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JUNGE AKADEMIE MAGAZIN

ENGLISH EDITION

DOSSIER

Avant-garde – Between Reality and Virtuality

CELEBRATORY KEYNOTE SPEECH

Jürgen Kaube: Is there a *Jugendstil* in Academia?

JUNGE AKADEMIE NEWS

New Members, Events, Theatre in Bielefeld



THE JUNGE AKADEMIE

The *Junge Akademie* (JA) was founded in 2000 as a joint project of the Berlin-Brandenburg Academy of Sciences and Humanities (*Berlin-Brandenburgische Akademie der Wissenschaften – BBAW*) and the German National Academy of Sciences Leopoldina (*Deutsche Akademie der Naturforscher Leopoldina*). It is the world's first academy of young academics. The *Junge Akademie* is co-owned by both academies, the *BBAW* and the *Leopoldina*. Since 2011 it has been firmly anchored administratively in the Leopoldina's budget and funded by the Federal Ministry of Education and Research (*Bundesministerium für Bildung und Forschung*) and the *Länder* Berlin, Brandenburg and Sachsen-Anhalt. Its fifty members, young academics from German-speaking countries, engage in interdisciplinary discourse and are active at the intersection of academia and society.

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Like a wayfarer, it travels lightly, rarely knows the exact path, but always hopes to find something new: the avant-garde.

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Aleksandra Domanović,
„Relay Runner“, 2013
Courtesy of the artist and
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EDITOR'S LETTER

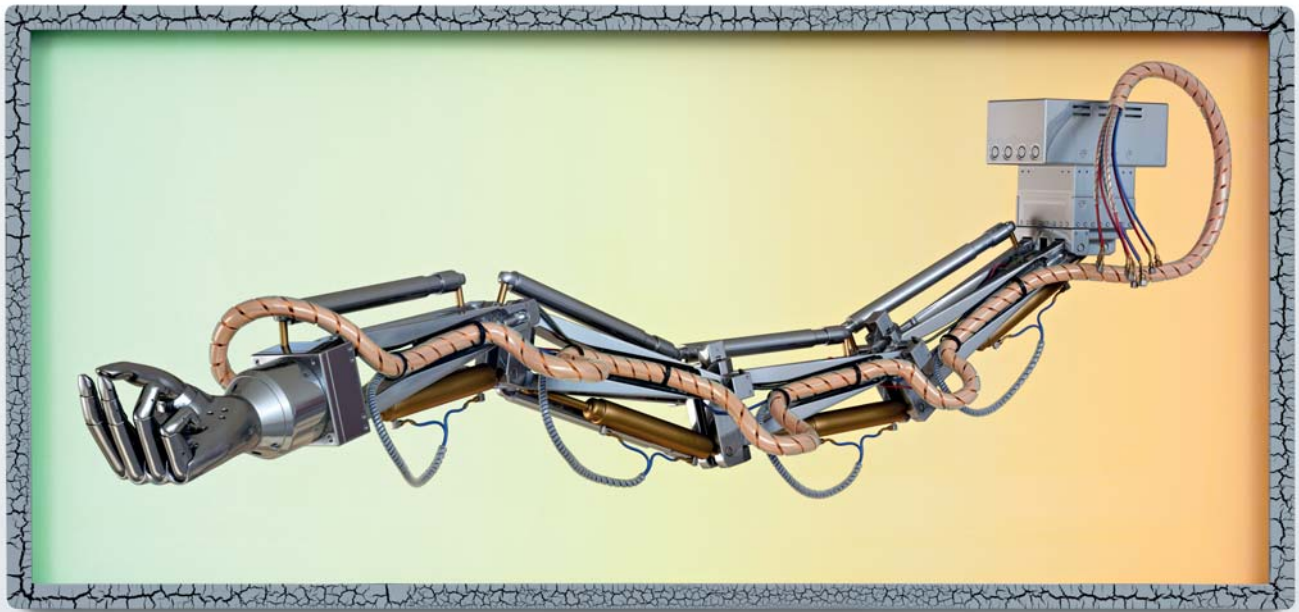
What is new? What can be new? How do we want to shape the new or adapt the old? These are the questions that we – the members of the *Junge Akademie* and our head office – deal with both implicitly and explicitly during all of our meetings. In our daily lives as researchers, we read (and write) in almost every application, every review, and every article that the uncharted must urgently be investigated, and that we must be the ones to do it. But is the avant-garde even possible anymore? That topic is at the heart of this issue of the *Junge Akademie Magazin* (JAM).

The *Junge Akademie* is no longer brand new, but nevertheless undergoing constant regeneration: this year marks the 15th anniversary of the academy's founding. In part due to this occasion, the celebration in Berlin in June 2015 revolved around the topic of institutions. Jürgen Kaube, co-editor of the *Frankfurter Allgemeine Zeitung* and member of the board of the *Junge Akademie*, gave the keynote speech: 'Forever Young or Is There a *Jugendstil* in Academia?' We present his speech in this issue.

The *Junge Akademie Magazin* is also undergoing a regeneration process: after four years as editor-in-chief of JAM, I am stepping down from the position, as my membership in the JA will come to an end in the summer of 2016 after five years that have passed all too quickly. Tobias J. Erb will take up the reins at JAM. In 2011 and 2012 we worked together to create a new design for the magazine, which led to the creation of the Dossier section and a new layout. The news of the success of the magazine has come to my ears again and again: imparted to me by directors of Max-Planck-Institutes, by editors-in-chief of (popular) academic magazines, and from readers around the world, as the English edition is read in Young Academies everywhere from Japan to South Africa. Even design archives and national libraries in various European countries are now among JAM's subscribers.

Whether that is enough to make the *Junge Akademie Magazin* avant-garde is not something I can judge. What I do know is that even in this digital age, it is worthwhile to produce a printed publication that draws its strength from a passionate urge to see the world in new ways, to explore it and think about it – and to tell stories about these explorations.

Thank you!
Evelyn Runge



Aleksandra Domanović, 'Belgrade Hand on Minsky Tentacle Arm', 2013. Installation view, 'The Future Was at Her Fingertips', 2013, Tanya Leighton, Berlin

The hand is regarded as humankind's most complicated tool. Even today, the partially automated 'Belgrade Hand', developed in 1963 in what was then the capital city of Yugoslavia, is an impressive example of how difficult it is to recreate our gripping reflex. The image by artist Aleksandra Domanović allows us to glimpse how humans and machines are slowly becoming fused – and how great a distance there still is to cover

ON THE BORDER BETWEEN REALITY AND VIRTUALITY

Avant-garde art may have a more difficult time of it today, but we can still recognise new tendencies within it. Today a young generation that is often described as 'post-internet-artists' is beginning to experiment with new forms of expression. These artists do not seek to establish a new genre. Rather, their work reflects on the production conditions of digital natives in the age of global connectedness. Aleksandra Domanović and Susanne M. Winterling explore the boundary between the real and the virtual self that all of us create within social networks. Furthermore, they investigate post-humanist concepts, in other words, the transition from human to machine. Both artists often take inspiration for their work from findings within academic research.

BIOGRAPHICAL NOTES

Aleksandra Domanović, born in 1981 in Novi Sad in what was then Yugoslavia, lives and works in Berlin and Oslo.

The artist Susanne M. Winterling, born in 1971 in Rebau in Bavaria, also lives and works in Berlin and Oslo.

WHAT IS HAPPENING WITH THE AVANT-GARDE?

COORDINATION EVELYN RUNGE | TEXT FLORIAN MEINEL

In 1962, Hans Magnus Enzensberger observed irritatedly that the term avant-garde ‘can be found on every laundry list today.’ Half a century later, things have changed significantly. Things have grown quiet around the avant-garde, and the same can be said of its former enemy images and opponents: ironic references to the establishment are made only by those who belong to it, and orthodoxy as a way of thinking and a way of life is decidedly dead. Even the father-son conflicts essential to cultivating an avant-garde attitude are now considered a part of the ‘happy family’ concept. Like the university that factored time into the curriculum for students to be opposed to things.

In this issue, we set out to find remnants of the avant-garde, and began our search in the field of academia. Here avant-garde can be taken to mean criticising research, radicalism, breaking through boundaries, and making the invisible visible. But it can also include submitting to trends, false youth, the eternal repetition of the same thing. Is it possible to breathe new life into the avant-garde? We don’t know. But when it gets to the point where no one else is even asking about the avant-garde anymore, it is our task to do so. Otherwise the *Junge Akademie* would have failed in its mission of supporting the youth of today on the path to becoming the establishment of tomorrow.

OFF TO NEW WORLDS

The author's research on virtual glasses allows him to experience on a daily basis how they are revolutionising vision and research

TEXT CHRISTIAN STEIN

It is an age-old dream of mankind to explore other worlds or even to create them. So many stories, narrative forms and media were created to allow other realities to take shape before our eyes. Beginning with simple drawings and later images that featured perspective, the development of visual media has continued via the photograph and motion pictures all the way to 3D cinema and interactive computer games. The aim was to delve ever deeper into a fictitious or virtual space. This deep diving with the help of visual media has continually shifted our concept of reality. Today the suggestive power of images is stronger than ever – in terms of the risk of manipulation as well as a convincing narrative strategy. At least since the media staging of the Iraq War in 2003, the power of media outlets to shape reality has been widely debated within public discourse.

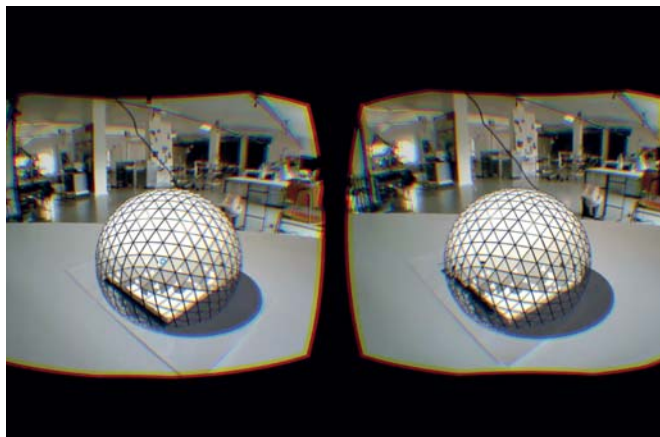
Many of these types of media are no longer avant-garde today. Over the last two years, however, a group of visionaries has begun experimenting within the shadow of the larger media forms. The members of this group believe in a new medium that could bring about a new revolution when it comes to the power of images. At the moment it is a small but rapidly growing and global movement: an avant-garde of virtual realities.

This movement began in the early 1980s. At that time, the dream of a technically transmitted virtual reality was described by Damie Broderick in his novel *The Judas Mandala*. Today this dream could become reality for large parts of society, as the necessary hardware and software will soon be affordable for the masses. It is anticipated that in 2016, devices costing around 300 euro will enter the market. There is even talk of so-called virtual reality glasses, the most well-known example of which is the Oculus Rift. These glasses are the size of a brick, resemble

diving goggles, and are fastened around the head with an elastic band so that they fit tightly onto the eyes and block all light. It takes a moment before the device, weighing about 400 grams, fits comfortably and no longer feels odd. The glasses consist of a 5.6 inch OLED double display with a resolution of 2160 x 1200 pixels and magnifying lenses for both eyes. The display provides a slightly shifted image for each eye, enabling stereoscopic vision.

Under a simulated sky

The fascinating thing about the Oculus Rift glasses is not only the three-dimensional image, which many people are already familiar with from 3D cinema. Rather, these glasses create a radical new way of experiencing the world, because the three-dimensional image no longer has any limitations. No matter how large a cinema screen may be, when you turn around, you still see the rest of the cinema behind you. Until now, you had to turn a blind eye to the physical space you were in. With virtual reality glasses, this has become much easier: every way you turn, you see the simulated world. A virtual sky arches above you, a virtual floor stretches below you. The observer has become part of the virtual world. When someone tries it for the first time, they must first learn that they really can look all around the space – it is a totally unfamiliar experience. At first, many test participants stretch out a hand to touch one of the virtual objects because it all seems so real and close. The glasses themselves constantly respond to the direction of the wearer's gaze: if you move your head to the left, the image in front of your eyes also pans to the left. The devices have become so sophisticated that dizziness and motion sickness are reduced to a minimum. The head movements perfectly match the visual impression that is delivered, and delays in the picture are almost imperceptible.



A virtual object in a physical environment



The Oculus Rift glasses are firmly attached to the wearer's head, much like diving goggles



Christian Stein virtually explores the Berlin Palace

There are many potential uses for this technology within research. These type of glasses could, for example, be used to better estimate size, distances, and spatial atmosphere. Architects could take a virtual walk through a building prior to construction, and historians and archaeologists could virtually enter reconstructions of previously existing buildings, while engineers could use them to better understand the spatial organisation of industrial facilities. In psychology, it is hoped that virtual glasses could be used therapeutically to help people defeat phobias such as fear of spiders or fear of flying by gradually approaching the object of their fear in the virtual world. Surgeons could receive better training for complicated operations by taking part in virtual versions of successful operations from a first-person perspective. These and many other disciplines are only beginning to discover the new opportunities that virtual reality has to offer.

The time for a grand entrance draws near

The coming generation of virtual reality glasses will change and expand our relationship with the world. Just like other new technologies, it certainly has its positive and negative sides. The avant-garde of virtual reality, which operated quietly in the background for so long, is gearing up for its grand entrance into the public sphere – and it will need to prove which of its ideas can truly convince us.



Christian Stein has been a member of the Junge Akademie since 2015. He studied literature, linguistics and computer science and is now conducting research within the 'Image Knowledge Gestaltung' Excellence Cluster at Humboldt-Universität zu Berlin.

BACK TO THE AVANT-GARDE

In his film *Midnight in Paris*, Woody Allen spins a tale about how wonderful it would be to meet the avant-gardists of centuries past. But does longing for nostalgia block our view of avant-garde movements?

TEXT CASPAR BATTEGAY

For the French poet Charles Baudelaire, the avant-garde always had to look forward to the future. The avant-garde, as he wrote in the middle of the 19th century, is a movement that audaciously leads one 'to the depths of the unknown' in order to 'find something new there.' Our contemporary culture is less likely to gaze toward the future and more prone to looking to the past. It is fixated on the familiar, and there is the widespread feeling that the new is nothing but the old in a different form. It is no coincidence that new retro models, remakes, and cover versions are constantly hitting the market. They feed our longing for a time in which the future seemed promising and free of crisis.

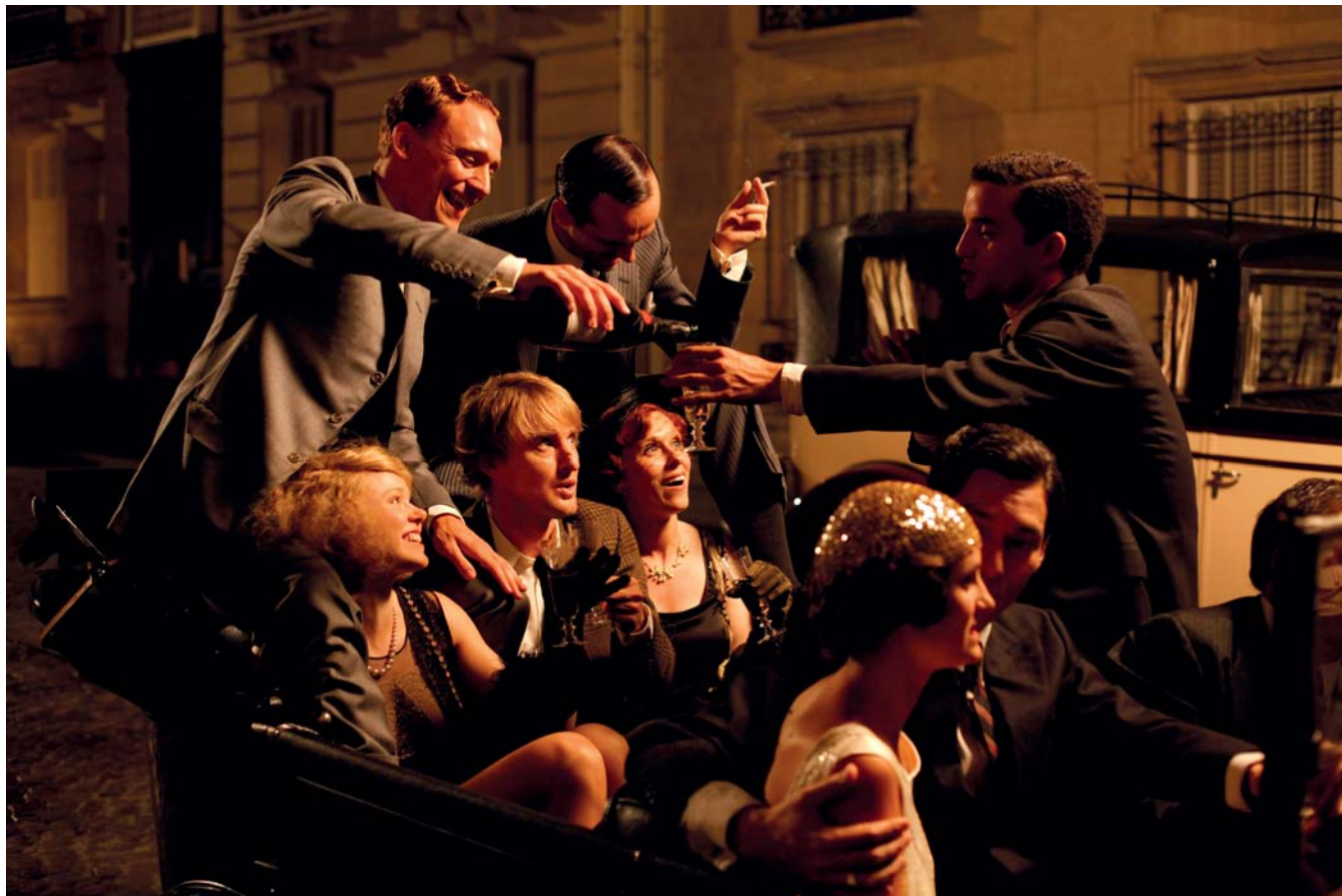
Few other films play as expertly with nostalgia as Woody Allen's *Midnight in Paris*, which was released in theatres in 2010 and became one of the most successful films of the past few years. It tells the story of an American screenwriter named Gil Pender who travels to Paris with his fiancée. In the city of love, it becomes clear that their relationship is in deep trouble. While Inez shows herself to be a pragmatic tourist who prefers to spend her time shopping in boutiques, Gil loses himself in romantic dreams. At night he wanders the streets by himself and sits in front of a church. As a clock strikes midnight, an Old-timer suddenly pulls up, Gil gets in – and when he alights from the car minutes later, he finds himself in a party in the 1920s. Here, to his great joy, he meets icons of the modern avant-garde: the authors Scott and Zelda Fitzgerald, Ernest Hemingway, and Gertrude Stein, and the painter Pablo Picasso.

Midnight in Paris is a poetic-ironic film study full of nostalgia. The term 'nostalgia' consists of two Greek words: 'nostos'

(return) and 'algos' (pain). It was coined by the Swiss medical student Johannes Hofer who used it to describe the pain of Swiss mercenaries longing for their mountain homeland. Only a return to that home, Hofer was sure, could cure this longing. Today the term nostalgia is applied to past epochs; the cultural scientist Svetlana Boym also sees this phenomenon as a 'longing for another time'.

In one of the most humorous scenes in *Midnight in Paris*, Gil is invited to share a glass of wine with Salvador Dali. They are soon joined by the director Louis Bunuel and the photographer Man Ray. After a while, Gil explains to the three surrealists that he comes from the future. The men are not very surprised. This is not a problem for them, for after all, as avant-gardists of their age, and in contrast to the nostalgic Gil, they are already living in the intellectual future.

A short while later, the time-travelling Gil falls in love with Picasso's beautiful muse Adriana, who reciprocates his feelings. But Adriana is bored. She herself longs for the good old days of the 1890s, and so Gil and Adriana travel even further back in time together. In a salon in Montmartre, they come across the avant-garde of the Belle Époque: the painters Henri Toulouse-Lautrec, Edgar Degas and Paul Gauguin. But these three painters by no means see themselves as the vanguard of the artistic revolution. They regard the artists of the renaissance as the true avant-garde. Nostalgia, the film makes clear, is eternally irredeemable.



Partying with the avant-gardists of the Roaring Twenties: Gil Pender meets his long-dead role models

At the end of the film, Gil returns to the present of the 21st century. He breaks up with his fiancée and decides to stay in Paris. He wants to work on his novel about a souvenir shop with the name 'Out of the Past'— and unexpectedly falls in love anew: with the beautiful Gabrielle, an antiques dealer.

The director Woody Allen was part of the American avant-garde in the 1970s. At that time, he arranged his films in a new way, created different kinds of dialogues, and developed a masterly experimental film language to undermine narrative reality. His most recent films refer to this avant-garde approach at most in an ironic-nostalgic manner. Thus *Midnight in Paris* demonstrates that even our nostalgia is not original and that nostalgia shaped previous eras. But that does not mean there is nothing new

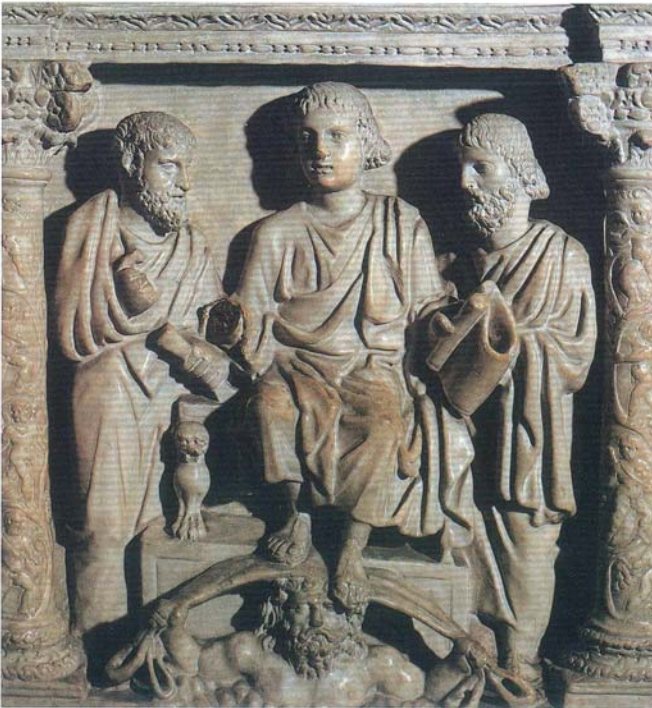
under the sun. The speed of electronic media and the overwhelming diversity of globalised cultural production make it difficult to say whom in our time a traveller from the future would visit. Who or what forms the avant-garde nowadays? Which street artist or blogger will one day be a classic? To what extent will art and culture as we know them still exist in the future? These questions cannot be answered by anything less than a trip to the future – a dream that Woody Allen already described in his 1973 film *Sleeper*.

Caspar Battegay is a literary scholar and conducts research at the University of Lausanne. He became a member of the Junge Akademie in 2015.

YOUNG GOD, OLD TRUTH

In the Roman Empire, Christianity was regarded as an attack on social conventions. So its followers attempted to overcome the stigma of youth

TEXT KATHARINA HEYDEN



Christ as a beardless youth triumphing over the old Roman god of the sky, Uranus. This sarcophagus relief from the fourth century shows an unusual self-representation of Christianity.

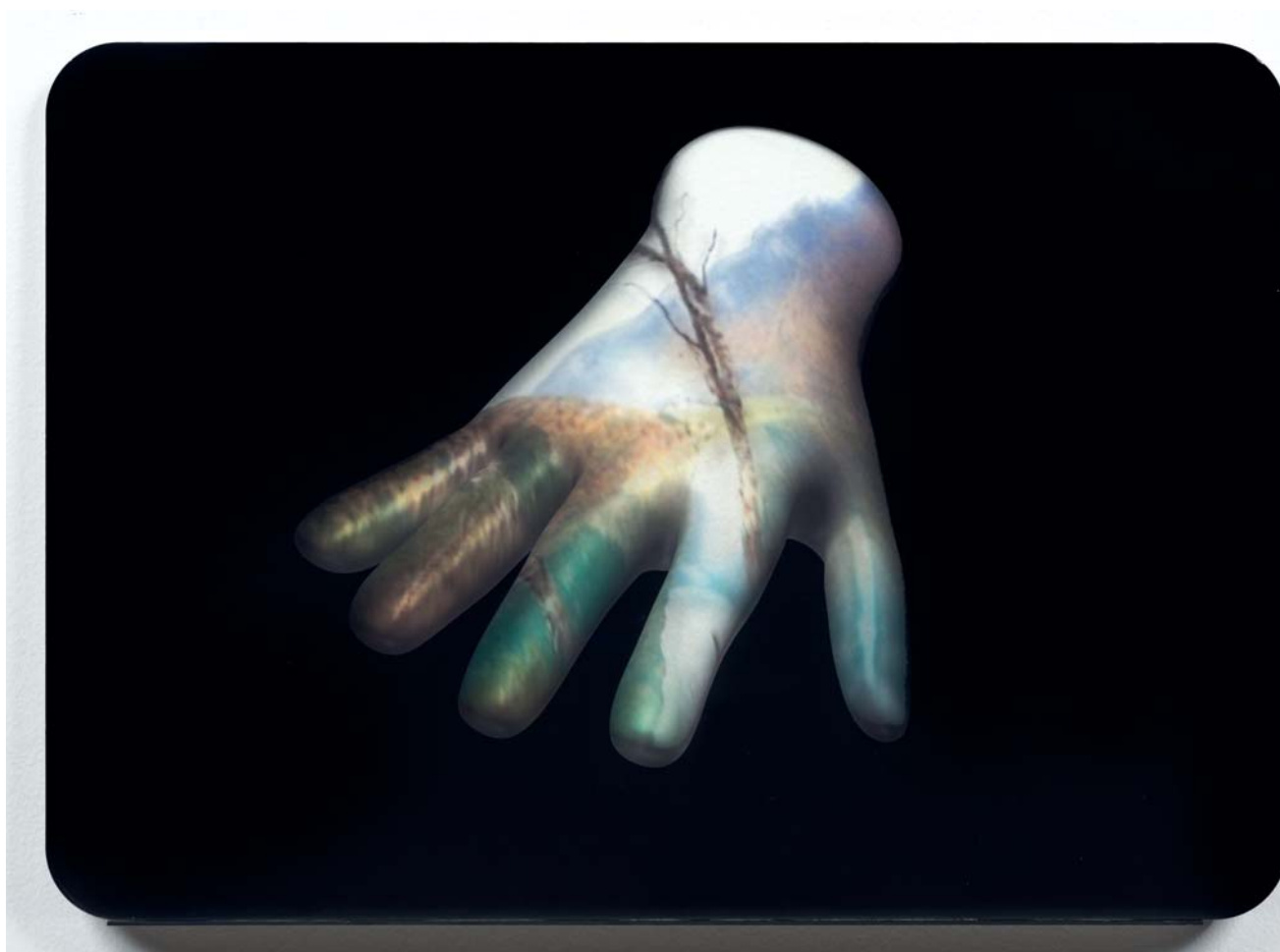
When the Roman senator Iunius Bassus died in 359, he was buried in a tomb that was as magnificent as it was provocative: the central relief showed Jesus Christ in the manner of a ruler, sitting on a throne in a victory pose and holding a scroll in one hand like a scepter. He is flanked by two followers, and his feet rest upon the old sky god.

This image represents the avant-garde of late antiquity: the youthful Christ putting the established deities in their place. The death of the 42-year-old senator Iunius ended a well-planned political career. During his time, acknowledging one's Christian faith was regarded by many within the conservative senate as an attack on social conventions. Presenting the Christian god as a young victor over the Roman religion was certainly audacious – an ambitious politician was wise to save such a gesture for when he was no longer among the living.

Older than Platon

Only once before, in the second century, had anyone dared to praise Christianity publicly as something new. That person was the Athenian philosopher Aristides, who, in a promotional text he dedicated to the emperor Hadrian, presented a sketch of the history of mankind in which the Christians had finally found the truth that the barbarians, Greeks, and Jews had searched for in vain. 'Truly great and wonderful are their teachings, and truly new is this people,' Aristides wrote.

Christianity as an experience of novelty? That did not sit well with the Romans, for whom achieving an advanced age was a guarantee of truth. 'The older is the better,' according to a Roman saying.



An injured hand floats freely in the darkness of a virtual room: with her digital print 'On Certainty, 2014', the artist Susanne M. Winterling explores how our reality changes when handwriting disappears and is replaced by new skills such as typing, scrolling and sliding. What remains in the new reality is apparently not much more than a cartoon-like projection surface for bionic patterns

PHOTO: COURTESY OF THE ARTIST AND JESSICA SILVERMAN GALLERY

Those who wished to make Christianity palatable to Romans needed to prove that it was an old religion, or even better, the oldest religion in the world. Christians in Roman times used chronological calculations and tables to try to substantiate the claim that Christ was older than Plato and Moses, older than Homer. Modern research has coined the term 'proof of antiquity' for this type of argumentation.

Therefore it is of no surprise that Jesus is often depicted as being of the same age as the Roman god of the sky. The image of Jesus on the sarcophagus of the Gallic bishop Concordius, for example, bears a suspicious resemblance to Uranus. This cleric was clearly not trying to send a message of Christianity as being avant-garde.

In the end, a paradoxical chimera of 'young' and 'old' asserted itself within iconography (at least in terms of imagery in antiquity). The bearded, long-haired Jesus dominated not only Christian art through history, but also Jesus films in our own time. It is only since the hippie movement of the 20th century, during which long hair and beards became an expression of wild youthfulness, that one can recognize an avant-garde aspect in this image of Jesus. This just goes to show that it is not the artwork itself but rather the viewers and their environment that determine what is and is not avant-garde.

Katharina Heyden is Professor for Church History and Interreligious Encounters at the University of Bern and became a member of the Junge Akademie in 2012.

DEFENDERS OF THE ESTABLISHMENT

Legal scholars usually adapt new ideas from other disciplines. But at one point, members of the Free Law Movement formulated an avant-garde programme

TEXT FLORIAN MEINEL

The question of whether law is an academic discipline was not one that legal practitioners asked themselves until academia came under pressure from the avant-garde. Industry and natural sciences, aesthetic modernity and the humanities – what drives jurisprudence to search for the new? The ‘worthlessness of jurisprudence as an academic discipline has been a catch phrase since the Berlin Chief Prosecutor Julius von Kirchmann used it in a speech in 1848. Since then, it seems that the law has always stood on the side of the establishment. People refer to ‘law and order’, by which they mean ‘Law is order!’ That is certainly the case in Germany, where lawyers had few opportunities to distinguish themselves as revolutionary opponents of the system. Lawyers always have ‘concerns’, on bad days they have ‘grave concerns’, and in the worst case they have ‘concerns about the constitutionality’ of something. Lawyers attack the aesthetic avant-garde using libel suits, like the one against poor George Grosz, and threaten the makers of new worlds, such as doctors, biotechnicians and digital developers, with criminal law, data protection, and liability law.

Legal scholarship provides lawyers with justifications: it schools and cultivates their ability to think in terms of deductions, an ability that belongs to the code of the establishment. A right is the result of a decision, which is the result of a law; the law is derived from the constitution, the constitution is derived from the constitutional authority, which is derived from democracy. Democratically speaking, this act of deduction (in technical terms: ‘dogmatic’) has much in its favour, but in terms of methodology, it is not for everyone. But what would an avant-garde jurisprudence look like? Avant-garde is something different from

its coddled, somewhat dumbly harmless sister, innovation. The law advances innovation, for example by enabling tax breaks for business expenditures for research and development. It is also capable of creating innovation within its own field, as proven by the historic invention by a Munich notary in the early 20th century, of the corporate form ‘GmbH & Co. KG’ (Limited Liability Company & Company Limited Partnership).

But avant-garde legal studies? The avant-garde makes the plainly new visible and wants to make it take hold. That would mean conceiving of the law in a completely different form, free of the dominant pressures and from the link to eternal derivations. To bring about something like this, it is not enough to take the perspective of an avant-garde philosophy, sociology or media theory and report on events in the world of law by making futuristic noises. That method only continuously confirms the initial result: here is the law, there is the future. As long as lawyers stick to their material and continue their derivations, they will not be capable of being avant-garde.

The battle against dilettante logic

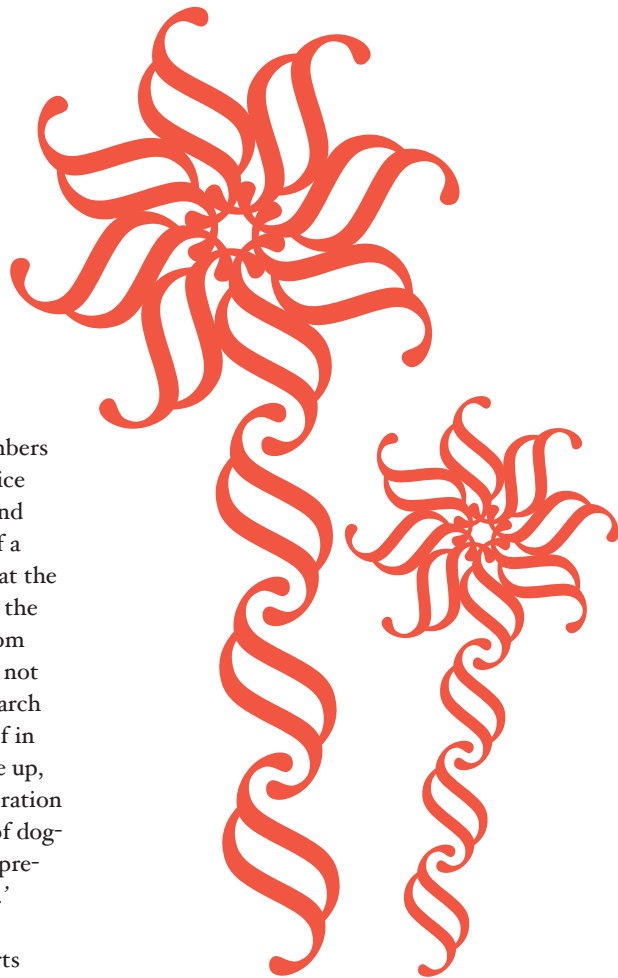
At least one attempt to break out of the establishment of legal studies has been documented. The effort was made around 1900 by a group that described itself as a ‘Free Law Movement’. Its most brilliant thinker, the legal historian Hermann Kantorowicz, formulated the program in a thin booklet entitled *The Battle for Jurisprudence*, which he published in 1906 under the telling pseudonym Gnaeus Flavius. Gnaeus Flavius was an imperial scribe who, in the year 300, revealed the secret formulas of Roman court proceedings to the public and thereby wrested

them from the establishment. Kantorowicz and other members of the Free Law Movement no longer believed in the practice of drawing logical conclusions from prescribed sentences and held the juridical system of the professors to be a 'utopia of a dilettante logic'. Fascinated by the feeling of crisis present at the fin de siècle, they aimed to open the language of the law to the not-yet-understood, for the free and just creation of law from the not yet decided, individual case. Whenever the law did not provide an unequivocal solution, they wanted lawyers to search for an answer in the colourful world around them instead of in the law books: 'From the ruins of torture triumphantly rose up, to the horror of all those without courage, the free consideration of evidence, the pride of the present time; from the ruins of dogmatism will rise, to the horror of all those who do not comprehend, the pride of the future, namely the *free creation of law*.'

And today, more than a hundred years later? Although courts do many things with great freedom, in terms of theory no one wants to hear much about happy vitalism or the free creation of law. Today there is a more relaxed approach to things. And anyway, dogmatism has managed to assert itself in the face of all attacks.

The representatives of nobility

Legal scholarship did recently end up with a guilty conscience about its lack of avant-garde when, in today's internationalised, externally funded research landscape, it was no longer able to provide enough project-based (and thus fundable) research proposals. The research council took up the matter and in 2012 provided a range of recommendations in its report about the 'Prospects for Legal Scholarship in Germany'. The council did not propose ideas for a new jurisprudential avant-garde, but it did deliver the well-known long-selling products to the members of its field: internationalisation, interdisciplinarity. The members of the field acknowledged the lessons and then returned to business as usual, as the establishment has always done when confronted with contradiction.



Legal practitioners who find the existing establishment uncomfortable or not hip enough are therefore limited to the strategies of management consultants lacking in ideas: to do what others are doing successfully. All too often, this includes adopting foreign avant-garde elements as soon as they have established themselves in their field of origin and no longer have the power to upset anyone. This applies to avant-garde turns in the social sciences: system theory, gender, rational choice, cultural turn. Whatever is working elsewhere can also 'be applied to the law', as lawyers like to say. But could it be different? At the moment, the situation in the legal field is a bit like that of the nobility who have come down in the world and now surround themselves with stars in showbiz. They feel like they used to be special, but they no longer really know why.



The legal scholar Florian Meinel joined the Junge Akademie in 2014. He conducts research at the Legal Faculty of the Humboldt-Universität zu Berlin.

GODS, ARTISTS, BIOHACKERS

Synthetic biologists create new life forms, inspiring hobby researchers to experiment on their own. Our author makes the case for collaboration

TEXT TOBIAS J. ERB

Three years ago, when Craig Ventner, the US bio-pioneer, announced that he had created artificial life in a test tube, the media response was extraordinary. Newspaper headlines proclaimed that Venter was 'Playing God', that this was 'Life 2.0' and 'New Creation'. Venter's laboratory had managed to syn-thesise an entire bacterial genome and embed it within an empty bacterial shell. Although this experiment did not in fact create artificial life but 'only' demonstrated the successful transplantation of the genetic operating system of a bacterium, it did lead to so-called synthetic biology moving into the public spotlight.

Although Stephane Leduc had already sketched a vision of a 'biologie synthétique' in 1912, this kind of research has become technically possible only very recently. Synthetic biologists break with traditional research methods in the biological sciences. Instead of being observers, synthetic biologists aim at becoming creators. They want to add characteristics that have not hitherto existed to life, and – as Venter tried – even create something living out of inorganic matter.

As progressive as these developments in biology may seem, they follow the typical development observed in other natural scientific disciplines. Freely paraphrasing Max Planck, according to whom scientific insight precedes application, physicists of the 18th century paved the way for the engineering sciences of today, while analytical chemists did the same for synthetic chemists.

Are synthetic biologists therefore the future engineers of life? The benefits promised by synthetic biology range from tailored

bacteria for the production of antibiotics and intelligent cells that fight cancer to designer organisms that turn the greenhouse gas carbon dioxide into biofuel.

A young movement of bio-artists who draw on synthetic-biological methods in their art observes these developments avidly. Eduardo Kac, who is part of this artistic avant-garde, gained much attention in 2000 for his work 'GFP Bunny', a bunny rabbit that fluoresces with green colour. The bunny, named Alba, had been bred in a French laboratory, where a fluorescence gene from the glowing jelly fish *Aequorea victoria* had been spliced into its genetic material.

The glowing bunny

Kac's goal in creating the bunny is to stimulate a dialogue between research and society. He wants to remind scientists that life forms like Alba whose molecular biological structure have been transformed can never be regarded as isolated laboratory objects. Through their existence, they always obtain a social context and are inevitably subjectivised. Furthermore, the transgene bunny is an attempt to hold up a mirror to society to show that the 'natural' world is in fact one shaped by humans.

Humans have been breeding bunny rabbits and selecting them based on genetic variation since the sixth century. From this perspective, the creation of a green fluorescent bunny is a continuation of the old breeding process. With the help of synthetic biology, genetic variations can now be conducted with more precision and more control than ever before, but this in no way makes the creative process behind the bunny any more



*A piece of wood grasped by a glowing futuristic hand:
Aleksandra Domanović, 'Relay Runner', 2013*

*Installation view, 'The Future Was at Her Fingertips', 2013,
Tanya Leighton, Berlin*

'unnatural'. Even the exchange of genes across species boundaries, as happened in Alba with the help of synthetic biology, is a biological reality. This type of gene exchange was essential in the natural creation of the sweet potato, to name but one example.

Bio-artists such as Eduardo Kac move within a legal grey area. The genetic engineering of organisms, as well as the handling of genetically modified organisms, are subject to strict rules. In order to realise their works, bio-artists must often turn to scientific laboratories for help. The display of their artworks, if possible at all, is usually permitted only if certain conditions are met, even if the organisms involved have been deemed genetically safe. In the worst case scenario, these artists face a prison sentence. The art professor and bio-artist Steve Kurtz was arrested in the US in 2004 on suspicion of bio-terrorism. Petri dishes for the cultivation of bacteria as preparation for an exhibition had been found in his house. Although the confiscated devices and organisms were categorised as non-dangerous, Kurtz was not acquitted until 2008. He had been facing a potential prison sentence of twenty years.

Conspiratorial experimentation

Like the bio-artists, 'biohackers' also find themselves in a similarly precarious legal situation. The term 'biohackers' encompasses private researchers of all kinds, from self-taught scientists to people with a PhD in biology. What unites them is a passionate interest in genetic engineering and synthetic biology, as well as a desire to help shape advances in bio-technology.

In terms of its structure and its self-conception, the self-

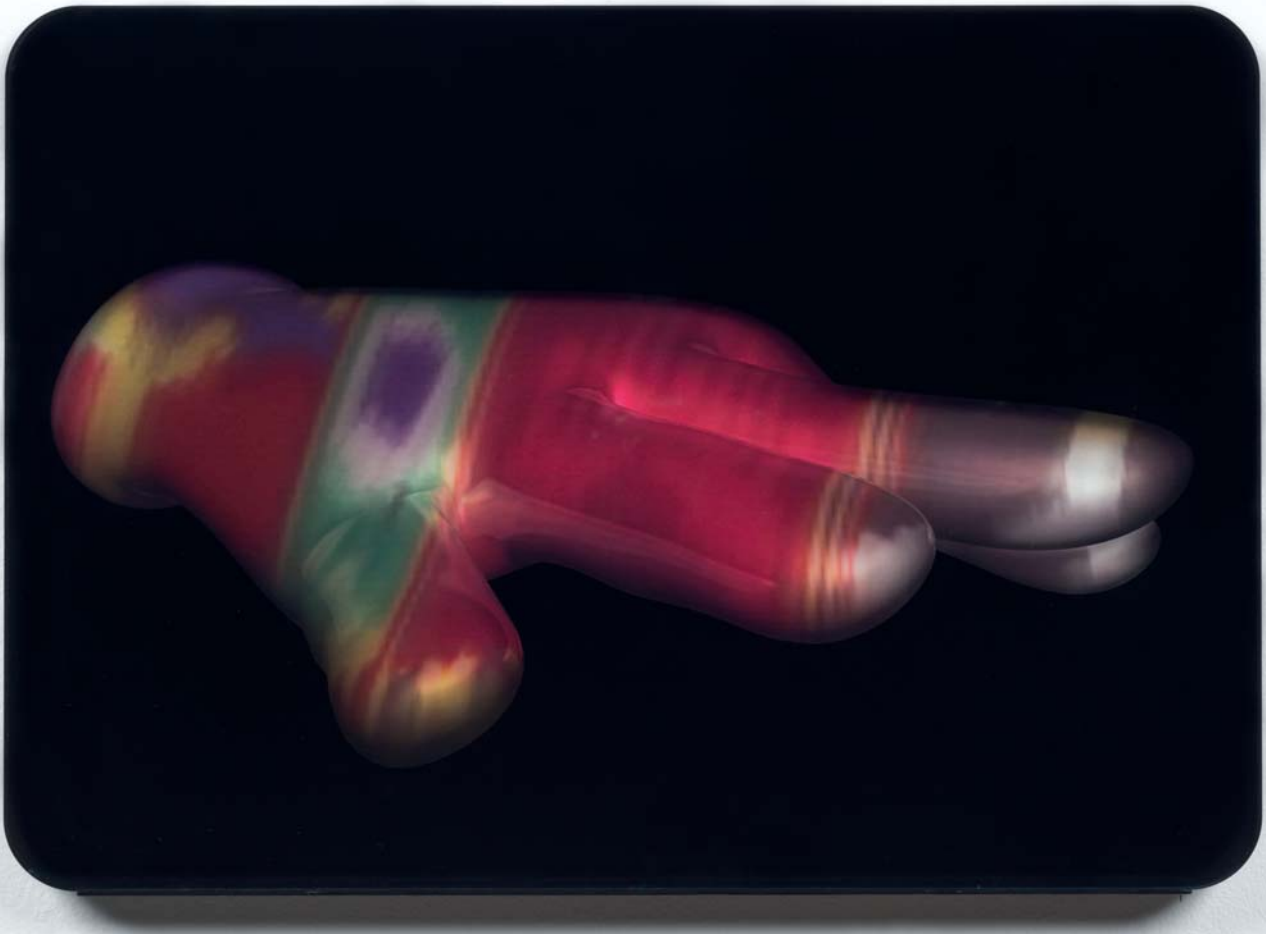
declared scene bears a strong resemblance to the computer hacker movement. In total, it consists of several thousand DIY biologists around the world who are in close contact with one another. There is a great spirit of optimism among them: the internet contains instructions for building devices to replicate DNA and for turning webcams into microscopes. These pioneers share their knowledge at conventions and in larger cities they meet late at night to experiment together in garage laboratories, meetings that are sometimes marked by a clichéd sense of conspiracy.

Artists into the laboratories

At this stage it is hard to say to what extent the hobby scientists will contribute to any scientific advances. Many of their attempts are playful – they often centre on replicating and analysing their own DNA or creating so-called sensor bacteria that indicate the presence of certain chemicals or poisons through a colour reaction. Oftentimes, biohackers are copying well-tried, harmless experiments with well-known genes at home.

Although most of these experiments and artworks are in no way dangerous, and although most bio-hackers have pledged to follow a strict hacker code of ethics, bio-artists and DIY biologists see themselves caught in a conflict between their right to individual freedom and society's need for safety. Another aspect of this conflict is the issue of the democratisation of scientific progress in an enlightened society. Should synthetic biology be monopolised within established institutions and behind closed laboratory doors? The biohacker scene demands more freedom.

One solution to this conflict might be found in a revision of the



A searching, fumbling hand in a black space: Susanne M. Winterling's digital print 'On Certainty' from 2014

German genetic engineering act in order to allow the handling of organisms and genetic engineering methods generally considered as safe for private use. Another plausible step would be an increased integration of hobby scientists and bio-artists in institutions. The SymbioticA of Western University of Australia, a laboratory that provides artists as well as scientists with equal access to biological experimentation, could serve as a role model here. A residency program allows artists to work in a lab with mentors and to blaze new trails along the intersection of science and art.

In Germany, the Schering Foundation recently initiated this type of transdisciplinary exchange. The foundation organised a symposium on synthetic biology from the perspective of art and

science together with the Leopoldina – the National Academy of Science – and the Berlin-Brandenburg Academy of Sciences and Humanities. This opening event will hopefully serve as an inspiration for closer co-operation between the arts and sciences. When it comes to synthetic biology, this kind of collaboration would be most welcome.



Tobias J. Erb became a member of the Junge Akademie in 2013. He studied biology and chemistry and currently conducts research at the Max-Planck-Institute for Terrestrial Microbiology in Marburg.

THINKING FURTHER

Humans value creativity, and yet they often resist good ideas

TEXT PHILIPP KANSKE

What is it about the avant-garde that makes it avant-garde? First and foremost, it is the new, the not yet imagined, that it produces or practices. In psychology, research dedicated to exploring how we can think of something new is conducted under the label of creativity. Psychologists assume that the act of connecting previously separate pieces of knowledge enables creativity. The success of this creative connection depends on how well versed we are in a subject. Thus a truly excellent chess player can beat a less experienced player with well-rehearsed moves, but he can only win against a professional if he can translate his knowledge into surprising moves. Fundamentally speaking, creativity benefits from a good mood and sleep, a well-developed sense of play, a tendency toward magical thinking as well as a creative environment – meaning the opportunity to watch other people who are being creative themselves. In stressful situations, however, we tend to produce the familiar.

But how do we treat the creative ideas of others? When you pose this question very directly, creativity wins every competition, and yet, creative ideas are often met with outright rejection. When Alfred Wegener published his theory of plate tectonics at the beginning of the 20th century, he was criticised harshly. It 'is a wonderful dream of beauty and grace, the dream of a great poet,' opined the French geologist Pierre-Marie Termier, while the Austrian geologist Fritz Kerner-Marilaun groaned that it was 'the fever fantasies of a man suffering from crust-turning sickness and pole-shifting plague.' Wegener's theory was not acknowledged until after his death.

But why do creative ideas so often meet with resistance? Answering this question requires not only asking people directly, but also measuring the unconscious, fast, and automatic judgements



of creativity. They show that we often prefer the apparent practicality of a proven solution, especially when we find ourselves in an uncertain environment or feel insecure. Insecurity not only leads us to value the tried and tested, but also makes us blind to creative ideas and solutions. Those who can cope better with insecurity are more willing to try something new.

Little exercises for big ideas

Even small exercises advance our ability to recognise creative ideas as such. In a psychological experiment, participants were first asked to write an essay on the following topic: 'For every problem there are a multitude of solutions'. The experiment demonstrated that after completing the essay, participants were more open to creative solutions. What also helps is imagining that a good idea has come from a faraway place – and not from the neighbouring village. This idea creates (psychological) distance and enables abstract thinking. We tend to see the larger picture and not lose ourselves in the details. If we manage to think in broader terms every now and then, perhaps the next fantasist will be deemed avant-garde while he or she still walks among us, and not posthumously.



Philipp Kanske joined the Junge Akademie in 2015. He conducts research at the Max-Planck-Institute for Human Cognitive and Brain Sciences in Leipzig.

ON BELL-BOTTOMS AND FOOTNOTES

One can find the avant-garde in both fashion and academia. Whether or not something becomes a trend is often determined by unforeseeable details

TEXT MILOŠ VEC



54. Corpus – Rotterdam 2002

Individuality as uniformity: from the series "Exactitudes"
by Ari Versluis and Ellie Uyttenbroek

The avant-garde does not contradict fashion. Quite the opposite, in fact, for fashion is a prerequisite for the existence of avant-garde. Fashion is a rather loose term for a permanent change in tastes whose motives cannot be fully explained rationally. Its trajectory and preferences certainly cannot be predicted, even if different manufacturers position themselves in the same market at the same time with similar products, black perfumes, for example.

In this transformation we can observe the normative power of society and its sub-systems. There are no clearly defined actors, procedures or decisions. The commitment never lasts long. Trends are subject to continuous readjustment and reformation along actors' path to self-assurance and self-regulation, until the new has once again become the old. This does not, however, allow for the reverse conclusion, namely that the new element in fashion is a reappearance of the old. Pure retro does not work.

Gothic or Antique?

While the classic field associated with fashion is clothing, even academia is subject to fashions. But it employs different terminological ciphers, unless it aims to devalue the fashion in question. Different fields of academia deal differently with fashions – some fields are conservative, others more open to fashionable trends, while still others are practically addicted to renewal. For outsiders, these tendencies consistently deliver reasons for astonishment, and it is highly enjoyable to take a closer look at disciplinary transformation. The history of science takes a professional approach to this examination, but often underestimates the contingency-based and genuinely fashionable element of these shifts: Gothic type or Antiqua font? Footnote styles? The use of paragraph symbols to organise textbooks?

Entire turns in disciplines are the expression of fashion(s): the field of historical scholarship, for example, has negotiated the orientation of its research from the linguistic via the acoustic to the emotional turn.

The representatives of a given discipline themselves often hold differing views on their discipline's openness toward or rejection of fashion, just as they hold differing wishes for more change or for more consistency. Some scholars (male) happen to be satisfied with the classic combination (grey trousers, blue blazer), while others (also female) would enjoy stepping up to the lectern in bellbottoms for once. It is similar when it comes to their choice of topics and methods.

What does it take to make a certain fashion successful and for advances to be lauded as avant-garde ex post? It is a great mystery. The cliff that separates the successful fashions from those developments deemed wrong or failed is characterised by subtleties and factors of which most of us are not aware. The style of the suggestion and the nature of the person making the suggestion are to be regarded with critical self-awareness upon every examination.

A little bit of retro is never wrong

The success of fashions heralded as avant-garde depends on many actors and circumstances, including markets, brands, media, and power relationships. Reviewers are just as likely as fashion bloggers to have their passion kindled and align themselves with a trend, while the preferences of an appointments committee are just as susceptible to popular tastes as those of It-Girls on Instagram. The authority of publicity and criticism is indispensable but susceptible to disruption. Many a good idea

was first rejected for bad reasons and never managed to acquire the label of avant-garde.

It would be naïve to try to generalise recipes for success – and do we even want to write recipes? When the avant-garde is successful, it experiences its own failure in the form of ascending to become part of the establishment, upon which it must then reinvent itself. A little bit of retro is never wrong. But perhaps only because a de-normatisation has occurred, one that no longer decrees or forbids anything for specific styles? That is certainly the case in fashion (in its literal meaning).

When presenting her new men's collection in June 2014, Miuccia Prada may have claimed that 'now is not the time for crazy', but the normcore in her collection did not consist of the textile pieces, but only of the settings for the photo shootings for her ads. Normcore is a unisex fashion style characterised by unobtrusive, practically unfashionable clothing. The grey concrete of parking garages and bridge foundations lent the vibrant Prada pieces an ironic twist. This mix of styles with its reflected, purposefully produced ruptures is simply too attractive for us not to think about its potential as an analogy to academia. And when we do, it is hard to distinguish between aesthetic and intellectual categories.



Miloš Vec is Professor for European Legal and Constitutional History at the University of Vienna. He was appointed a founding member of the Junge Akademie in 2000 and has been an alumnus since 2005.

FOREVER YOUNG OR IS THERE A JUGENDSTIL IN ACADEMIA?

Celebratory keynote speech by Jürgen Kaube, co-editor of the *Frankfurter Allgemeine Zeitung*, at the 2015 Junge Akademie gala

TEXT JÜRGEN KAUBE



'A mixture of silliness and seriousness' – Jürgen Kaube addresses the Junge Akademie and its guests.

Youth is a curious mixture of silliness and seriousness. The following ideas will also consist of these two elements, a little bit of silliness and a little bit of seriousness, and my goal is that you won't exactly be able to tell which part is which.

In contrast to what has previously been claimed, the *Junge Akademie* is 1,814 years old. One arrives at this number by adding together the ages of all the members. In reality, it is even older than that, but I was not able to ascertain exactly how much older, as two of the members – the two artists, as it happens – have not provided their years of birth on the *Akademie's* website, which could also provide inspiration for us to think once again about the differences between scholarship, which becomes dated, and art, in which some works never age. 1,814 years – that is an average of 36.5 years, and this average age is relatively equally distributed across the natural sciences on the one hand and the humanities and social sciences on the other. (The humanities scholars and social scientists are older by three quarters of a year.) The age range lies between 31 and 42. Based on a list only of birth years, we cannot know which members have already celebrated their birthdays this year. When carrying out my calculations, I tried to adjust for this unknown factor by alternating between assuming that one member had already celebrated a birthday this year and that the following member had not. As you can see, I have tried to be as exact as possible.

Why am I starting out by talking about these numbers? On the one hand, to provide a veneer of empiricism, and on the other hand, to pose a question, namely about the meaning of the word

'young' in the title of this academy. I am not doing this in order to question whether the academy is young enough. That is a question that has been posed often enough, namely in regard to the use of the word 'young' to describe people who are 36.5 years old. Nor am I doing this in order to question whether 'young' means something else in academia than in other areas of society. If we think about family life: young parents of 36.5 years of age, you could get away with saying that. Athletes are certainly not young at 36.5 years of age; the Olympic Youth Games have a maximum age limit of 18; by contrast, politicians are deemed young when they are close to this age: in the SPD (Social Democratic Party of Germany), for example, any members under the age of 35 are automatically part of the youth organisation.

My question is rather whether 'young' is of any significance at all within the context of academic scholarship. The terminology of the world in which I grew up – Bielefeld – instructed us: first you must differentiate! So how do we differentiate 'young'? From 'old'. But one of its characteristics is that 'old' is not only differentiated from 'young', but also from 'new'. In this case, the German language does not always follow a clear rule as to which differentiation, between 'young – old' or 'young – new', is applicable in a given situation. Thus we allow constructs such as that in the famous essay by Theodor W. Adorno 'The Ageing of the New Music' – although something that is new cannot 'age', it can only 'become obsolete'. Or we speak of 'new' wine, although we mean 'unripe' wine, which again points more toward the direction of being young, although young wine never becomes old. We allow further paradoxes to exist: for example, 'the

elderly who are young at heart' or the 'precocious youngsters'. In honour of today's World Children's Day, my newspaper published a number of striking sentences sent in by readers who had overheard them from their children. The one most relevant to this evening's speech is: 'Granny, you're older than grown-up.' If we were to apply this logic to the *Junge Akademie*, we would have to say that its members are more grown-up than they are young.

When scholarship consists of publications and results, then it is clear that the differentiation between 'old – new' is essential to it – it certainly is for modern scholarship, which no longer concerns itself with maintaining old findings and existing knowledge, as one imagines was the task of scholars in pre-modern times, but rather focuses on the production of new findings. When it comes to the differentiation between 'old – young', on the other hand, it is less certain that it is meaningful when applied to scholarship. The auxiliary construction that I will examine in the next section and that probably also forms the basis of the *Junge Akademie*, consists of the concept of youth as being the bearer of the new, a concept that combines both of these differentiations.

My second calculation is based on youth as the bearer of the new. Here I have drawn on the average age of Nobel Prize winners and gone through the first ten years of winners, by which I mean I used the age of the individual winner when that person made the discovery for which he or she received the Nobel Prize. The result: 38 years. This has not changed much; I also went through the last ten years of prize winners, where the result was

a little bit over 39 years. There are some outliers: The oldest person to ever receive the Nobel Prize, a type of Would-be Nobel Prize, namely in economics, is Leonid Hurwicz, who received it at the age of 90 for something he had written when he was 56. But this is a special case, and the members of this academy cannot use it to tell themselves that they have another 20 years at least, because Hurwicz had not studied economics, but first law, then physics, then piano. In fact, he never studied economics at all, and on top of that, a world war and forced migration lay between the time he wrote his work and his receipt of the prize.

At the other end of the spectrum we have Marconi, who was 22 years old when he made the discovery for which he received the Nobel Prize. The youngest Nobel Prize winner ever, William Lawrence Bragg, received it at 25 for something he had discovered at 23, namely X-ray diffraction through crystals. The slight upward trend in the average age of Nobel Prize winners, meaning their age at the time they made their discovery, which is difficult to determine seeing as scholars write many papers and are continuously conducting research, so it is unclear at which point they actually discovered that for which they then received the prize, can perhaps be linked to the fact that nowadays it is more often research groups instead of individuals who receive the Nobel Prize. The last Nobel Prize for physics went to a group of three Japanese researchers, aged 60, 35 and 29, respectively. This shows that within the process of discovery we find the age structure of a small organisation.

Youth means excused absence

There is also the view that subjects are clearly differentiated by whether the young are the bearers of the new. Mathematics is a prominent case: the most significant prize in this subject has a maximum age limit, and there is no doubt that one can be a mathematician at the age of 18. But can one be a German philologist at 18? But even in the natural sciences there are subjects, such as systematic zoology, about which I have been told that the best researchers are the oldest, those who have seen more shrimps than all the rest. There are also prominent examples from philosophy: Kant, of course, but even he was outdone by

Hans-Georg Gadamer, who wrote his most important work shortly before retiring. On the other hand, even the humanities bear examples of works completed by very young scholars: the essay 'Meaning and Understanding in the History of Ideas', which for me is the most important contribution to the history of political ideas, was written by Quentin Skinner at the age of 28. So even if one can state with a certain amount of justification that there are 18-year-old mathematicians but no 18-year-old art historians, one does always have to be ready to be surprised. We recently had the case of a 19-year-old who, as an intern at the Museum Karlsruhe, identified a Piranesi convolute that scholars had previously been unable to categorize. We should call this young man an art historian.

So what is it that, at this heterogenous point of departure, makes youth the bearer of the new? I will only name two motives, though of course there are more. The first is what one could, in the sense of Karl Mannheim, call 'competition in the field of ideas'. Young researchers, it seems to me, enter the competitive situation in a different way than older researchers, as they are confronted by three-fold competition: they are competing with their contemporaries, competing with the already established researchers, and competing to obtain the attention of the established researchers. This is much less the case for older scholars, and I believe this specific competitive framework is what predestines young researchers to be the bearers of the new. Perhaps that is also why one sometimes has the impression, when surrounded by one's contemporaries, that the young are particularly sharp-witted, in contrast to when one engages with established researchers, because in their case competition exists not only between them and their peers, but also for them and their attention. In any case, one has the impression, when reading review publications, that peers treat each other in a rather inconciliant fashion. This combination of competing with everyone and for the attention of someone could be explained using the example of a historical appearance during which the young were the bearers of the new, namely during secessions from schools. There was a time in scholarship in which very prominent secessions from schools occurred during which

someone was not simply turning against someone else, but turning against the old material in the respective school. Heidegger in regard to Husserl is one such case, but also Clifford Geertz in regard to Talcott Parsons or Willard Quine in regard to the Carnap School, perhaps also the iconologists in regard to their teachers. So this is the first complex: youth as bearers of the new due to a very specific tendency to compete.

The second point is based on a general characteristic of youth. Sociologically speaking, if one had to define 'youth' very concisely, one could describe it as follows: youth means having excused absences. In our society there are different well institutionalised excuses for absence: the best one is illness. Being ill is an excuse for almost everything, but youth also serves as a great excuse for many things. This begins around the age of 15, perhaps already at 13, when families say: For the next few years, the things that are supposed to be valid will not apply, that which was valid before and which is valid once again starting around the age of 28, in relation to standards of time, attention or partner selection. It is easier to change partners when one attributes the rapid change to youth, rather than later on when one is older. As one's age increases, so does the need for justification. And when one is young, one can also be absent more easily. This excused absence could be a source of the new in academia. If we look at those who are still students and not those who have made it into the *Junge Akademie*, we find there is a vocabulary for describing educational situations befitting this complex of excused absence: Those in question are mentally present, but not physically present in the space in which they should find themselves. They are reading but are not responsive. They get caught up in a topic. They show little consideration for networks and do not work hard to maintain these. They have a systemic tendency to be all over the place. In light of all this, it is rather odd that the decision to drop out of one's studies is described in a negative way, as it really depends on the individual circumstances: for some the act of dropping out has basically been the source of the new, while in other cases it could have been prevented and was perhaps a regrettable decision.



They do not know why they are studying a certain subject

Seen from the perspective of academia, this somewhat unreliable behaviour at universities can also be an advantage. 'Search behaviour', one could call it, or perhaps 'self-discovery behaviour', for example in relation to cognitive roles, so that one says: I don't really know yet what it is that interests me. This is applicable to 90 per cent of new students, who naturally do not know what they are actually studying, and also do not really know why they are studying it. There are a few exceptions, mathematicians, for example, but even in my own subject, economics, none of the students know what that discipline really entails, namely second-class mathematics. All of this could be a reason for the fact that youth, with its excused absence and its unreliable nature, its tendency to dream or be interested in a diverse range of things, its undecidedness, is the bearer of the new.

Of course important counter-descriptions and counter-tendencies to this concept of youth also exist, which I will only briefly address here: first the situation of studying under pressure, which presses students into courses that leave little time, that in fact were created to leave as little time as possible – with the somewhat nicer expression that the goal is to enable students to complete their education more quickly, but this also occurs at the level of research and an early entry of researchers into projects – projects that they often do not conceive themselves, but that are tied to positions that focus on a specific topic and with it force an early specialisation. Increasingly, up and coming scholars are writing their Bachelor's thesis, their Master's thesis and their doctoral dissertation about what is essentially the same subject. Add to this perhaps an early managerial role: courses that teach even young researchers how to obtain external funding, etc. I do not wish to express criticism of this here – perhaps it is entirely unpreventable – but simply wish to say that these are counter-tendencies to the excused absence, to this educational phase of somewhat unpredictable being, for all of these counter-tendencies make the process relatively predictable.

On top of all that, there is another aspect that makes it difficult for youth to be the bearer of the new. I alluded to it in the title to this brief speech: *Forever Young*. In many disciplines – not in all, but especially those I know my way around a bit and with which I suffer vicariously the most – there is a tendency for the old to play young. That is what I meant by including the *Jugendstil* in the title, by which I mean *Jugendstil* among the non-youthful. This is a phenomenon spanning all of society: the colourful elderly, the tolerant elderly, the funny elderly. There are counterparts within academia: paradigm shift was once a term that Thomas Kuhn, the physicist and historian of science, applied to describe the generational change from one cognitive complex to another. Today, paradigm shift is a planned transition – not something that Kuhn could ever have imagined. He thought that certain cognitive models would die out together with their representatives, followed by the appearance of new models and new representatives who see the world differently.



Is there a Jugendstil in German academia? Jürgen Kaube in conversation with Margit and Jörg Hacker from the Leopoldina ...



... and with JAM editor-in-chief Evelyn Runge.

Today, all of that is planned and is known as a ‘turn’. Planned obsolescence, for that we also have the term ‘fashion’: fashion is the structure for planned obsolescence. Fashion is not conceived for the long haul. It is almost as if it were written on the label that the next European research funding period will focus on something else, and that after ten years the DFG (German Research Foundation) will have tired of a topic, that you will not be able to whet anyone’s appetite with it anymore. So there is planned obsolescence within the world of external funding, and the more external funding takes on a dominant and formidable role, the more young people see themselves confronted with this planned obsolescence.

On the right to older authorities

The increase in fundamental financing for higher education institutions, which today is often rather hypocritically demanded, that is, demanded by the very people behind external funding, aims not only to instate another type of financing, but also changes the role of the young as the bearers of the new. The new is now usually presented to them from the outside as something that must now take place. For some disciplines within the humanities or cultural studies, one could even argue that this extends all the way into the selection of subjects: the *Jugendstil* of the elderly, the implausible boom of the last fifteen years of topics such as bodies, emotions, passions, desire, acceleration – all of these ‘childish toys’ are interesting to observe when they are presented in lectures by 60-year-olds in T-shirts. There is, then, something along the lines of botoxed academia.

What I am about to say is not aimed at the youth, those of 36.5 years of age, but to everyone else: I think that youth, if it is supposed to be the bearer of the new, has a right to a certain type of older authorities. Namely an older generation that does not prescribe a certain type of youth and does not try to take away the young generation’s youth by trying to remain younger than those who are in the system described above, with its many uncertainties, and trying to find a position somewhere on the horizon. Rather, the young have the right to an older generation that really is older and does not pretend to be anything else. An

older generation that does not embody turmoil, but peacefulness, reliability, presence, and not unexcused absence (due to external activities, assessments, conferences, etc.) in the system. The *Forever Young* in the title of my speech could be the expectation of hope for the young, but as a reality it is a rather useless comedy. In this sense, I have quoted a pop song from 1984, for which only the older ones among you will be able to name the singer.



JÜRGEN KAUBE, co-editor of the *Frankfurter Allgemeine Zeitung*, joined the board of the *Junge Akademie* in 2013. In this issue of *JAM*, we document his celebratory keynote speech ‘*Forever Young* or Is there a *Jugendstil* in Academia?’ Kaube gave this speech at the 2015 *Junge Akademie* gala, which celebrated its 15th anniversary under the motto ‘Institutions’.

“WE WANT TO BEAT EVOLUTION”

Microbiologist Tobias J. Erb on new ways to fight global warming, programmed bacteria, and off-the-wall ideas for the future

INTERVIEW DIRK LIESEMER

JAM: Tobias, you want to fight global warming. What's your approach?

Tobias J. Erb: We're searching for efficient methods of removing carbon dioxide from the air. Nature evolved plants in order to do that. But their biocatalyst that transforms CO₂ works very slowly, and it only transform as much CO₂ as the plant needs in order to grow. Seen from a technical engineering perspective, the metabolism of plants is not optimal, even though it has evolved over billions of years. At this point, we biologists have a good understanding of how CO₂ binding works in plants. But we also know that other, faster possibilities for biological CO₂ fixation could exist. These possibilities have not been realised by nature, at least not on a larger scale. For example, we only recently discovered previously unknown biocatalysts for CO₂ binding in bacteria that work much more effectively than those in plants. The CO₂ fixation metabolism of plants as it evolved is thus in large part due to historical coincidence.

JAM: Until recently, biology mainly concentrated on understanding what happens in nature.

Erb: That is changing right now. Synthetic biology is experiencing a massive boost at the moment. Researchers are not just thinking about how biological processes came to be, but also about how we could improve on them from a technical engineering perspective – and what methods we would need in order to do that. It is a double-edged development: on the one hand, you want to understand nature, but once you've understood it, you obviously want to apply that knowledge. The field of chemistry underwent a similar development a long time ago. Chemists first studied how matter is constructed, and then they used that

knowledge to synthesize new molecules. We biologists want to apply our collective know-how in order to create tailor-made biological processes. In contrast to chemistry, however, biology is a younger science and the objects of our research are far more complex. We are now at the point where we want to build a metabolic system in the laboratory that can remove CO₂ from the air more efficiently than plants ever could. Basically we want to beat evolution using its own tools.

JAM: When it comes to plants, where exactly does the problem lie?

Erb: The plant biocatalysts are slow and often confuse CO₂ with oxygen so that a lot of time and energy is wasted during the natural process of CO₂ fixation by plants. The bacterial biocatalysts that we've found are a hundred times faster than those of plants and are not impeded by the presence of oxygen. The question is whether we can really build a new metabolic system for converting CO₂ with the help of these bacterial biocatalysts. To achieve this goal, we conducted a targeted search for other metabolic reactions in nature whose combined output could provide a highly efficient way to transform CO₂. The equation is simple: if we manage to design this new metabolism into microorganisms, it would enable us to manufacture sustainable products from CO₂ more quickly.

JAM: What types of products do you mean?

Erb: First, we're talking about building blocks for chemical synthesis, such as small acids from which we can synthesise polymers – bioplastics. Another product would be antibiotics and biofuels from CO₂ – much simpler and faster than producing these from



THE MICROBIOLOGIST

Tobias J. Erb, born 1979, is a Research Group Leader at the Max-Planck-Institute for Terrestrial Microbiology in Marburg. He studied biology and chemistry and his current research focuses on synthetic biology and the question of how bacteria and artificial cells can be used to fix carbon dioxide from the air. He joined the Junge Akademie in 2013.

plants that first have to grow for months and also take up large areas of land. We want to take CO₂ out of the air and be able to turn it directly into an industrial product with the help of micro-organisms or minimal living organisms.

JAM: Future researchers formulate scenarios of a new industrial revolution. Will you be able to deliver the technology for an industry that does not emit any CO₂ and that therefore does not contribute to global warming?

Erb: That is certainly a big goal, but I think we are on our way to reaching it. At least we have an idea of how it could work. What we don't know yet is when our biocatalysts will be ready to use, or which industrial processes they could replace in the end. And it's unclear how synthetic biology could transform the chemical industry as a whole. Because once we are able to programme organisms in a targeted way, we might be able to invent completely new processes. Just one example: let's say I need

solvent X in order to clean certain wood surfaces. In the future, all I might need to know is which enzymes – meaning which biocatalysts – I need to combine into bacteria in order to build this solvent out of CO₂. But there are still many open questions left to resolve before we get to that point. We are only at the beginning of this development and we don't even know if it will be required to apply these techniques on a large scale. Maybe someday everyone will be able to produce their special products at home with the help of programmed organisms. But it will still take a few decades before that is possible.

JAM: It sounds like your discipline is on the verge of a very exciting time.

Erb: There are some totally crazy visions. I've just returned from an academic conference attended by pioneers who already live very far in the future, totally unbelievable. It's true that chemical DNA synthesis is becoming much less expensive, and




Biologists already know a great deal about nature, but much still remains a mystery

it's possible to imagine that in two, three decades, everyone will have devices at home that allow them to print DNA or biocatalysts in the manner of an ink-jet printer. So you would say, 'Today I need some medicine,' so you simply program the biological process into the device, which then delivers the finished medicine. Or maybe you need a chair: so you go buy a piece of wood and program some bacteria that create a chair out of it. The last example is very much a pie in the sky type of idea and lacks any kind of scientific foundation, but it shows how radically some synthetic biologists are thinking these days. In my laboratory, we are currently working on jumping over the lowest hurdle. But we are all closely following the debate: on the one hand, there is a movement that fundamentally wants to create life anew. On the

other hand, you have those who discuss what role science will play in the future and how we are to understand that role.

JAM: You just spoke briefly of DNA, which is a storage unit for information. Are computer scientists interested at all in these developments in synthetic biology?

Erb: They certainly are. Larry Page, the founder of Google, is very interested in our discipline. He is incredibly intrigued by how DNA codes information and how its body plan can be used. It remains to be seen if computer technology and DNA will merge. With that, synthetic biology would finally have arrived in the Information Age. But those are still crazy dreams. 

AWARDS, HONOURS AND FELLOWSHIPS

TOBIAS J. ERB | C&EN TALENTED 12 YOUNG SCIENTISTS 2015

Tobias J. Erb was named one of the “Talented 12” young scientists of 2015 by the American Chemical Society’s Chemical & Engineering News. He received this honour for his work on synthetic CO₂ fixation which is meant to help slow down climate change. The vote, which took place for the first time this year, was based on nominations by renowned members of the American Chemical Society. Erb is the only European scientist among the winners.

GIESELA RÜHL | ELECTED TO FULL MEMBERSHIP OF THE EUROPEAN ACADEMY OF SCIENCES AND ARTS

Gisela Rühl was elected to full membership of the European Academy of Sciences and Arts (Class V – Social Sciences, Law and Economics) in March of this year. The academy, conceived as a European academic forum, consists of 1500 members and focuses on interdisciplinary, transnational, and bridge-building topics relevant to Europe.

EVELYN RUNGE | RESEARCH FELLOWSHIP OF THE MARTIN BUBER SOCIETY OF FELLOWS IN THE HUMANITIES AND SOCIAL SCIENCES

Evelyn Runge has received a research fellowship from the Martin Buber Society of Fellows in the Humanities and Social Sciences. Starting in October 2015, she will conduct research at the Hebrew University of Jerusalem in Israel. Her project ‘Image Capture’ explores the conditions under which photo journalists work and produce material in the digital age. Every year, fellowships are granted to five Israeli and five German researchers by the Society. The Martin Buber Society is funded by an endowment fund of the BMBF (Federal Ministry of Education and Research).

JULIA TJUS | YOUNG SCIENTIST PRIZE OF THE INTERNATIONAL UNION OF PURE AND APPLIED PHYSICS

Julia Tjus has been awarded the IUPAP Young Scientist Prize 2015 in the field of astroparticle physics for her outstanding work in linking the phenomenology of neutrino astronomy with experimental findings. The prize is endowed with 800 euros and was presented at the International Cosmic Ray Conference in The Hague.

EMANUEL V. TOWFIGH | SPONSORSHIP PRIZE 2015 OF THE UNIVERSITY SOCIETY MÜNSTER

In June, Emanuel V. Towfigh was awarded the prize for the advancement of young researchers, presented annually by the University Society of Münster e.V. for outstanding research. Towfigh was selected for the award on the basis of his habilitation on the subject of ‘The Party Paradox – A Contribution to Determining the Relationship between Democracy and Parties’. The prize is endowed with 5,000 euro.

NEW MEMBERS



MIRIAM AKKERMANN

Miriam makes music with machines. She describes the sound of her music as 'a mix of atonal ambient sounds without a beat, but instead with a high proportion of noise and free jazz.' Elsewhere, she is also looking for action: from climbing and skiing to Philippine martial arts – whatever it is, it needs to rock. In response to our prize question, Miriam reveals herself to be a passionate European. She studied in Italy and enjoyed the unofficial transalpine markets. Miriam is certain to leave a few soundtracks in the JA.

CASPAR BATTEGAY

What do Hollywood comedies have to do with Judaism? A lot, if you ask Caspar Battegay. A researcher at the University of Lausanne, he studies how Judaism presents itself in contemporary pop culture. For Caspar Battegay, who studied German literature and Jewish Studies, pop encompasses everything that is popular. That includes food, his greatest passion. Which is why Caspar Battegay also dedicates himself to studying the cultural presentation of cuisine in his research, and throws himself into cooking marathons in his spare time.



THOMAS BÖTTCHER

Spending your free time working on a balloon probe for space exploration and your holidays excavating dinosaurs sounds a bit like something out of an adventure novel, but they are Thomas Böttcher's real hobbies. How did that happen? They were things he was interested in and 'it just turned out that way,' as he puts it. Thomas Böttcher studied chemistry and biology and currently works at the University of Konstanz, where he conducts research on how micro-organisms communicate, with the goal of developing alternatives to antibiotics.



ULRIKE ENDESFELDER

Ulrike Endesfelder explores the invisible: tiny organisms that only become visible with the help of special microscopes. As a Frankfurt resident by choice, she also benefits from the visible world, such as on visits to the Städel Museum, which she enjoys painting red, as she says herself. That leads one to wonder if she tends towards the mantic or the aesthetic. But perhaps it is not possible to have the one without the other – just as Europa only allowed Zeus to carry her off because he was carried away by her beauty.



CHRISTIAN HOF

Christian Hof hunts amphibians, dragonflies, and birds. As an animal ecologist, he conducts research on species diversity, and even spends his free time exploring animal life: with binoculars and a camera. On top of all that, he sings like a bird himself and enhances classical choirs with his voice. In answer to our prize question, he tweeted that Europe must remain a harmonious unit of culture and nature. A good piece of advice at a time when there is more talk about the currency than the preservation of Europe.



TEXT JULE SPECHT AND CHRIS THOMALE



PHILIPP KANSKE

Philipp Kanske studies emotions – how they arise and how they can be identified and changed. At the Max-Planck-Institute in Leipzig, he uses neuroscientific methods to explain why for some the glass is half full while for others it is half empty. In his research, he draws on his experience as a psychotherapist as well as inspiration from Far Eastern traditions of meditation. When Philipp Kanske is not delving into his own or others' psyches, he can be found listening to music, or playing some himself.

FABIAN KRÄMER

Are you a humanities scholar or a scientist? Are you undecided? Fabian Krämer conducts research at the Ludwig-Maximilian University Munich on why this dichotomy persists within academia. This historian and English philologist works at the border between disciplines and, as a scholar of the history of science, deals with academic revolutions. Whenever he is not busy bridging disciplinary divides, Fabian Krämer enjoys exploring big city life, learning new languages, and travelling in order to try out foreign cuisines.



DIRK PFLÜGER

Dirk Pflüger is an expert for high-dimensional problems and high performance calculations. It is probably not possible for him to rid himself completely of this high performance simulated existence outside of the data centre. Whenever he leads conference on the topic of 'Humour in Computer Sciences', the result is as entertaining as an evening course on landscape painting hosted on a submarine. And those who remain sceptical are soon convinced by Dirk's humour and his professional expertise.

CHRISTIAN STEIN

'An interesting impasse' is what Christian Stein calls the moment when interdisciplinary collaboration fails. He should know, because that is what his research is all about. He not only researches it, he practically lives interdisciplinarity: he first studied German literature and computer science, now he is a researcher in the multidisciplinary excellence cluster 'Image Knowledge Gestaltung' at the Humboldt-Universität Berlin. In his free time, Christian Stein dives into virtual reality with help of the Oculus Rift or uses stories to open up further spaces of the imagination.



RICARDA WINKELMANN

Ricarda Winkelmann saves seals. That may be an exaggerated way of putting it, but she studies climate change, which influences the lives of many creatures, not least that of the seals. She has long held a position at the Potsdam Institute for Climate Research and thus stands in proximity to the JA both spatially and professionally, as she combines research with public relations work. Which is why we are pleased that in this politically charged field we have someone who is not only an expert but also a skilled organiser with a voice that knows how to make itself heard.

ALUMNI



DANIEL CHAPPELL

Daniel is not quite what you would expect of an expert in anaesthesiology. Normally a dry sense of humour requires a conscious audience. Luckily for us, Daniel has found this audience in the *Junge Akademie*. His drive and ironic distance enabled him to become a key figure in the Research Group 'Ethics in Practice' and on the executive board, where he served for two years and oversaw the finances. We will miss his delightful lack of bustle, but we are convinced that this award-winning academic has a great career ahead of him.

SVEN DIEDERICH

Discrete, pragmatic, ambitious: that is Sven in a nutshell. In the *Junge Akademie* he was involved in the Research Group 'Science Policy'. Today, the head of the department for RNA Biology & Cancer at the German Cancer Research Center and the Pathological Institute of the University of Heidelberg is delighted about the fact that he will once again have more time for hiking and photography – that is, whenever he is not at conference on Crete or spending time in the USA. We hope that his travels will lead him back to us every now and then, and certainly in time for the alumni evening in Berlin.



KIRILL DMITRIEV

Kirill is a searcher. He worked successfully as a mediator, travelled throughout the Arab world to find partners, and furthered exchanges with young Russian scholars. His field of Arabic Studies, which he presented in the Research Group 'Fascination' and as the speaker of the Research Group 'Minorities', led him to the University of St Andrews in 2011, where he currently teaches at the School of Modern Languages. We hope that the world view of the Orient, as transmitted by Kirill, remains vibrant in the *Junge Akademie*.



MARC HELBLING

What constitutes originality in academia? Marc explored this question at a public event of the *Junge Akademie* in Berlin. Together with Rebekka Voss and Katharina Heyden, he reinvented the 'Speakers' Corner', with actors reciting socially critical texts in public spaces in Göttingen, Frankfurt, and Berlin. With the Research Group 'Why the Social Sciences?', Marc explored what the social sciences contribute to society. It is obvious: we need the social sciences – and we need Marc, who has been appointed Professor for Political Sociology at the University of Bamberg.



VERONIKA LIPPARDT

Veronika repeatedly provided us with unusual historical glimpses into human genetics. Truth and method formed the basis for her contributions to the Research Groups 'Sustainability' and 'Art as Research?'. In the *Junge Akademie*, she shared her unusual mixture of intellectuality and sensitivity. Most recently, she founded the blog 'Research and Family' in which she and Giesela Rühl have created a forum on the reconcilability of academic work and family life. She has just been appointed to a position at the University of Freiburg.



TEXT EVELYN RUNGE AND RONNY THOMALE



CORNELIS MENKE

Cornelis is predestined for great projects. As the speaker of the Research Group 'Science Policy: After the Excellence Initiative', he was the lead author of the position paper on 'Human Resources as the Key to Higher Performance of Universities'. A philosopher of science, Cornelis greatly shaped the *Junge Akademie* as speaker and as a member of the executive board. On top of that, Cornelis is the inventor of the research simulation game 'Peer Review' – as his guinea pigs we all got to laugh a great deal. May this humour stay with us.

REGINA PALKOVITS

Regina impressed us from the very beginning with her research topic: the development of new catalysers for renewable resources. She fascinated us with her presentation on this subject at the Autumn Plenary in 2011 and enriched the Research Group 'Sustainability'. She is one of the youngest chemists in Germany and now holds the Professorship for Heterogeneous Catalysis and Technical Chemistry at the RWTH Aachen. We hope that similarly high-profile scholars spring up in her wake – worst comes to worst, we will ask Regina to build us a catalyser for that.

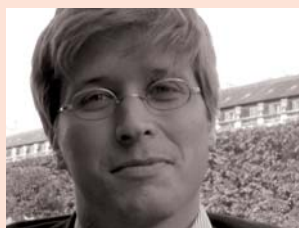


SYLVIE ROKE

Sylvie Roke's specialty is bio-photonics. She uses new optical methods to study what happens on the surface of tiny drops. These drops might only be as big as a millionth of a millimetre – and yet in larger numbers they are relevant to the system as a whole. Sylvie holds the Julia Jacobi Chair for Photomedicine at the École Polytechnique Fédérale de Lausanne in Switzerland. But even that may only be a brief stop in her fast-paced career, much like her membership in the *Junge Akademie*.

GIESELA RÜHL

Giesela's career was laid out early on. After completing her habilitation dissertation in February 2010 in Hamburg and a guest professorship in Urbana-Champaign, she was appointed Professor for Civil Law, Civil Procedure Law, International Private and Procedure Law, European Private Law and Comparative Law in Jena. As the mother of two children, she still managed to find the time and energy to become involved in the executive board and the blog project 'Research and Family'. We hope that Giesela continues to be involved with our parent academies.



MORITZ SCHULARICK

Moritz moves between epochs and continents. And he knows how to deal with money: as Professor for Economics at the University of Bonn he focuses on financial globalisation. As a member of the *Junge Akademie*, he was also involved in international projects: he co-founded the Research Group of European Young Academies, whose first joint project was to formulate a European prize question. As a member of the executive board, he helped shape our future. We look forward to seeing where his career takes him.

A QUESTION FOR EUROPE

Who Gets Carried Away by Europe? We present the winning contribution 'Zeus/Europe'

TEXT CHRISTINE LEHNEN

He is staring at me. I have noticed. He wears a white suit and doesn't let me out of his sight. Perhaps he knows women like me and knows exactly what to do and what I want. What I need. What I am prepared to do. But it doesn't matter. I have waited so long for this day, and no longer feel anything but hope.

I am sitting inside a bar below ground, chiseled into the rock, so that it should be cool here, cool at last. But instead, bodies are shoving against bodies, loudspeakers pumping hot sounds into the stifling air, Moroccan whiskey driving the heat into my veins. That's what they call their herbal tea here, jokingly, and it feels as if it is sticking to my skin, warm and moist.

And for all that, he never stops looking at me. Me, the woman who has burn scars on her throat and hands, caked with dust, barely hidden by my red scarf. He walks towards me, stands in front of me, very close, both arms resting at my sides. When he bends to whisper something in my ear his breath is a gentle caress on my cheek, his fingers enclose my neck. He is like snow. The way I always imagined snow to be, a kind cover of soft coolness.

"Es-tu prête à prendre le taureau par les cornes?" he whispers while tapping his breast pocket. Are you ready to take the bull by the horns? And at first I shake my head before I nod, before I get scared. My lips slide over his skin as I turn my head, he lowers his face so that I touch the corner of his mouth. Sweet and hot, I taste honey and mint even if he barely brushes my lips. He touches me, shamelessly, and I don't resist or bridle because it does not matter anymore, I have been waiting far

too long. Lips, teeth, arms, thighs, exhausted feet. His touch is everywhere, almost sweet; he is gently fingering my throat, my chest, my heart beat, moving my scarf to the side.

Halting.

And I don't feel anything but hope and gratitude and at last. At long last, when he indicates that I should follow him. Outside, onto the street where everything is dark except him, his suit, his eyes. I hear my eager breath, fast and wet, impatient, desperate. He just laughs and leads the way, along whitewashed houses and tall palm trees, following the wind, to the sea. At last, at long last, the time has come.

He leads me to the port, to a boat. It is small, not more than six feet long and made of rubber. Seven people are already inside. I climb in. He stays on shore, doesn't look at us, doesn't go into his breast pocket to pull out the packet of green banknotes I have given him, hours ago, inside the bar, before a new life. I am grateful to him. He left it at touching. I put my scarf back over my scars, my dirty skin, my hollow cheeks. The boat rocks roughly as I sit down, as if it wants to throw me off, into the sea, this horribly seething depth. I try not to look into the dark abyss but to the land that is waiting for me: behind the darkness, a white strip on the horizon, mountains rising. A journey on the edge of the scythe, riffs and currents unkind. But sweet will be the kiss of Europe.

And my hope is making me blind.



A QUESTION FOR EUROPE

Last year, seven European Young Academies announced prizes for the competition question about Europe (see *JAM* 17/2014, English edition, p. 37). The question is intended to stimulate discussions about our continent.

The project, funded by the Commerzbank Foundation, can look back on a successful year: 131 contributions from 15 countries in ten languages were submitted, some by teams, others by individual contenders. Many of the contributions deal with the discrepancy between ideal and reality. Europe seduces and is seduced; it has not yet become what it could be.

The award-winning entries reflect this tension: 'Zeus/Europa' illustrates the drama between promise and reality (Christine Lehnen, Germany). By contrast, 'Not Just For Kicks' (Krzysztof Usakiewicz, Poland) and 'Who Gets Carried Away By Europe? – ERASMUS' depict what would be possible in Europe (Giacomo Bertazzoli, Pauline Buffin, Gustavo Dantas, Guy Frankel, Chloe Weiss and Christoph Wiest, Sweden). Additional prizes went to Lina Zachariasen and Lisa Staugaard, Denmark, as well as to Moritz Alexander Klein, Germany.

The shortlist, the top three winners, and both special awards can be found on the website www.aquestionforeurope.eu. All winning entries have been gathered in a brochure that can be obtained from the head office of the *Junge Akademie*: office@diejungeakademie.de.



The winners with the members of the international jury: JA member Moritz Schularick (third from left) and Jakub Fichna, of the Polish Young Academy (second from right), as well as laudator Jan-Hendrik Olbertz (first from right).

BIG DATA

A German-Israeli symposium in Jerusalem on data management

TEXT SIBYLLE BAUMBACH AND REBEKKA VOSS



A brief pause during an otherwise lively discussion

How big does *big data* have to be in order to be considered big? Where does *small data* end? And what roles do dark data, slow data or hidden data play? These questions were at the centre of an interdisciplinary symposium that took place at the Israel Academy of Sciences and Humanities in Jerusalem from 17 to 19 February 2015. The event was co-organised by the Israel Young Academy, founded in 2012, and the *Junge Akademie*.

For two days, members of both academies debated new approaches and methods as well as risks and limitations that accompany *big data* – from selection to storage to security, but also ethical aspects and questions of interpretation. One goal of the debate was to find similarities and differences between the disciplines, to identify interdisciplinary research fields, and to trigger collaborative projects in order to bridge the divide between the natural sciences and the humanities. One of the main strands of the discussion revolved around the question of whether *big data* is even applicable to the humanities.

From YouTube to genome sequencing

Apart from presentations of best practice models based on large data sets and on methods for collecting, structuring, and evaluating *big data*, a broad spectrum of topics was discussed, including – but not restricted to – the following questions: how can we deal with medieval data sets and how can we evaluate new methods that allow us to digitalise and visualise data? Presentations covered a broad array of different disciplines: from photo journalism, to musical performances and YouTube-art to genome sequencing, both larger and smaller data sets were scrutinized in order to reflect upon the impact of *big data* on research (and also teaching) after the digital turn.

Alessio Assonitis (The Medici Archive Project) and Yaniv Erlich (Columbia University) of the Israel Young Academy provided insights into the latest developments in big data research within the humanities and the natural sciences. They explained how research is changing in light of the immense increase in data. We would like to thank Sharon Aronson-Lehavi and Galia Finzi without whom this symposium would not have been possible. The discussion in both young academies is far from over. While answers to some questions were found, numerous new questions arose as a result of the discussion. These new questions will form the basis of the second German-Israeli symposium to be held in Berlin in the summer of 2016.

Both authors are members of the Junge Akademie. Sibylle Baumbach is Professor for English Literature and Culture at the University of Innsbruck. Rebecca Voß is Professor for Jewish Studies at the Goethe University Frankfurt

A WHOLE CITY GETS IN ON THE ACT

Probably no other city lies as close to the German average existence as Bielefeld. But that is exactly why it is the best place for a new form of theatre

TEXT GORDON KAMPE

In April 2015, tents suddenly start appearing in the centre of Bielefeld. Those who dare to step inside can get a glimpse of a possible future. Across from the city hall, a design for a transparent city hall building is displayed. Not far from the theatre, the concept of a stage of the future is presented in the shape of a floating amphitheatre. Over and over, passers-by enter the tent, take a look around, are amused, curious or even angry about the alternative designs for their city.

The tents are the prologue for the musical theatre piece *Places. Roofs. People. Paths* that premieres at the Theatre Bielefeld in April. Bielefeld is perfectly suited for the search for new utopias: it is a city of medium size with average incomes and average problems. Everything appears very normal and not very hip. Sometimes, avant-garde has to be uncool. The piece is inspired by a challenge from the theatre company Rimini Protokoll: “Technically speaking, in a real city theatre that does what it claims to do, the whole city has to get in on the act.” Where else could the utopias of a society be negotiated if not in the city theatre, in the public squares, in the streets?

Musicians, dancers, visual artists, scholars, and dramaturges are inspired to join the project. They create sound-walks through parks and fields, across a weather-beaten bicycle racetrack and to sites of “architectural sins” – such as an underpass by the *Ostwestfalendamm*. At an academic symposium in the plenary hall of the Bielefeld city hall, organised in conjunction with the *Junge Akademie*, we talk about our experiences, discuss impressions, share ideas – and notice how polyphonic a city is. This had first become apparent during the extensive research process when the team spoke with local politicians, with members of the integration council, and with teachers at a laboratory school.

Our musical theatre piece was not meant to be perfect. “When too perfect, God angry,” as the American composer and media artist Nam-June Paik once said. And that is how the piece is composed: sometimes a line of an opera singer’s part runs up against the spoken voice of an actress, then the spoken voice of the singer collides with the singing of the actress. Over and over, original voices from the research process can be heard. You hear people speak and sing, old and young, long-term residents and more recent arrivals. If theatre is to return to the function of the agora – and that is the message of this piece – then the entire city and its many voices must take part.

Gordon Kampe composed the musical theatre piece for a utopian Bielefeld. He has been a member of the Junge Akademie since 2012.



Setting up of a “Utopia Petrol Station” at Bielefeld City Hall.

THE LANGUAGE OF STATISTICS

Causal data analysis is its own scientific field. Those who master it will one day be able to prove what many today can only assume

TEXT ALIDA KINDT, CHRISTIAN LEVERS AND JAN-MATTHIS LÜCKMANN

In the US, people eat a lot of chocolate and there are a lot of Nobel Prize winners. Of course, these two facts are not directly linked. Just because two statistical measurements point in the same direction does not mean there is a causal relationship between them. Otherwise, some governments might encourage their citizens to eat chocolate all the time. In the case mentioned here, we have a correlation between two measurements, but certainly not a causal link.

And yet it is possible to arrive at conclusions about causality with the help of statistical methods, as reported by Jonas Peters at a two-day interdisciplinary workshop of the *Junge Akademie* last March. Peters is a Group Leader at the Max-Planck-Institute for Intelligent Systems in Tübingen and was the first speaker of the day at the workshop. His presentation served to start a debate about techniques and questions within causal data analysis. Only when experiments are carefully planned can researchers prove that the experimental manipulation of one variable has an impact on another variable. This requires a rigid methodological framework with its own formal language and notation.

Practical and ethical boundaries

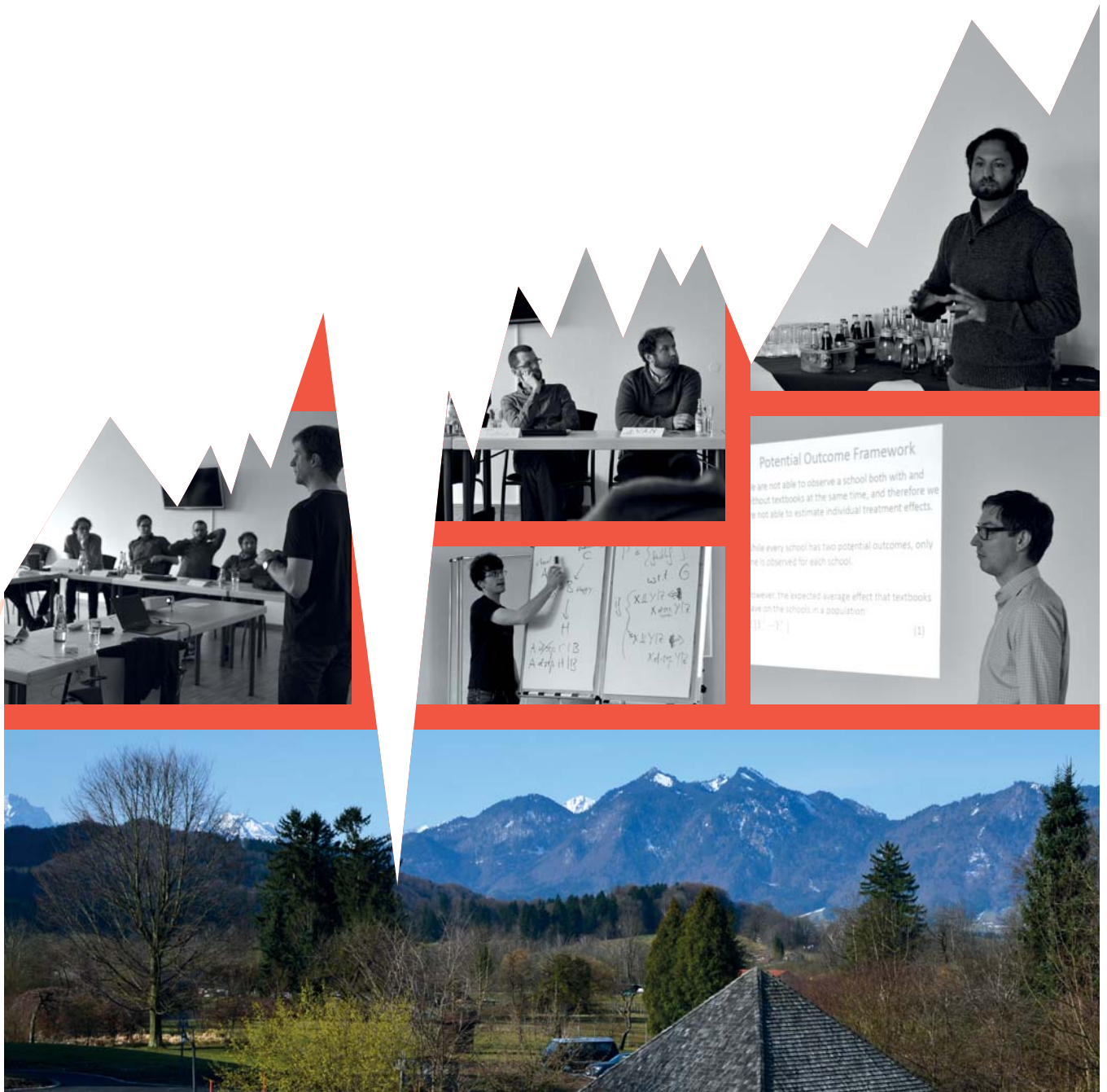
Comparatively speaking, chemical and physics experiments are pretty easy to carry out. Elsewhere, such as in the social or environmental sciences, experiments quickly run into practical and ethical boundaries. Scientists cannot simply manipulate the global temperature in order to see how the earth would respond. Which is why environmental scientists often cannot do much more than evaluate observational data such as climate indicators or satellite images of landscapes. But even these types of data allow researchers to draw conclusions about causal relationships.

Methodological foundations

Causal relationships can be illustrated most clearly with the help of networks where nodes are connected by arrows that point in the direction of effects. These are known as 'directed acyclical graphs'. Together with structural equation models, these graphs form the methodological foundation for modelling causality.

At the workshop, researchers reported on their work in different disciplines and explained how they manage to draw conclusions about causality with the help of observational data and experiments. Examples from ecology, economics, genetics, and neurosciences were presented. These kinds of approaches allow researchers to analyse questions such as whether the civil war in the Congo has an effect on regional deforestation patterns. Elsewhere, statistical methods are applied in order to search for gene sequences that are likely to cause diseases. Although the participants stemmed from a variety of disciplines, their common interest in causal inference and their common language of statistics enabled a vibrant exchange of ideas.

The organisers of the workshop – Alexander Danzer, Tobias Kümmerle and Jakob Macke – are members of the Junge Akademie. Fabian Joachim Theis, who also helped to co-ordinate the event, joined the ranks of Junge Akademie alumni in 2014.



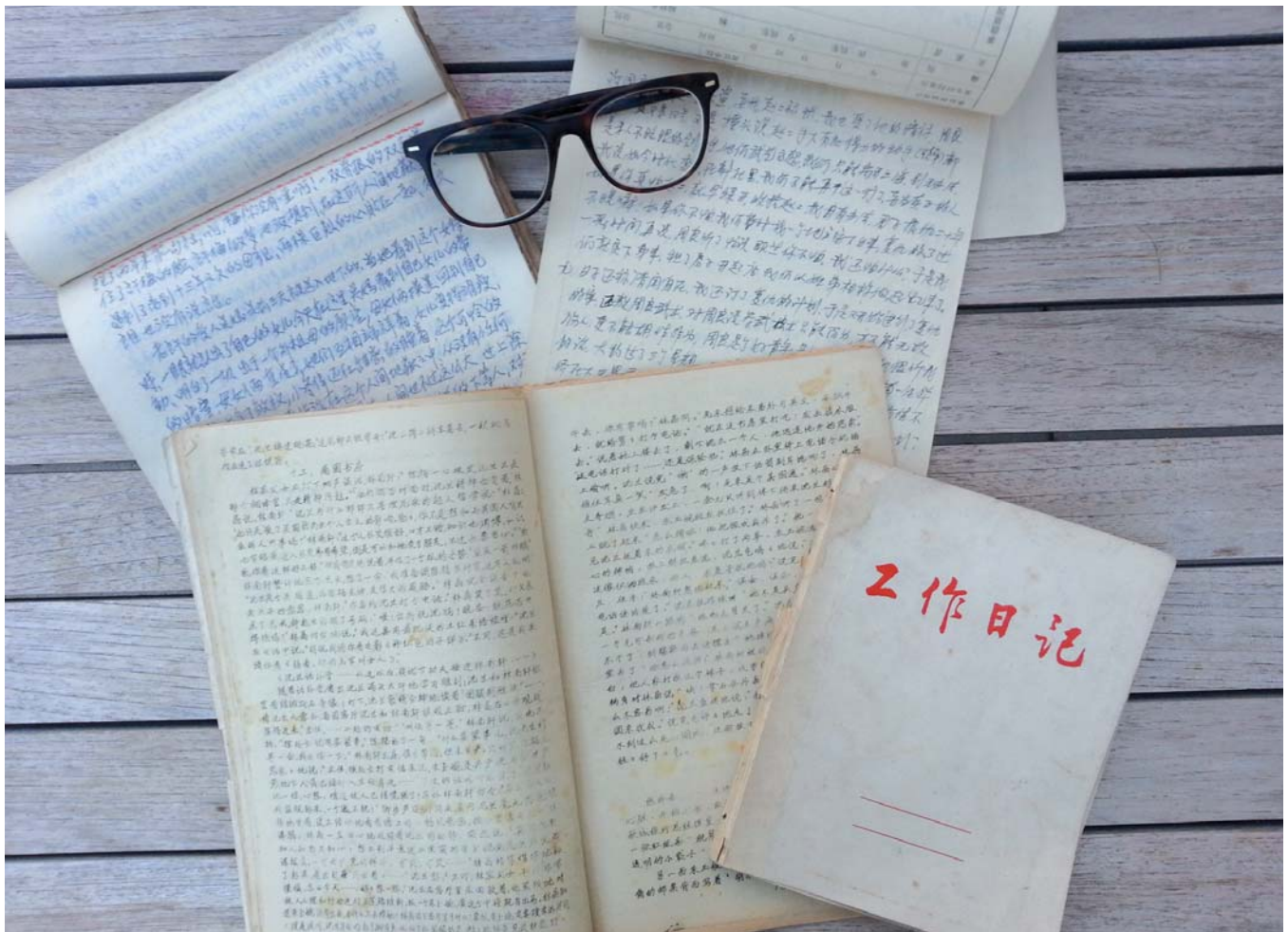
PHOTOS: JAKOB MACKE

At their workshop in the mountains, participants discussed how statistics can help overcome complexity.

READING, LISTENING, WRITING

In Munich an interdisciplinary workshop looked at the impact of technological change on reader reception and authorship

TEXT LENA HENNINGSEN AND REBEKKA VOSS



Secret signs: illegal entertainment literature from the era of the Chinese Cultural Revolution

Technological change enables increased participation as well as the interweaving and clashing of text, image and sound. Within this context, many web 2.0 technologies are often regarded as so-called empowerment instruments that enable participation in cultural or intellectual discourses. But how are reader reception and authorship changing? What concept of authorship and readership forms the foundation of the production and consumption of popular culture? Where do the boundaries between 'author' and 'reader' become blurred? And at what point do 'authors' disappear?

Literary studies may have proclaimed the death of the author, but for real readers and authors, the figure of the author continues to be a relevant category that can be meaningful for a work's reception. Do the hymns of praise of the participatory need to be revealed to be nothing but the fiction or simple promise of emancipation of 'ordinary users'? And is all of this really so new, or did comparable mechanisms and interpretational templates exist in the pre-digital and even in pre-modern times? What role does listening play – not only with regard to music, but also to oral traditions and in terms of the soundscape of texts?

What musical scores from the German Empire reveal


These questions were at the core of an interdisciplinary workshop held in Munich in early June 2015, organised by the RG 'Popular Culture(s)' of the *Junge Akademie* at the Bavarian Academy of Sciences. Participants included scholars of German literature, Jewish studies, music, English literature, Chinese Studies, and media culture. It became clear that simple and clearly hierarchical author-text-reader models do not suffice when it comes to description and theorising. All three concepts proved to be fluid or marked by diffuse boundaries, both in medieval as well as contemporary practices.

Readers turn into editors, arrangers or authors, such as in the manuscript culture of the middle ages (Henrike Manuwald) and in the context of illegal entertainment literature from the Chinese Cultural Revolution (Lena Henningsen), or as amateurs who contribute to web 2.0 projects (Martin Butler). Texts thereby function as evidence of the readings and interpretations of their readers. A comparison of musical scores of conductor Karl Muck from both the German Empire and the Weimar Republic

show how he adapted classical orchestral works to the taste of the times (Gordon Kampe). Simultaneously, Theodor Siebs 'invented' High German on the basis of the pronunciation used on the stage and thereby shaped the pronunciation of German in education and culture until long after WWII (Viktoria Tkaczyk).

The promise of equal participation

The work of Siebs shows that readers are discursively constructed or orchestrated by authors and producers. Likewise many web 2.0 projects are subject to a rhetoric that romanticises the promise of equal participation and the figure of the amateur (Butler). On the other hand, online image portals help the amateur photographer to attain prominence (Evelyn Runge). Email novels not only take the narratological principles of Victorian epistolary novels to the extreme, but also reflect the fragmented reading and writing customs of the digital age (Sibylle Baumbach). Just as these novels provide the reader with a multitude of identification options via characters who write and read, lists function as narrative stylistic means and guide the reader while also pointing to gaps which the reader fills on their own (Eva von Contzen).

The relationship between author and reader was key to the approaches discussed. Nicolai Volland proposed the historically plausible reader as an analytical model within comparative studies. This reader is derived from the empirical analysis of texts that circulated at a certain time within a certain context. But the construction of the 'reader' does have limitations. While the prosumer of fan videos on YouTube exists under the medial control of economics and consumer rights (Stephan Packard), a pop concert can only create the hoped-for ecstatic experience through the collaboration of star and fans (Moritz Baßler). Similar arguments can be made about the interaction with music in daily life: aside from the actual piece of music, what determines the 'reading' and the significance of the piece (Oliver Seibt) are the previous experiences of the individual and the framework that exists during the exact moment of music consumption. 

Both authors are members of the Junge Akademie. Lena Henningsen is Junior Professor for Chinese Studies at the University of Freiburg. Rebekka Voß teaches in the Jewish Studies programme at the Goethe University Frankfurt.

TEN YEARS OF FOSTERING ACADEMIA AND SOCIETY

Looking abroad: the Dutch Young Academy is celebrating a big anniversary this year

TEXT IRIS KOOPMANS

The *Jonge Akademie* was founded as the second Young Academy in the world, taking the German *Junge Akademie* as its role model. The seed was planted on a Tuesday in July 2002 when the Royal Netherlands Academy of Arts and Sciences (KNAW) received visitors from the Berlin-Brandenburg Academy of Sciences and Humanities. On a terrace in Amsterdam, Helmut Schwarz, the latter's vice-president at the time, encouraged the creation of a Young Academy. And so it was done. This year, the Netherlands are celebrating the tenth anniversary of their Young Academy.

50 young scholars in an independent institution

The Dutch Young Academy is an independent platform for young scholars working at the forefront of their respective fields. All members have completed their doctoral degrees no more than ten years prior to their entry into the Academy. They represent a broad spectrum of academic disciplines and all work either at a Dutch university or research institution.

To be considered for membership, young scholars must have excelled within their academic field and have demonstrated a broad interest for the role of academia in society. Researchers are nominated for membership by a variety of institutions within Dutch academia.

The *Jonge Akademie* has 50 members, each appointed for a term of five years. Every year, ten more members are accepted into its ranks while another ten go on to join the alumni. The Young Academy is active at the intersection of academia and society and focuses on interdisciplinary work, educational policy, and

internationalisation. It is led by a five-person board and consists of four (permanent) research groups, a selection and fellowship committee as well as project committees.

The Dutch Young Academy is part of the KNAW with an individual work plan, individual projects, and independent positions on issues. In addition to regular administrative consultations, it works together with the KNAW on joint projects and meetings. Members of the 'classical' Academy are invited to sit on the commissions and committees of the Young Academy and vice versa.

At the *Jonge Akademie*, the main focus is on the members, while the administration provides a support function. Both the chairperson of the board as well as the members of the executive board are selected by the members themselves. Members work together on projects in which each participant delivers their own contribution. When the Young Academy announces a public position on a topic, it means that the position has a great deal of support within the organisation since a two-thirds majority is required in order for such a position to be declared. Votes and discussions often occur via email. This channel is also used by members to contribute topics and projects to the work of the Academy. This process allows members to find focal points for research, new perspectives, and better ideas. The *Jonge Akademie* can communicate its own positions and recommendations to the public while informing the 'classical' Academy about new stances it wishes to take as a matter of course. In its ten years of existence, the Dutch Young Academy has realised numerous projects. Examples include *De Jonge Akademie on Wheels*,



The 'Expedition Mundus' game will soon be available in German

'Expedition Mundus', *Kennis op straat* ('Knowledge on the Street'), and *Gewetenschap* ('ConScience'). During the initiative *De Jonge Akademie on Wheels*, a bus full of researchers drove to secondary schools where members of the Young Academy organised vibrant school-day programmes centred on research.

Exploring an unknown planet

Within the framework of a competition, the prize for which was a visit by *De Jonge Akademie on Wheels*, the Young Academy developed the academic game 'Expedition Mundus' in collaboration with the project office De Praktijk. The game was initially created for secondary schools and later expanded to primary schools. The goal is to explore an unknown planet. Pupils are required to collect information, exchange data, and publish conclusions, in short: to work together as a team of researchers. The game is currently being translated into German by the *Junge Akademie*.

One focus of the 2012 cohort of members was to find an engaging way to bring academia to parts of the public that would otherwise not necessarily come into contact with it. That is why *Kennis op straat* ('Knowledge on the Street') is available upon request to everyone in society: from schools to retirement homes, from community centres to academic cafés. As part of this initiative, young scholars from many different disciplines give short public presentations that are not only informative in terms of content, but that also explain how researchers go about their work. The website www.kennisopstraat.nl allows interested parties to choose from dozens of presentations: from separation

technology and suspicion in ancient Rome to water on Mars, climate change, empathy, victims' rights, the plasticity of the brain or plasters for the heart – there's something for everyone.

The casual academic satire *Gewetenschap* (The 'ConScience' App) has been travelling to Dutch universities since 2014 and serves as a point of departure for debates about dilemmas that frequently arise within the research environment. How do you acknowledge co-authors appropriately? Or how do you evaluate the work of competitors? Or how do you find the right balance between your own work and the supervision of doctoral students? Or between the pressure to publish and the urge to produce better quality work?

With *Gewetenschap* the *Jonge Akademie* encouraged young researchers still at the beginning of their careers as well as academic colleagues and university decision-makers to start discussions about the grey areas in their daily work and to maintain each other's awareness for them. In order to develop *Gewetenschap*, all 50 members of the *Jonge Akademie* were surveyed to identify the problems, dilemmas, and temptations that scholars face in their daily work.

Iris Koopmans is Policy Officer at the Jonge Akademie. Further information and contact: www.dejongeakademie.nl

PUBLICATIONS 2014/2015



FASZINATION WISSENSCHAFT 2016 VISIONS AND IMAGES OF FASCINATION (*FASCINATING RESEARCH 2016*)

The world of academics often seems foreign and serious. Who would know that the burning of high-energy metals, an object of research, can look like a magical fire storm? Who would guess that the tiny structures inside a tree resemble glowing, colourful church windows? The calendar presents 53 images that provide unusual insights into the work of European researchers. Some photos are abstract, some are allegorical. Each one was selected from the entries to the international photography competition 'Visions and Images of Fascination', co-organised by the *Junge Akademie*. More images are available at www.imagesoffascination.net.

Editor

Sibylle Baumbach

Publisher

Jan Thorbecke
Ostfildern, 2015



PEER REVIEW

The idea behind the Peer Review game goes back to the 17th century when Henry Oldenburg, first secretary of the Royal Society, revolutionised the manner of publication in academia. He sent all the manuscripts intended for publication to renowned scholars for evaluation. *JA* member and philosopher Cornelis Menke has turned this practice into a game. Peer Review is suitable for four to six players. In order to win, players must act strategically and negotiate wisely. The game is intended to train young researchers, to encourage established scholars to think about academic practices, and to provide basic knowledge about the academic system to all others (see *Junge Akademie Magazin* 19, English edition, pp. 40/41).

Developer

Cornelis Menke

Publisher

Spielkartenfabrik Altenburg
Altenburg, 2015

<http://www.diejungeakademie.de/en/activities/academia-society/game-peer-review/>

Single copies can be obtained at a cost of 16 euro (plus shipping and handling) by contacting the head office of the Junge Akademie.



**DIE NATUR-KULTUR-GRENZE
IN KUNST UND WISSENSCHAFT**
HISTORISCHE ENTWICKLUNG – INTERDISZIPLINÄRE
DIFFERENZ – AKTUELLER FORSCHUNGSSTAND
*(THE NATURE-CULTURE BOUNDARY IN ART AND
SCIENCE)*

*HISTORICAL DEVELOPMENT – INTERDISCIPLINARY
DIFFERENCE – CURRENT STATE OF RESEARCH)*

Where does culture begin and nature end? This question has long been the subject of dispute in many disciplines. The boundary between nature and culture remains epistemologically highly controversial and even today no cross-disciplinary consensus exists on this topic. No attempt has yet been made to produce an interdisciplinary synopsis. As a result, there is no clarity on what individual disciplines have achieved at this point and what goals they have yet to attain. The topics of this volume are based on a conference of the *Junge Akademie* in Saas-Fee in Switzerland and span epistemology, cultural anthropology, and art history as well as athletic, musical and theatrical practices. The essays, studies, and interviews with athletes and artists illuminate individual theories – always with a focus on the respective location of the boundary between nature and culture.

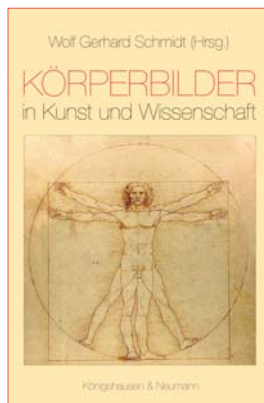
Editor

Wolf Gerhardt Schmidt

Publisher

Königshausen & Neumann

Würzburg, 2014



KÖRPERBILDER IN KUNST UND WISSENSCHAFT
(BODY IMAGES IN ART AND SCIENCE)

During the 20th century, the world of academic research rediscovered the body as an object of study, and doctors, neuroscientists, sociologists, and philosophers began to take part in debates about it. The topics of this volume are based on a conference of the *Junge Akademie* in Pontresina, Switzerland and cover a broad spectrum, with contributions addressing crucifixion rituals in the Philippines, the bodies of top athletes, and the question of whether the body of a musician in the contemporary German novel is depicted as an unfeeling tool or as a vessel for universal feelings. Here the debate is not reduced to simple naked physicality, but is always led with a focus on cognition, representation, culture, and artistic practice.

Editor

Wolf Gerhardt Schmidt

Publisher

Königshausen & Neumann

Würzburg, 2014

EVENTS 2015/2016

2015 in review

-
- 16 to 18 March** **‘Causation from Correlation?’**
Interdisciplinary Workshop
Oblstadt
-
- 23/24 March** **‘Prospects for Young Researchers’**
JA Guest Appearance at the Day of German Institutes of Higher Education
Mainz
-
- 5 May** **‘Big Data. The End of Autonomy and the Private Sphere?’**
ZEIT Forum Wissenschaft
Berlin
-
- 7/8 May** **Workshop of the Managing Directors of European Young Academies**
Stockholm
-
- 7 to 9 May** **Conference ‘A Career in Science’**
JA Guest Appearance together with the German National Academic Foundation
Cologne
-
- 27/28 May** **JA Guest Appearance: German-Portuguese Forum**
Lisbon
-
- 1/2 June** **‘Writing, Reading, Listening. Reception and Authorship in Popular Culture’**
Workshop run by the RG ‘Fascination’
Munich
-
- 30 June** **‘Career as an Obstacle Course’**
JA Guest Appearance: Panel Discussion
Stuttgart
-
- 9 to 11 July** **“To Boldly Go Where No Man Has Gone Before.” The Fascination with the Unknown: Time**
Conference run by the RG ‘Fascination’
Berlin
-
- 23 to 30 August** **Summer Academy of the German National Academic Foundation**
Kloster Roggenburg
-

2015 in review

4 September

‘Diversity for Academic Excellence: Creating Opportunities for Female and Young Scholars’Symposium of the Japanese-German Center Berlin and the Japan Foundation
Tokyo

7 to 13 September

Writing workshop*Harkensee (Baltic Sea)*

18 to 20 September

Autumn plenary session*Halle/Saale*

25 to 26 September

‘Career Paths in German Academia’JA Guest Appearance: Workshop Discussion of the Volkswagen Foundation
Hanover

30 September to 2 October

‘Popularising Holy Texts and Their Normative Boundaries in Judaism, Christianity and Islam’Conference run by the RG ‘Popular Culture(s)’
Berne

15 to 17 October

Ideas workshop*Creuzburg (Thuringian Forest)*

4 to 5 November

Annual meeting of European Young Academies*Brussels***What's on in 2016**

3 to 5 March 2016

Spring plenary session*Strasbourg*

11 June 2016

Summer plenary session and *Junge Akademie* gala*Berlin*

CATCHING UP WITH ... RAINER MARIA KIESOW

There is a life after the *Junge Akademie* – which is why this space is reserved for alumni

1. Is joy important for your work? Should it be?

Joy, fun, important, unimportant – a bee doesn't pose any should questions, or being questions. It is how it is. There's a lot of chance involved. Without doing the work, you get nowhere. Reading, thinking, teaching: wonderful. Writing: unfortunately that has to happen, otherwise it wouldn't be how it is.

2. What humankind's greatest achievement?

The other. And yet another. Meaning: Society.

3. If you were to die tomorrow, what achievement would you look back on with the most pride?

I would probably spend all night interpreting the word 'achieved' – and then it would be too late to be proud of anything.

4. What aspects of your research are relevant for humankind?

Nothing, but that doesn't matter.

5. What advice would you give Ph.D. students?

Do the work.

6. What advice would you give professors?

Let others do the work.

7. What was humankind's greatest mistake?

Oh god!

8. What does the German academic system need?

Less system. Someone's probably already thought of that.

9. Should we abolish the universities?

Why?

10. What impact has your career in academia had on you?

Independent.

11. What impact has the *Junge Akademie* had on you?

More curious.



ABOUT THE INTERVIEWEE

Professor Rainer Maria Kiesow holds the Chair in Legal Order at the École des hautes études en sciences sociales (EHESS) in Paris, where he heads the Centre Georg Simmel. He is also Professor for Legal Philosophy and Theory at the Fernuni Schweiz/UniDistance Suisse. He is the co-founder and editor of the German journal 'Myops. Berichte aus der Welt des Rechts' as well as the French journal 'Grief. Revue sur les mondes du droit'. He was a member of the *Junge Akademie* from 2000 to 2005.

12. Do you have anything to add?

Always.

13. Any final words?

Alas.





JUNGE AKADEMIE MAGAZIN

The *Junge Akademie Magazin* was conceived by members of the *Junge Akademie*. It provides insights into projects and events of the *Junge Akademie*, reports on members and publications, and intervenes in current academic and science policy debates.



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