Russia: Explanatory Prospects of Prospect Theory

When asked if they prefer a gamble of 50% chance to win 1000$ (or nothing) over the sure gain of 500$, most people would tend to be risk averse and opt for the sure gain. Conversely, when asked if they prefer a gamble of 50% chance to lose 1000$ (or nothing) over the sure loss of 500$, the majority of people would tend to be risk seeking and choose the gamble. These choices are rationally inconsistent. This logical inconsistency is explained by prospect theory. Prospect theory explains how people make decisions when faced with probabilistic alternatives that involve uncertainly and risk. The proposed project to be started at the HWK seeks to apply prospect theory propositions in order to explain why some countries located in the shared neighbourhood between the EU and Russia select the European Union (EU) integration project, while others choose the alternative of joining the Eurasian Economic Union (EaEU). The project will explain how perceived gains and losses associated with the perspective of joining the EU or EaEU determine – under conditions of uncertainty and risk – the choice of one or another strategic alternative. This effort is going to be the first application of prospect theory to the strategic alternatives faced by countries in the concerned region.

Dr. Jean-Claude Dreher

HWK Fellow
Society

Fellowship period
01.09.15-30.06.16

Home institution
French National Centre for Scientific Research (CNRS)
Bron
France

The Psychological and Neurobiological Basis of Social Decision Making in Humans

Although social decision making is ubiquitous and central to human society, its underlying neural mechanisms remain poorly understood. The fact that complex social decision making relies on probabilistic knowledge about the possible outcomes of choices and on the intentions and cooperativeness of other individuals has been underappreciated. Our current proposal considers social decision making as the interactive process of adaptive autonomous agents equipped with probabilistic knowledge. Our main hypothesis is that the brain performs Bayesian inferences using probabilistic representations of other's intentions. We will use intracranial recordings in patients with epilepsy, fMRI in healthy individuals and computational models to identify the neural mechanisms engaged when we predict hypothetical action outcomes, the intentions of others and whether the other is cooperative or competitive. The ground-breaking nature and potential impact of the research is to provide a mechanistic understanding of the neural processes engaged in social decision making.

Prof. Dr. Chad Alan Goldberg

HWK Fellow
Society

Fellowship period
01.01.15-16.07.15

Home institution
University of Wisconsin-Madison
Department of Sociology
Madison, Wisconsin
USA

Modernity and the Jews in Social Theory

My project at the HWK was to complete a book that compares the portrayal, symbolism, and meaning of the Jews and Judaism in French, German, and American social thought from the late 19th century through the early decades of the 20th century. Jews became a major reference point in debates at this time about modernity and national identity, serving as an intermediary through which European and American social thinkers discerned in a roundabout fashion the nature, problems, and trajectory of their own, wider societies. While portrayals of Jews served this purpose in a wide range of genres, I concentrate on references to Jews in sociology. Since the chief task that sociology set for itself was to interpret and explain the modern era, the symbolic function of the Jews as an intermediary for self-reflection was especially visible in the new discipline at this time. One chapter investigates the relationship of the Jews to the French Revolution as it was conceived in the French sociological tradition. Another chapter examines the relationship of the Jews to modern capitalism as it was conceived in the German tradition. A third chapter turns to the Chicago school of American sociology, where the key metaphor of modernity was neither democracy nor industrial capitalism, but the city. A final chapter highlights the study's broader implications and contemporary relevance. The book manuscript is now under review at the University of Chicago Press.

Prof. Dr. Christine Hauskeller

HWK Fellow
Society

Fellowship period
01.10.15-31.12.15

Home institution
University of Exeter
Department of Sociology and Philosophy
Exeter
United Kingdom

Cooperation partners
Prof. Dr. Gesa Lindemann
University of Oldenburg

Prof. Dr. Michi Knecht
University of Bremen

Genetics and Identity - The Politics of Defining Humanity

My book Genetics and Identity examines genetics as a knowledge form and technology. Worldwide, DNA tests are used increasingly not only in medicine but in institutions such as family courts, marriage counseling or immigration control. This use builds on the common believe that such tests provide reliable information about a person's biological kinship, ethnicity, or predisposition to illness. I have conducted 10 years of research into the institutional uses and legal references to DNA. For example, one recent article examines how border control authorities have begun to use DNA tests on asylum seekers. The situations in which DNA tests are used are mostly such of distress and a challenge of legal and social status. Being a carrier of a congenital disease or learning that one's father is not biological kin, for instance, change social status in material and often threatening ways. Genetics and identity are closely entwined. Another aspect is that some countries including Germany have enshrined the idea that each individual is defined by her unique genome into laws concerning human rights and human dignity. At the HWK I will write on the implications and consequences of appealing to the genome as a guarantor of individual and human species identity and how it affects the regulation of medical and other DNA testing but also the policies that govern biomedical science. The HWK provides a set of scholarly communities to which I can contribute and engagement with whom will much advance my work.

Prof. Dr. Steffen Hillmert

HWK Fellow
Society

Fellowship period
15.09.15-.14.03.16

Home institution
University of Tübingen
Department of Sociology
Tübingen
Germany

Cooperation partner
Prof. Dr. Klaus Schlichte
University of Bremen

The Conceptualisation and Implementation of Flexible Spatial Contexts in Life-Course Research

In both social science and the public, there is a growing awareness of the relevance of specific context conditions for individual life chances. However, it is often controversial »how large« relevant contexts are and at which level of aggregation particular social phenomena should best be observed. The aim of the proposed research project is to better understand how causal factors located in specific, spatially defined socio-structural contexts contribute towards explaining life-course developments and how this affects the conceptualisation, definition and measurement of such contexts. Existing concepts of contextual settings such as social space, neighbourhoods and local labour markets are further developed and integrated to form a comprehensive and flexible conceptualisation of relevant spatial contexts. An enhanced analytical concept is applied to a selection of multi-level data on educational and occupational careers. This allows reanalysing traditional questions of unequal living conditions and individual chances of education and employment.

Ass. Prof. Dr. Clémence Ledoux

HWK Fellow
Society

Fellowship period
19.06.15-22.08.15

Home institution
University of Nantes
Faculty of Law and Political Science
Nantes
France

Cooperation partner
Prof. Dr. Karin Gottschall
University of Bremen

Auswirkung der Transformation des Staates auf den Status der care-Arbeitnehmer

Das Projekt wird den Status von unterschiedlichen Diensten vergleichen, die oft nicht gemeinsam gedacht werden und die zu den care-Tätigkeiten gehören. Zwei unterschliche wissenschaftliche Debatten bezeichnen diese Tätigkeiten: die philosophische und soziologische Debatte über Pflege und personenbezogene Dienstleistungstätigkeiten und die Debatte über die Veränderung der öffentlichen Beschäftigung. Frankreich und Deutschland entsprechen zwei ähnlichen Staaten mit sozialer Marktwirtschaft, mit standardisierter Art der Rekrutierung und Lebensläufen im öffentlichen Sektor, aber die Transformation des Staates hat sich unterschiedlich vollzogen. Als case studies sind der Müllsektor und die häuslichen personenbezogenen Dienstleistungen in Frankreich und in Deutschland ausgewählt worden, weil diese zwei Sektoren der gleichen care-Phase entsprechen und von Personen, die den unteren sozialen Schichten angehören, ausgeführt werden. In beiden Sektoren gibt es einen hohen Anteil von Migranten, aber die gender balance ist sehr unterschiedlich. Die Frage stellt sich, inwieweit die Veränderungen des Staates und seiner policies einen Einfluss auf den Status der Berufe ausgeübt hat. Der Aufenthalt am Hanse-Kolleg in Delmenhorst würde mir die Möglichkeit geben, zwei Projekte, an denen ich zurzeit arbeite, zu vertiefen: die Forschung zu meinem Dissertationsthema und meine Mitarbeit an einem Projekt »Der Staat als Arbeitgeber« am Sonderforschungsbereich 597, das von Prof. Dr. Karin Gottschall und Prof. Dr. Bernard Kittel geleitet wird.

Prof. Dr. Carola Lentz

HWK Fellow
Society

Fellowship period
15.04.15-15.07.15

Home institution
Mainz University
Department of Anthropology and African Studies
Mainz
Germany

Cooperation partner
Prof. Dr. Klaus Schlichte
University of Bremen

Local Commitments, National Aspirations: The Making of an African Middle Class

My book project explores the making of an African upper middle class. It discusses who, and through which strategies, became a member of the middle class, and to which extent class boundaries have hardened over the past decades. It examines how middle-class families struggle to maintain their status by investing in their children's education. And it studies the middle-class members' relations with their extended families that usually live in poorer rural areas or popular urban neighbourhoods. The book is based on a case study of four generations of highly educated men from northwestern Ghana who work as lawyers or doctors, and in the public administration, the educational sector, the army, and the Catholic Church. It discusses how these men's careers, life styles, self-perceptions and personal ideals as well as their activities in various associations and political orientations have changed over time, since the first schools were opened in their home region in the 1930s. The book explores how these men perceive their experiences of social mobility and growing inequality, and how they straddle the challenges of making a career and building a family in a modernising colonial and post-colonial order, and the demands of more traditionalist role models that characterise their rural communities of origin.

The case study contributes to broader debates on the mechanisms, experiences and legitimations of social mobility. Different from developments in the Global North, however, social stratification in Africa usually emerges in a context of pronounced ethnic and regional heterogeneity. Furthermore, the extended family and local community of 'origin' continue to be of great symbolic and economic importance. Studying how social mobility operates under these conditions offers new perspectives on the global history of the middle classes.

Dr. Anna Paretskaya

HWK Fellow
Society

Fellowship period
01.04.15-30.06.15

Home institution
University of Wisconsin-Madison
Department of Sociology
Madison, Wisconsin
USA

Middle Class and the Twilight of Socialism: Discourses of Politics and Culture in the Late Soviet Union

This project is an intervention into neoclassical sociology, a paradigm that emerged following the demise of socialism in Europe and which centers on the origins and varieties of postsocialist capitalisms. Drawing on a variety of historical sources, it shows that during late socialism the Communist Party of the Soviet Union inadvertently promoted individuality, self-realization, autonomy, and privacy—the values indicative more of post-World War II capitalism and the Western middle class than of the proletariat of socialism's revolutionary period. These values resonated with a growing segment of the Soviet urban population, who were educated and skilled, upwardly mobile, and consumerist. The nascent Soviet middle class became an »accidental agent« of capitalism when its members increasingly asserted their aspirations for and their right to individuality and personal success, in order to achieve which they engaged in quasi-market-like practices in politics, cultural production and consumption, and the economy, forming, spontaneously, networks that were autonomous from the state. Furthermore, I argue that the intricate relationship between the ideals of collectivism and postcollectivism played a role not only in the declining commitment to socialism on the part of Soviet citizens but also in what followed socialism's demise, especially in terms of chances for the emergence of the culture of capitalism and the culture of democratic politics.

Dr. Valentina Parisi

HWK Fellow
Society

Fellowship period
01.09.14-30.06.15

Home institution
Central European University
Institute for Advanced Study
Budapest
Hungary

Soviet Counter-Culture

The research which I am currently carrying on is focused on the historical role played by the uncensored production and circulation of texts in the former USSR (samizdat) and beyond its boundaries (tamizdat). It is generally assumed that samizdat as a self-publishing strategy was a key form of dissident activity which aimed to spread forbidden works within and beyond the borders of the Soviet Union and insofar to discredit or undermine the authority of the State. But from a different viewpoint samizdat can be also analyzed as a medium which challenges to a great extent our presuppositions about how a published text should look like. In particular, while it established a parallel level of textual production and dissemination, samizdat recalled to life aspects of scribal culture which have been marginalized by the invention of the printing press. While scrutinizing archival documents available at the Forschungsstelle Osteuropa, Bremen University, I will contextualize the socialization of uncensored texts during the Cold War within the theoretical framework provided by book history, a relatively recent discipline which analyze books and print media as cultural artifacts. Focusing my attention on a selected corpus of typewritten and handwritten literary and art journals, I will address issues relating to the pre-Gutenberg character of self-published texts and analyse reading practices connected to their circulation and consumption. Namely, I will question the character of recipients' response to samizdat texts and try to define the features of the communities of readers who shared such experience.

Prof. Dr. Arjan H. Schakel

HWK Fellow
Society

Fellowship period
01.09.14-30.06.15

Home institution
Maastricht University
Department of Political Science
Maastricht
Netherlands

Cooperation partner
Prof. Dr. Marc Debus
University of Mannheim

Territoriality of the Vote and Government Accountability in the European Multilevel Electoral System

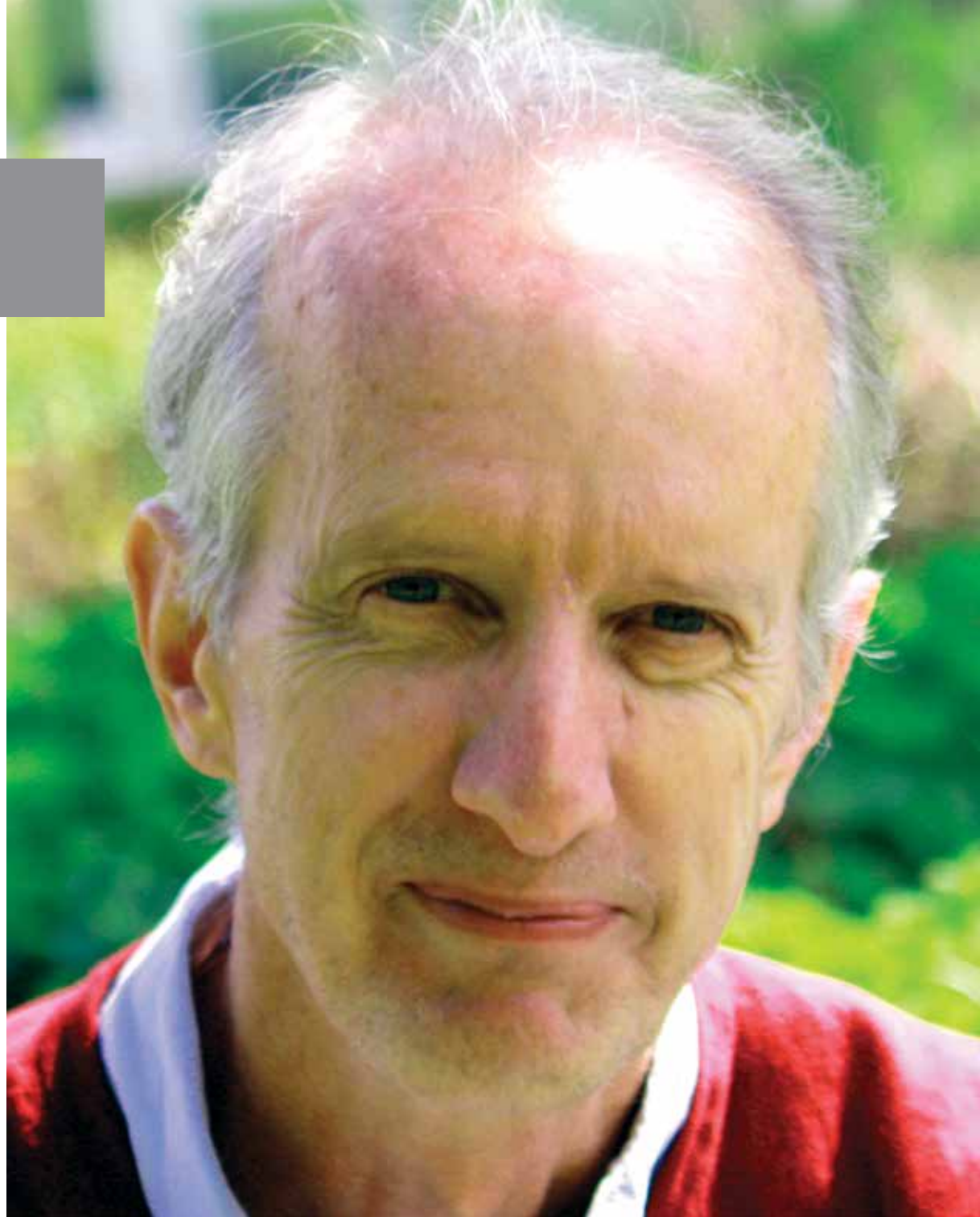
One of the major transformations on the European continent has been the proliferation of electoral institutions. The number of countries which hold elections to the European Parliament has increased from 9 in 1979 to 27 in 2009 and, since 1970, 14 out of the 27 current member states of the European Union have introduced elections for regional governments –that is the tier between local and national government. The changed circumstances have opened up a significant new research question on the ways in which electoral outcomes at the regional, national, and European level are, or are not, linked with or constitutive of each other. The dominant scholarly view on European and regional elections is that they are 'secondorder', that is subordinate, to national elections. Voters do not bother to turn out and those who do use supra- and sub-national elections to signal their (dis)approval with parties in national government. The second-order election model incorporates a 'methodological nationalism bias' which means that research treats European and regional elections as a function of national elections rather than treating them on their 'own terms'. I study European electoral dynamics in its multilevel setting which allows me to approach elections in a new and innovative way. A multilevel perspective entails that one establishes the extent to which and why the vote differs across electoral arenas and that one investigates the linkages between elections. A dataset including European, national and regional election results and government data for the three government tiers for the 27 member states of the European Union since the first election to the European Parliament in 1979 allows me to tackle these issues.

Prof. Dr. Ben Ross Schneider

HWK Fellow
Society

Fellowship period
01.04.15-30.07.15

Home institution
Massachusetts Institute of Technology
Department of Political Science
Cambridge, Massachusetts
USA



Dilemmas of Democratic Developmental States: Open Industrial Policy and State-Owned Enterprises in Latin America

After the market oriented 1990s, most countries of Latin America returned to industrial policies, though under very changed conditions. Policy makers operated in newly democratic contexts that imposed greater accountability and vulnerability to organized interests, especially business. At the same time the international environment imposed other constraints ranging from international institutions like the WTO and other formal agreements as well as soaring commodity prices and associated Dutch disease effects. As states in Latin America and elsewhere increase state intervention in contexts that are more open politically and economically, what explains the variable capacity of states to promote development? A core hypothesis of this research is that, compared to policies in the 20th century, these international and political constraints made industrial policy in the 2000s in Latin America more difficult and vulnerable to capture, and therefore general policies tended to be shallower, more diluted, and less effective. In contrast, more ambitious and transformative programs emerged from specific sectoral policies adopted by state-owned enterprises (SOEs).

Prof. Dr. Kathleen Thelen

HWK Fellow
Society

Fellowship period
01.04.15-30.07.15

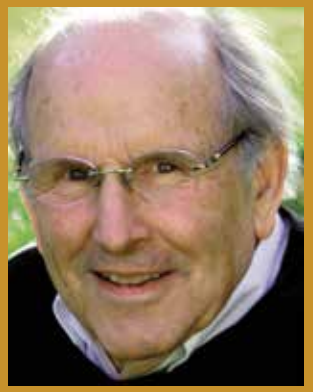
Home institution
Massachusetts Institute of Technology
Department of Political Science
Cambridge, Massachusetts
USA

Cooperation partners
Prof. Dr. Stephan Leibfried
Prof. Dr. Frank Nullmeier
University of Bremen

The Future of Egalitarian Capitalism in the Twenty-First Century

This project addresses contemporary possibilities for egalitarian capitalism in comparative and historical perspective. Part I examines developments across five countries – Germany, Japan, Sweden, Denmark and the Netherlands – that have moved along different trajectories since the 1990s, with some more prone to tendencies toward growing inequality (»dualism«) than others. It argues that the strength of dualism can be traced back to the coalitional politics and specifically to the role and preferences of manufacturing interests relative to other actors in the political economy. Parts II turns to the question of the »root causes« of dualism, and argues that the tracks were set for divergent political outcomes already during the so-called Golden Era of postwar capitalism in the 1960s. I trace important contemporary differences to responses to labor market shortages as well as conflicts over industrial democracy in that previous period. Part III of the book extends the temporal canvas further back in time. Historical analysis has shown that labor strength and employer organization do not stand in a zero-sum relationship to one another but in fact go hand-in-hand; in other words, coordination on the employer side (while clearly not sufficient) appears to be necessary to sustaining high levels of social solidarity. This part of the book asks what allows coordinated capitalism to take on a more egalitarian form. It focuses special attention on Germany, tracing the creation and ongoing transformation of key labormarket institutions over the past century in order to gain insight into the possibilities for survival and adaptation of these institutions in the present crisis.






Arts &

Humanities

Natalie Grenzhaeuser

Artist in Residence
Arts & Humanities

Fellowship period
27.01.15-12.03.15
17.08.15-15.12.15

Location
Berlin
Germany

Cooperation partner
Dr. Monica Meyer-Bohlen
Hanse-Wissenschaftskolleg

Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Metamorphosen - Klimaphänomene und Landschaftsräume aus künstlerischer Sicht

Die Berliner Künstlerin Nathalie Grenzhaeuser arbeitet im Medium Fotografie und war nach sechswöchiger Vorbereitungsphase im März und April 2015 während ihres AWI/HWK Fellowship »Wissenschaft und Kunst« drei Wochen zu Gast auf der wissenschaftlichen AWIPEV-Station in Ny Alesund auf dem arktischen Inselarchipel Spitzbergen. Ihr Projekt mit dem Titel »Metamorphosen, Klimaphänomene und Landschaftsräume aus künstlerischer Sicht« widmet sich der arktischen Forschung im 21. Jahrhundert mit den Fragen: Wie sieht Forschung an einem gleichermaßen unwirtlichen wie unwirklichen Ort aus und wie gestaltet sich diese? Vor diesem Hintergrund hat sie sich auf der Station vor allem mit den klimarelevanten Messmethoden- und Anlagen auseinandergesetzt, die den Luftraum betreffen, wie den Aerosol-, Treibhausgas- und Ozonmessungen. Weitere Arbeitsansätze galten der unterschiedlichen Materialität von Schnee und Eis, den Mythen und Science-Fiction-Aspekten, die mit dem arktischen Landschaftsraum kulturgeschichtlich verbunden werden, sowie dem Wandel Ny Alesunds, von einem Bergbauort hin zu einer Basis internationaler Forschungsarbeit. Auf dieser Basis entstanden Bild-, Film- und Audioskizzen, die auch die - neben klimarelevanten Phänomenen - astronomischen und meteorologischen Phänomene mit einbezogen, die ihren Aufenthalt auf der Station geprägt haben wie: die totale Sonnenfinsternis am 20 März, Stürme, Halos und Whiteouts. Ihr zweiter Aufenthalt am HWK vom August 2015 bis Ende Januar 2016 gilt der Nachbereitung des Materials. Die Resultate werden zusammen mit bereits realisierten Arbeiten in einer zweiteiligen Soloshow unter dem Titel »The Arctic Series« am 29 Januar 2016 in der Städtischen Galerie Delmenhorst und im März/April in der Kunsthalle Bremerhaven gezeigt.

Clemens Krauss

Artist in Residence
Arts & Humanities

Fellowship period
05.01.15-31.03.15

Location
Berlin
Germany

Cooperation partner
Dr. Monica Meyer-Bohlen
Hanse-Wissenschaftskolleg

Metabolizing History

Im Zentrum des multimedialen Schaffens des österreichischen Künstlers Clemens Krauss steht der Mensch in seiner existentiellen Situation – sei dies in Kommunikation oder Vereinzelung – immer aber in bewegtem Zustand. Auf dem Thema »Metabolising History« liegt während seiner Zeit am Hanse-Wissenschaftskolleg das Hauptinteresse des Künstlers, der die conditio humana als eine in stetigem Prozess begriffene und in Abhängigkeit von äußeren und inneren Bedingungen gegebene Situation begreift. In diesem Themen-Marathon geht es nicht einfach nur um das Hier und Jetzt, sondern um Gegenwart unter dem Aspekt der Erinnerung, um einen »Protest gegen das Vergessen«, wie der Historiker Eric Hobsbawn das genannt hat. Dabei fließen politisch-soziale Gefüge in jeweils biografisch Persönliches ein und führen zu ewigen Transformationen, zu Zuständen des Übergangs. Der Kunst von Clemens Krauss, verstanden als hochkomplexer Prozess, ist in diesem Zusammenhang konsequent und kontinuierlich die Frage nach der Individualität des Einzelnen implizit. Die Arbeiten von Clemens Krauss sind vielleicht der Ort, an dem die Spannung der Extreme von Bild und Zeichen (Symbol), Natur und Geist, Objekt und Subjekt ihre Bühne findet. Worauf es im Sinne Adornos auch dem Denken ankommt: Perspektiven zu gewinnen, in denen die Welt als eine verfremdete und versetzte sich offenbart. Seine am HWK geschaffenen malerischen Arbeiten präsentierte er unter dem Titel *Die offene Gesellschaft ist nicht ganz Dicht*.

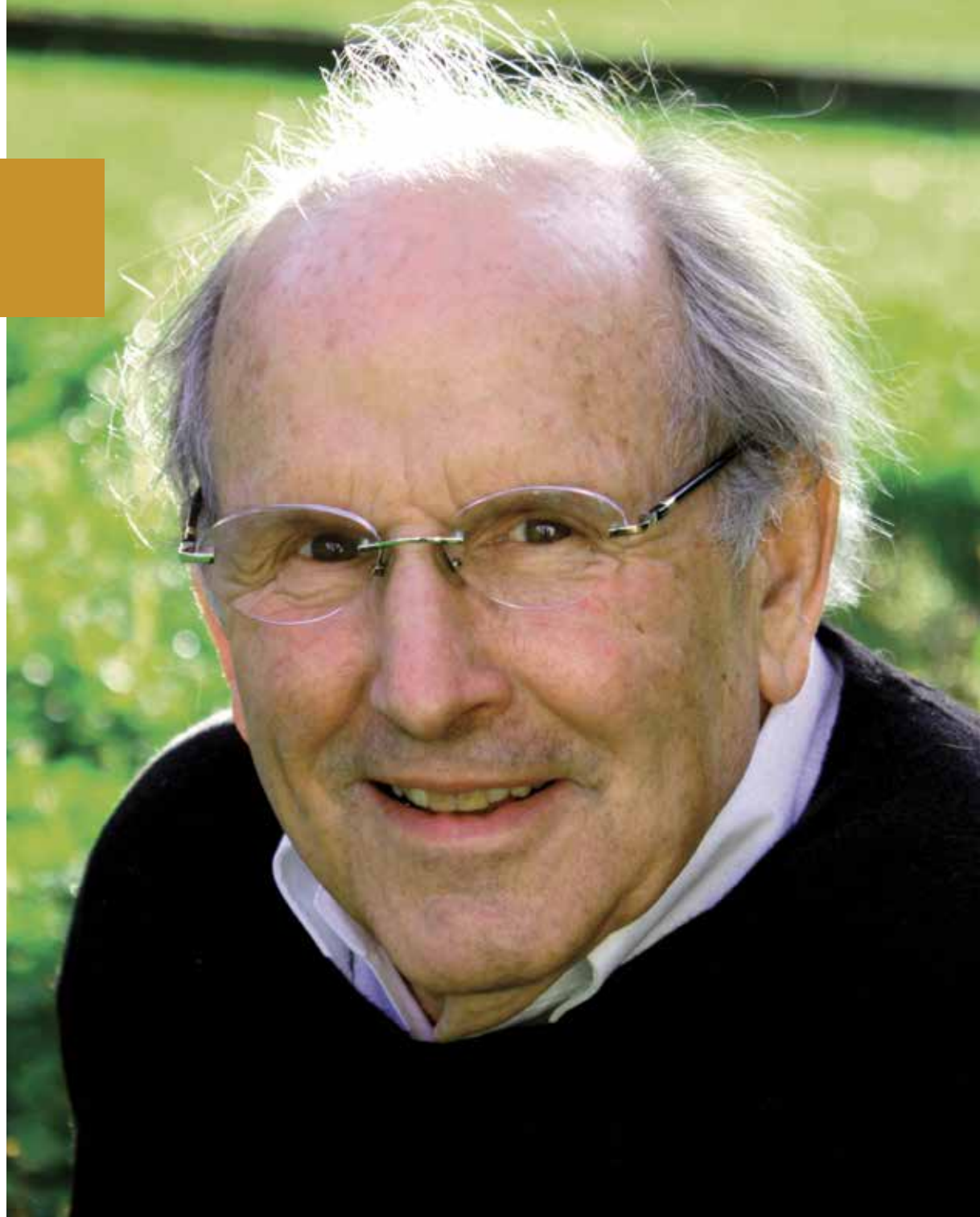
Alexander Stokes MacLean

Artist in Residence
Arts & Humanities

Fellowship period
25.04.15-14.05.15
07.07.15-25.07.15

Location
Landslides Aerial Photography
Lincoln, MA
USA

Cooperation partner
Dr. Monica Meyer-Bohlen
Hanse-Wissenschaftskolleg



Aerial Pattern Language of Northwestern Germany, Part II

Der amerikanische Fotokünstler, Pilot und Autor Alex MacLean, der ursprünglich Architektur studierte, kommt von seiner Ausbildung her vom räumlichen Denken zur künstlerischen Fotografie. – Er hält seit Jahrzehnten hauptsächlich die amerikanischen Landschaften seiner Heimat als Luftfotografien fest.Wir sehen Landschaft aus der Vogelperspektive als physische Realität von Stein, Boden Vegetation, Wasser. Und Landschaft als Herrschaft des Menschen über die Natur. Im Jahr 2012, als der Künstler zum ersten Mal Fellow am HWK war, konnte ein Teil seines vergleichenden Werkzyklus zu LAS VEGAS und VENEDIG – beides Stadtlandschaften, die ebenso mythenumweht wie ökologisch gefährdet sind - am HWK gezeigt werden, zu der Zeit, in der MacLean zum ersten Mal seine Aufmerksamkeit auf unsere nordwestdeutsche Küstenregion lenken konnte. Seine diesjährige Kabinett-Ausstellung ON SECOND GLANCE stellt einen Ausschnitt aus seiner fortgesetzten Erforschung dieser Landschaft dar. MacLeans Bilder stehen exemplarisch für unseren sorglosen Umgang mit der Erde, sie sind gleichzeitig von verstörender Schönheit und provozieren uns, hinter die schöne Bildoberfläche zu schauen.

Bettina Thierig

Artist in Residence
Arts & Humanities

Fellowship period
01.06.15-31.07.15

Location
Lübeck
Germany

Cooperation partner
Dr. Monica Meyer-Bohlen
Hanse-Wissenschaftskolleg

Zeigen-Wahrnehmen-Spüren: Skulptur; To Exhibit-To Sense-To Feel: Sculpture

Die in Hannover geborene deutsche Künstlerin studierte bei Joachim Peter Kastner Bildende Kunst an der Universität Dortmund und legte 1992 ihr Staatsexamen ab. Anschließend setzte sie ihr Kunststudium bis 1996 an der renommierten Düsseldorfer Akademie der Künste fort. Bettina Thierig ist bildende Künstlerin und Lyrikerin. Als klassische Bildhauerin ist ihr Arbeitsmaterial vorwiegend Muschelkalk aus Frankreich. Überlebensgroße Holzskulpturen bearbeitet sie mit der Motorsäge, ihre Figurinen sind in Bronze gegossen. Zeitgleich zum Aufenthalt am HWK präsentiert das Kolleg eine Skulpturenausstellung der Künstlerin mit dem Titel THE SHIPPING OF THE KING im Foyer des Hauses. Sie arbeitet in reduktionistischem Stil und erzielt damit eine eindrucksvolle Statuarik und den Eindruck massiver Körperlichkeit und Ruhe der Skulpturen. Gleichzeitig suggerieren diese geballte Kraft und Energie, die sich jederzeit in dynamische Bewegung entladen kann, ähnlich den griechischen Kuroi der vorklassischen archaischen Periode. Bettina Thierig beherrscht die Klaviatur des kleinen Maßstabs bis hin zu monumentaler Form, von Figurativem zu reiner Abstraktion, immer sich bewegend im humanistischen Konzept der menschlichen Figur.

Dr. Joan Haran

Fiction meets Science Scholar
Arts & Humanities

Fellowship period
05.01.15-25.05.15
03.08.15-23.11.15

Home institution
Cardiff University
School of Social Sciences
Cardiff
United Kingdom

Cooperation partner
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

Genomic Fictions: Genes, Gender and Genre

This project explores the contribution contemporary fiction makes to public engagement with science and the web of science communications. The focus is on novels published after the mapping of the human genome which organize their narrative around particular applications of genomic science. A case is made for reading these novels in relation to the contemporary mass and social media landscape, rather than in isolation. The project explores the ways that this relationship functions with regard to science and technology.
It outlines the ways in which genomic fictions portray the production and circulation of genomic knowledge and its applications through the key sites of the laboratory, the clinic and the marketplace. It explores the ways that they represent and engage social and subjective responses and responsibilities towards scientific and technological innovation. It weighs up the relative effectiveness of different narrative strategies, for example alternative histories or speculative fictions, in facilitating readers' critical engagement with science in society. Finally it analyses the way the fictions themselves represent the ways that readers, publics and / or audiences relate to science in society, and the extent to which these representations of the specific subject positions of readers, publics and audiences provide role models or cautionary tales for readers' engagement with science in general and with genomics, in particular.

Dr. Pippa Goldschmidt

Writer in Residence
Arts & Humanities

Fellowship period
07.11.14-31.07.15

Location
Musselburgh
United Kingdom

Cooperation partner
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

Book Project on the Interactions Between Scientists and The Machines They Use

During her residency, Pippa Goldschmidt began work on a novel about the Austrian physicist Schrödinger, collected new ideas for her short stories, and edited an anthology of stories inspired by general relativity. She chatted with scientists from a huge variety of backgrounds and disciplines, learning about bees' brains, human processing of light, genetic causes of deafness, plankton in Antarctica, protest songs in the USA, and many more fascinating topics, some of which are filtering into her short stories. Pippa attended the FMS jour fixe and book club meetings, offering insightful contributions to the discussions, and gave several readings in Bremen and Berlin, as well as a private reading for the HWK fellows.

Prof. Dr. Roslynn Haynes

Fiction meets Science Scholar
Arts & Humanities

Fellowship period
01.09.15-06.11.15

Home institution
University of Tasmania
School of Humanities
Sandy Bay, Tasmania
Australia

Cooperation partner
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

The Process of Writing a Science Novel: Interviews with Novelists and Scientists

One part of this project examines the process of bringing science into fiction. What makes science »special« or »difficult« as a topic for fiction? What inspires authors to write about it? What, if any, actual contact with working scientists do they need? What are the effects of such cooperation? Is it crucial to the production of a science novel? We will address these questions and others in a set of questionnaires and narrative interviews directed at science novel authors and the scientists they have talked to or »followed«. Does the novel's treatment of science and scientists conform to or stand outside what the author perceives to be the traditional stereotypes? This last question is the connection with the second part of the project which investigates the change of the presentation of the scientist character from the previously dominant archetype of the 'mad', usually evil scientist to a new literary figure of the personable, constructive, problem-solving, well-intentioned researcher. This happens against the backdrop of a strong popular engagement with science, and many sociological and environmental inferences may be drawn from this study, as well as yielding important implications of how best to communicate science to non-scientists.

Dr. Bernhard Kegel

Writer in Residence
Arts & Humanities

Fellowship period
01.09.15-31.12.15

Location
Berlin
Germany

Cooperation partners
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

Prof. Dr. Hildegard Westphal
Leibniz Center for Tropical Marine Ecology (ZMT), Bremen

Wissenschaftsroman Galapagos

Bernhard Kegel has been hanging out with the biologists and geologists at Bremen's Leibniz Center for Tropical Marine Ecology (ZMT), acquiring background information and inspiration for a new novel. In January 2013, he accompanied his new colleagues to a field research station in Jordan, and in April he accompanied ZMT scientists on a research cruise in the Galapagos Islands. He took up residence as a Fellow at the Hanse-Wissenschaftskolleg from April to June of 2013, and began outlining plans for the new book, while continuing his research with colleagues at ZMT. During his time as a Fellow, he incited debate among FMS members and the HWK's interdisciplinary community of scientists and scholars, with his lecture »To become a storyteller of science you have to be a scientist first – and then forget about it.« He also joined local scientists and scholars to read from and discuss his last novel, *Tiefer Fall*, for the Delmenhorst, Bremen, and Bremerhaven public.

Anne von Canal

Writer in Residence
Arts & Humanities

Fellowship period
02.02.15-14.02.15

Location
Winningen
Germany

Cooperation partner
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

Eisland

In summer 2014, Anne von Canal published her first novel entitled »Der Grund« which earned a positive response from critics as well as from the general public. The story about dreams and new beginnings in life is told from the perspective of a medical doctor who grew up in a rich suburb of Stockholm and who travels the world in search for reconciliation with the past. The Fellowship at the HWK served as a period of research for her new novel with the working title »Eisland« and was followed by an expedition to a research station at Spitzbergen in collaboration with the Alfred-Wegener Institute Bremerhaven.

Julia Schnittger

Art in Progress
Arts & Humanities

Fellowship period
03.12.15-30.06.16

Location
Berlin
Germany

Cooperation partner
Dr. Monica Meyer-Bohlen
Hanse-Wissenschaftskolleg

Alfred Wegener Institute,
Helmholtz Center for Polar and Marine
Research (AWI), Bremerhaven

Gedächtnisverlust

»Gedächtnisverlust« ist die Überschrift für mein künstlerisches Projekt am Hanse-Wissenschaftskolleg in Zusammenarbeit mit dem Alfred-Wegener-Institut für Polar- und Meeresforschung. Ein Bohrkern aus antarktischem Eis, für Klimaforscher ein Zeittunnel. In ihm gespeicherte Vergangenheit, die nur überlebensfähig ist in Kälte, so leicht zum Verschwinden zu bringen mitsamt all den eingeschlossenen Geschichten. Das Gedächtnis aus Eis zerfließt, die Merkfähigkeit ist verloren mit der Unmöglichkeit des Eises zur Erneuerung. Der »Whiteout« schien mir als optisches Sinnbild dem Gedächtnisverlust verwandt. Man bewegt sich in einem weißen Raum ohne Horizont, Orientierung ist unmöglich gemacht. Weder ist sichtbar, woher man kommt, noch wohin man sich bewegt. Gerät man in ein Whiteout, wird empfohlen, erst weiterzugehen, wenn der Spuk vorbei ist. Bleibt die Frage, ob man sich am gleichen Ort wiederfindet, an dem man stand, als der weiße Vorhang sich schloss oder ob sich ein völlig unbekanntes Bild eröffnet, wenn der Vorhang beginnt sich zu lichten. Gedächtnisverlust als Zäsur. Als Bühnenbildnerin ist mein »Forschungsobjekt« der Raum. Mich interessiert die antarktische Landschaft auch als der Körper, in dem das Gedächtnis wohnt, das die Wissenschaft erkundet. Und Erinnerung als fiktiver Raum, für den erst eine Form der Darstellung gefunden werden muss. Im Rahmen meiner Recherchen soll eine begehbare musiktheatrale Installation entstehen, in der Objekte, Raum und Klang als »Darsteller« sprechen.







Outlook

Prof. Dr. Laurel Carney

HWK Fellow
Brain

Fellowship period
01.06.16-30.11.16
01.06.17-31.07.17

Home institution
University of Rochester
Biomedical Engineering and
Neurobiology and Anatomy
Rochester, New York
USA

Cooperation partner
Prof. Dr. Georg Klump
University of Oldenburg

Physiological, perceptual, and computational modeling studies of temporal fine-structure and envelope cues in the Mongolian gerbil

A number of recent studies in human listeners suggest that one effect of common forms of hearing loss is a change in the ability to use different features of sounds. This question is important to improve our understanding of the huge effect of even mild hearing loss on the ability to detect and identify complex sounds, such as speech, in the presence of background noise. In particular, the ability to use the detailed timing of sound waveforms (i.e. »fine-structure«), as opposed to the slower fluctuations in amplitude (i.e. »envelopes«), has been hypothesized to change with hearing loss. We will study physiological responses in the auditory regions of the gerbil brain and compare neural sensitivity to the already established perceptual abilities of these animals. My contributions to the study will be to participate in the physiological experiments and to help develop computer models for the responses of brain cells. These models can be used to test hypotheses concerning the roles of these two types of features in perception. The results of this study will improve our understanding of how complex sounds are encoded by auditory brain cells in healthy animals and in animals with hearing loss. My recent experience in a study that used responses of human listeners to identify the roles of these different sound features for detection of signals in a noisy background will be useful for the proposed work.

Prof. Dr. Peter Haddawy

HWK Fellow
Brain

Fellowship period
27.06.16-31.12.2016
01.06.17-31.08.17

Home institution
Mahidol University
Faculty of Information and
Communication Technology
Bangkok
Thailand

Cooperation partners
Prof. Dr. Christian Freksa
Prof. Dr. Ron Kikinis
University of Bremen

Intelligent Environments Supporting Learning and Decision Making in Complex Dynamic Medical Domains

The proposed work on intelligent environments for learning and decision making in complex dynamic medical domains will be approached from two perspectives. Work on Intelligent Surgical Training Systems will seek to help realize the potential of surgical simulation to revolutionize the teaching of surgery. While simulation has the promise to address numerous challenges facing medical schools, current simulation environments have not yet fully realized this promise due to the lack of intelligence in the simulations. We will address teaching of psychomotor skills by developing techniques to objectively assess surgical procedures, outcomes, and the relation between the two and to use this to generate tutorial feedback. We will address teaching of decision making by developing student modeling techniques and automated pedagogical strategies to teach pre-operative and intra-operative decision making. Work on Dynamic Model Construction for Situation Awareness in Crowdsourcing for Disease Surveillance seeks to leverage the availability of smartphones and network coverage in developing countries to address the problem of rapidly and precisely detecting disease outbreaks. We will develop techniques to automatically construct ecological niche models for vector borne diseases to perform integration and interpretation of crowdsourced data.

Dr. Ronit Sharon

HWK Fellow
Brain

Fellowship period
01.07.16-30.09.16

Home institution
Hebrew University
Faculty of Medicine
Jerusalem
Israel

Cooperation partners
Prof. Dr. Christiane Richter-Landsberg
Prof. Dr. Karl Wilhelm Koch
University of Oldenburg

Alpha-Synuclein and lipid signalling in myelination: in health and disease

This application focuses on studying the associations between Alpha-Synuclein protein; a specific fraction of brain lipids, present in myelin sheath that cover axons of neuronal cells; and the myelin forming cells, e.g., oligodendrocytes. We plan to study the effect of Alpha-Synuclein expression on the expression levels of other gene in oligodendrocytes. We expect that identified changes in gene expression following Alpha-Synuclein expression may provide clues regarding genes and signals that associate with neurodegeneration, in addition to normal mechanisms of neuronal development and maturation of oligodendrocytes in the healthy brain. Elucidating the role of neuronal Alpha-Synuclein in communicating with oligogenedrocytes and synthesis of myelin is critical for the development of novel strategies for treatment. The elucidation of specific pathways and their relevance to the normal (physiologic) function and pathogenic conditions in oligodendrocytes, will be performed in collaboration between Profs. Drs. Christiane Richter Landsberg and Karl Wilhelm Koch from the Oldenburg University and Dr. Ronit Sharon, from the Hebrew University. This collaboration is built upon shared interests in elucidating the biochemical, cellular and molecular biology aspects of neuronal function and dysfunction in the mammalian brain.

Prof. Dr. Roger Summons

HWK Honorary Fellow
Earth

Fellowship period
23.05.16-15.08.16

Home institution
Massachusetts Institute of Technology
Department of Earth Atmospheric and
Planetary Sciences
Cambrdige, Massachusetts
USA

Cooperation partner
Prof. Dr. Kai-Uwe Hinrichs
University of Bremen

Studies of Microbial Lipids at Small Spatial Scales

Microbes are key players in the biogeochemical cycles that operate on Earth and which sustain complex life through the production of oxygen and the recycling of other nutrients on a global scale. Our understanding of these processes has been developed over many years through the fields of microbiology, geochemistry and, most recently, genomics. These studies have revealed, in some detail, a myriad of interdependencies in these biogeochemical processes whereby numerous groups of microbes shuffle carbon and electrons through complex networks at small (millimetric to micron) spatial scales. A key issue that begs further research is to gain a better understanding about how microbes interact with each other at these scales. Microelectrodes can tell us about subtle fluxes of electron donors (e.g. H_2, H_2S) and electron acceptors (e.g. O_2, nitrate, sulfate). An additional and valuable adjunct to these data would be the ability to understand the spatial arrangements of the microbes themselves. Microbial lipids are one tool that we can use to improve understanding in this respect. In collaboration with Professor Kai-Uwe Hinrichs I will use the opportunity afforded by this HWK Fellowship to investigate the distribution of lipids in microbial mat communities from ice-covered lakes in Antarctica using a new combinatorial analytical technique known as Laser Desorption Ionization-Fourier Transform-Ion Cyclotron Resonance Mass Spectrometry (LDI-FT-ICRMS). With this equipment, a laser is deployed to vaporize and ionize biosignature lipids (diagnostic pigments, fragments of membrane etc.) at micron scales (LDI). An ultra-high resolution mass spectrometer (FT-ICRMS) is then used to accurately identify these molecules. In this way, we hope to build 2D, or even 3D, maps of these lipids within the biological community. It may even be possible to extend the technique to fossilized microbial communities.

Prof. Dr. Margarita Balmaceda

HWK Fellow
Society

Fellowship period
01.10.16-31.07.17

Home institution
Seton Hall University
School of Diplomacy and International Relations
South Orange, New Jersey
USA

Chains of Value, Chains of Power: Russian Energy, Value Chains and the Remaking of Social Relations from Vladivostok to Brussels

This book project brings insights from anthropology and critical geography to bear on a key Political Science question: in which ways can natural resources be used as means of international power? With Russia a key energy supplier to energy-dependent post-Soviet states such as Ukraine as well as to the EU, it makes much sense to use this case to shed light on this larger question. Discussions of Russia's use of energy power as a state-held »weapon« abound. While such power has indeed been used, framing the question in terms of »state energy power« neglects the role of other actors above and beyond the central state, and of differences between energy sources. In contrast, the project will analyze energy power starting from a much more basic starting point: energy itself. In other words, starting from each type of energy and how its technical characteristics and production processes help shape social relations along the whole chain from producer to consumer. To reach customers in the EU, oil, gas and coal from Russia must not only travel thousands of kilometres from their production sites and transit through states with diverse political and economic relations with Russia, but also *go through a series of production and post-production processes largely determined by the physical characteristics of each energy commodity.* By bringing these processes and the actor constellations they bring to life to the forefront of research on energy power, this project seeks to provide new insights on Russia's ability to use energy for external leverage, on energy's role in international relations, and on the *power of process* in political economy more generally.

Dr. Srikumar Chattopadhyay

HWK Fellow
Society

Fellowship period
01.03.16-31.08.16

Home institution
Centre for Earth Science Studies
Thiruvananthapuram
Kerala
India

Cooperation partners
Dr. Tim Jennerjahn
Leibniz Center for Tropical Marine Ecology (ZMT), Bremen

Prof. Dr. Michael Flitner
Sustainability Research Center (artec), Bremen

Human Dimension of Environmental Change in Water System and Water Governance: A Comparative Study of India (Vembanad Lake Basin, Kerala), Indonesia (Segara Anakan Lagoon and Brantas River Basin) and Germany (Weser River Basin, Bremen) for Sustainability Transition

Water plays an important role in all walks of human life. Rivers, wetlands, estuaries and coastal waters are fundamental to food security, industrial development, economic growth and human well-being. However, water can be used provided its quality is maintained. All water systems, whether fresh or coastal are affected by various direct and indirect human actions. The problem of water system is not limited to any group of countries and warrants global attention. The globalization has initiated a process of widening, deepening and speeding up of worldwide interconnectedness in all aspects of contemporary social life. The present study covering India, Indonesia and Germany is an attempt to learn from country specific experiences and exchange ideas. Case study sites covering fresh and coastal waters are chosen considering nature of environmental and socio-economic problems and availability of studies. Both technical and non-technical issues in water management will be examined. The aim is to bring out country specific information, document management initiatives and laws and compare them for mutual understanding. Germany has achieved water management admirably. German experience on water management can help both India and Indonesia in their pursuit to improve water system. This study will be taken up in cooperation with colleagues from the ZMT and Artec, Bremen University. Outcome of this project will be useful for the academicians, policy makers and the society at large.

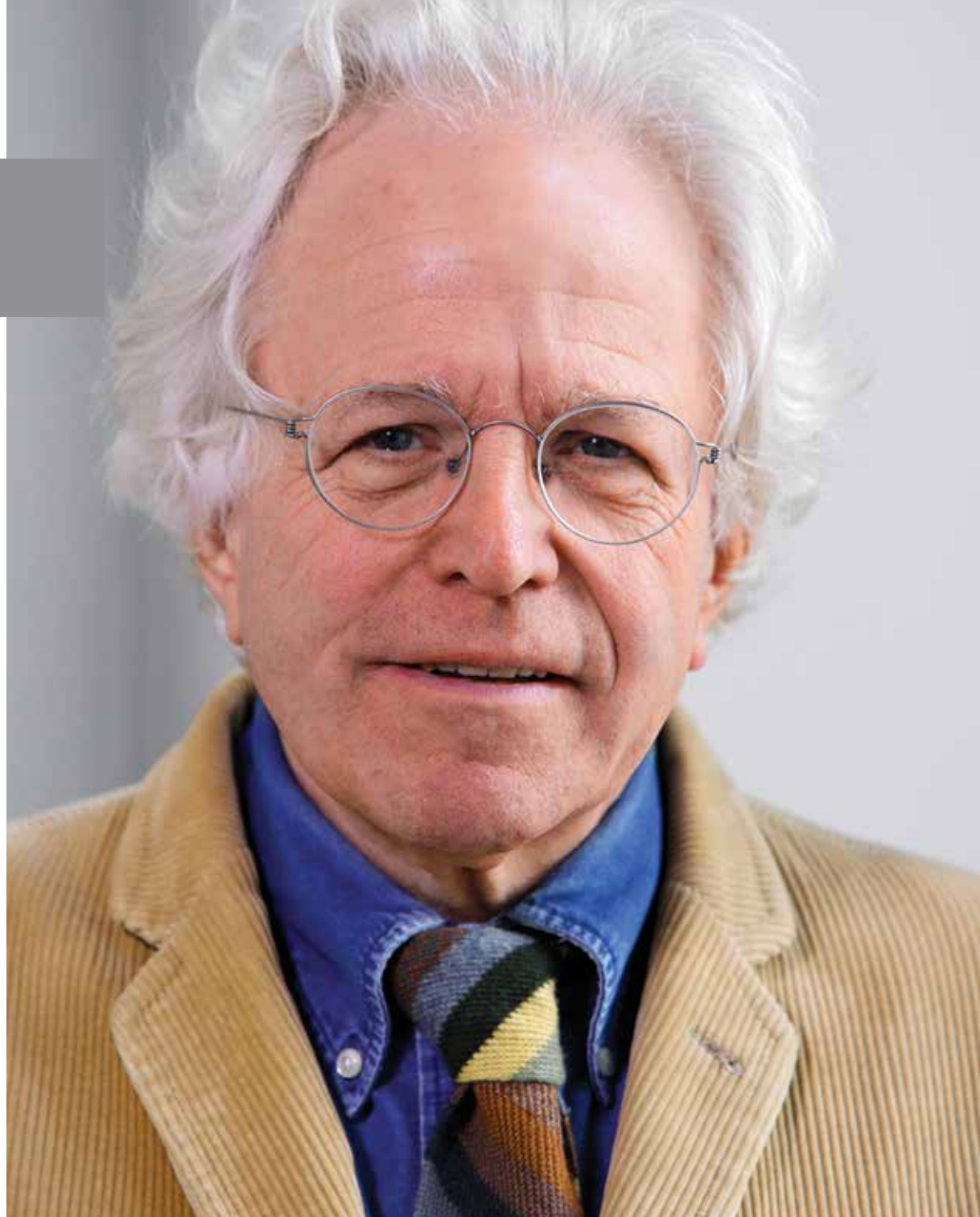
Prof. Dr. Otto Kallscheuer

HWK Fellow
Society

Fellowship period
01.03.16-31.08.16

Home institution
Osnabrück University
Department of Protestant Theology
Osnabrück
Germany

Cooperation partner
Prof. Dr. Ulrich Preuß
Freie Universität Berlin
Hertie School of Governance
Berlin



Political Space and World Religion

More and more people are crossing national boundaries, legally or illegally; so do their ideas. World religions not only spread as elements of inherited cultural identities of migrant communities, they also contain a universal message or a missionary obligation, destined to save all mankind. Transcendent religions do appeal to a ‚higher authority' than to the state. It is true that in the second half of the 20th century very important ‚higher-order-norms' (Human Rights) have been formally accepted by an overall majority of the states represented in the U.N., but the exact role and reach of religious liberty amongst them still remains a matter of dispute. As long as transnational migration was confined to small religious minorities, it did not present a challenge to the international political system of nation-states. Is the political regulation of religion affected by the growing transnationalization of migration? And the globalization of religious communication is not only a question of numbers, it is also a question of compatibility between competing universal messages and missions. The nation-state is historically a recent acquisition - ‚invented' to deal not least with religious conflicts. So my research projects will also look at other forms of ‚governance' of religious competition: city-states, multi-religious empires, trading routes, the accommodation of religious diasporas. Can we learn from them?

Tobias Ginsburg

Writer in Residence
Arts & Humanities

Fellowship period
04.01.16-30.04.16

Location
München
Germany

Cooperation partners
Fiction meets Science (FMS)
University of Bremen
University of Oldenburg

Bühnenstück »Behemoth«

In Zusammenarbeit mit dem Staatstheater Oldenburg soll unter dem Titel »Behemoth« ein Bühnenstück entstehen.

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