

HKW  
Haus der Kulturen der Welt

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# The Anthropocene Project: A Report on a Two-Year Endeavor

Bernd M. Scherer

We have reached a *tipping point*, a conjuncture that does not merely consist in the fact that climate change has reached a point where it is self-reinforcing, or that fossil resources are becoming dramatically depleted. Over the last centuries, humankind has put processes in motion leading to developments for which we no longer have any standards by which to judge them. When humankind itself becomes a natural force—or that which we have understood to be nature is now made by humans—then dualisms such as nature/culture or subject/object no longer function in the accustomed fashion. With the traditional methods of knowledge acquisition—the natural sciences on the one side and the humanities on the other—humankind has reached a limit. The indivisible concatenation of industrial metabolism, climate change, urbanization, soil erosion, and the extinction of species, as well as a new social (self-)consciousness, have shown that the rapid reformation of cause and effect, means and end, and quality and quantity requires a new approach to the world which is not governed by postmodern discourse but by material interconnections and processes. A new sense of amazement at the wonder of the Earth is required: what can we do and how can we know—and to what extent are these two questions connected? With what means, methods, and senses can we encounter the world of our own creation?

The *tipping point* consists in the challenge of finding new standards for judging an activity that has crystallized over the last 300 years in the form of a geohistorically effective dominance. The task is to create a forum where this process can be analyzed. It is no longer a question of accumulating further knowledge in accordance with a naïve notion of a knowledge society. The reassessment of our situation requires a sensuous-aesthetic praxis,

which sharpens our powers of judgment with respect to the epochal transformations of the Anthropocene.

A forum must be established, beginning with the things themselves and the problems they pose—*matter* in a double sense—where scientists, artists, and practitioners can evaluate things anew. Haus der Kulturen der Welt's *Anthropocene Project* sees itself as precisely such a forum.

The individual programs of *The Anthropocene Project* can be viewed as “trials” forming part of the forum mentioned in the preface, “hearings” in which the players of the Anthropocene world, things, emotions, theories, music, and animals, are given a voice, while simultaneously becoming subjects of the proceedings.

**First hearing: The Anthropocene Project, an Opening (January 2013, curated by Katrin Klingan, Christian Schwägerl, Cordula Hamschmidt, Flora Lysen, Janek Müller, Christoph Rosol, Ashkan Sepahvand, and Cecelia Watson)**

In the opening of the Anthropocene proceedings, the evidence for a fundamental transformation of the material world and our relation to it was “placed on the table,” presented, or laid out in front of the public. When Lorraine Daston presents a stone composed of quartz and feldspar and this is positioned next to a floppy disc, this arrangement of objects tells us something about our understanding of time with respect to the world of things. The stone, which because of its materiality has been formed by wind and water over thousands of years, refers to a completely different time dimension to that of the floppy disc, which, produced in the 1980s of the last century, has already acquired the character of a museal artifact after only twenty years. What does it mean when people, who in their day-to-day activities locate themselves in the time dimension of the floppy disc, thrust themselves into geological time as a species?

## Second hearing: Inhuman Music

(February 2013, curated by Detlef Diederichsen and Holger Schulze)

In this program, the borders between man, nature, and the machine world was examined. Robots, birds, whale sounds, computer programs, and musicians took to the witness stand. What happens when birds adopt melodies from people or transform them into new sound patterns? Does this still conform to our traditional understanding of music? Can one attribute human creativity to a computer program that digitally stores music from Bach in order to compose its own music “in the style” of Bach?

## Third hearing: The Whole Earth

(April–July 2013, curated by Diedrich Diederichsen and Anselm Franke)

*The Whole Earth* project examined a basic trope of the Anthropocene view of the world—a planetary perspective on the world as a whole. It locates the origin of this way of thinking in California of the 1960s and 1970s, a world in which rock musicians, psychedelic artists, the *Whole Earth Catalog*, documents of cybernetic thinking, and the labels of the new world of the corporate conglomerates all make an appearance. This is the site where two cultures meet, both producing the “whole world” and making it experienceable through their interaction. On the one side there was the “counterculture” movement of the hippies, who in their communes searched for a connection between man and nature within the framework of a cosmic unity. On the other side, the space program, a product of the military-technological field driven forward by the Cold War, enabled the Earth to be viewed from the outside for the first time. The image of the “Blue Marble” became the icon of the green movements, which set out to protect the Earth as a whole. At the same time, companies such as Apple, later followed by Google and Facebook, adopted some of the basic ideas of the hippie movement as their communes began to fall apart. The laptop and then social networks became technological instruments enabling people to live out their personal freedom while being globally networked. This involved the simultaneous development of the promise of freedom and surveillance

methods within the framework of a consumer society, which commodified the original values and attitudes as “goods,” thus removing people from social discourse.

#### Fourth hearing: *Forensis*

(March–May 2014, curated by Anselm Franke and Eyal Weizman)

The *Forensis* project, originally developed by the Forensic Architecture group at Goldsmiths, University of London, examined concrete sociopolitical conflicts using technological, artistic, and scientific processes in order for them to be negotiated in the spirit of a forum. A number of the projects, presented in the form of an exhibition, examined cases in which natural processes and human activity are so closely intertwined that classical legal categories are not sufficient to solve them. Who is responsible for acts of violence when the aerosols emitted by European industry, through a complex chain of interactions in the atmosphere, change the rainfall patterns in the African Sahel region to such an extent that entire areas are devastated, resulting in conflicts over resources between the people affected?

#### Fifth hearing: *Evil Music* (October 2013) and *Stupid Music*

(May 2014, both curated by Detlef Diederichsen and Holger Schulze)

The emotional dispositions of people in the Anthropocene world were examined as part of two music programs: *Evil* and *Stupid*. In the process, they consciously explored border regions that are generally marginalized by established conceptions of music. With hate rap, murder ballads, death metal, and black metal, *Evil Music* styles were presented which give expression to people’s dark side. However, they also raised the question of whether sound sequences or rhythms have moral connotations in themselves, whether “a language of evil” is already encoded in the world of sounds. In contrast, *Stupid Music* examined escapism, flight from the world by means of music. When the unsettling news reports increase, music can provide its own spacetime capsule, enabling one to immunize oneself, at least for a certain time.

Sixth hearing: *Textures of the Anthropocene: Grain Vapor Ray*  
(edited by Katrin Klingan, Ashkan Sepahvand, Christoph Rosol, and  
Bernd M. Scherer)

The research project published here develops a point of access to the Anthropocene world from the perspective of material and immaterial processes. The processes and their forms of presentation are the subject of the forum. It is the attempt to revitalize a language with respect to historical texts, or to rediscover or invent a language that will give voice to the constitutive dynamics of a world in change. In the process, grain, vapor, and ray, as the sensuous qualities of the particulate, the volatile, and the radiant, articulate methods for integrating material transformations and fluid theoretical models. They are located at an interface, at the point where “matter does matter,” in other words, at the point where the processual conditions for life on Earth begin to speak again, developing new meaning for us.

Seventh hearing: *A Matter Theater*  
(October 2014, curated by Katrin Klingan, Ashkan Sepahvand,  
Christoph Rosol, and Janek Müller)

The concept is derived from a combination of a resensitization to the Earth’s material metabolic processes and a tradition of the *ars memoria*. In the dual sense of the word “matter,” this results in specific interactions between material transformations and matters of importance, constellations that necessitate specific knowledge practices associated with handling, synthesizing perception, and experience—in short, Anthropocene practices. Matter does matter; the material world structures the world of thought. *A Matter Theater* translates the treatments of *Grain Vapor Ray* into the concrete situation of the forum where processes are not only discussed but also appear themselves, are given a voice, are demonstrated and practiced. While *Grain Vapor Ray* articulates analysis, language, and drawings in book form, *A Matter Theater* realizes a praxis of sensation at a concrete site and at a specific time.



## Eighth hearing: Anthropocene Curriculum (March 2013–November 2014, curated by Katrin Klingan and Christoph Rosol)

The starting point for the curriculum is the fact that institutionalized knowledge production is carried out in disciplines that have established their own traditional methodologies, and thus ways of approaching the world. However, as a result of Anthropocene processes, developments have been set in motion that necessitate new forms of cooperation and the integration of the methods of the natural and social sciences, the humanities, and artistic research. The goal is to analyze carefully the interaction between material and cultural processes, which will require the development of new concepts.

Beginning with concrete cases, groups of three scientists and university lecturers from a range of faculties developed a curriculum that exemplifies the new Anthropocene knowledge relations. These will be discussed and tested at the HKW's weeklong *Anthropocene Campus* by 100 young academics, artists, and players from the cultural sector, all of whom will be future mediators of a new knowledge.

## Anthropocene Observatory (Armin Linke, Territorial Agency [John Palmesino and Ann-Sofi Rönnskog], and Anselm Franke, 2013–14, curated by Anselm Franke)

Anthropocene Observatory prepares material for the hearings. Worldwide it enters international institutions, laboratories, and places of work usually reserved for specialists, in order to trace the increasingly complex relationships between abstract mounds of data and models of Earth observation, as well as concrete sites and organizations involved with knowledge manufacture and planning. It generates an institutional geography of geoscience and politics, implicitly posing the question: which institutions do we actually need in order to characterize and shape the Anthropocene?

### The Otolith Group: Medium Earth (2014, curated by Anselm Franke)

While Anthropocene Observatory examines the institutional structures of science and politics which contribute to the construction of the Anthropocene concept, The Otolith Group explores the way in which geological changes become inscribed in popular knowledge systems. Working with a group of “Earthquake Sensitives” in California, they recorded how these individuals develop their own visions of the world by mixing, in a magical fashion, their common knowledge and experiences with expert knowledge. The resulting ideas of reality, outside the realm of the sciences, build bridges between institutional knowledge and individual bodily experiences. This raises the question: What relevance do the knowledge pools of the sciences have for the lives and thoughts of individuals and groups.

### Adam Avikainen: CSI Department of Natural Resources (2014, curated by Anselm Franke)

In contrast, Adam Avikainen sees himself as a forensic scientist. It is in this role that he initiated a number of investigative examinations within the environs of the HKW over recent months with the aim of uncovering how nature and culture inscribe themselves in the environment. In this case the landscape is the canvas, which is subjected to a variety of layering processes. On the one side it is processed by the sun, wind, and rain, with traces from the Earth and nature becoming deposited upon it. On the other side, Avikainen reworks these “natural” layers using synthetic paints in the cave situation of the HKW’s studio gallery. This results in landscapes in which his inner life, his vision, become fused with natural processes—post-apocalyptic scenarios, glimpses of the present from a world after the Anthropocene, represented by solar energy, wind, microbes, bacteria, and synthetic materials.

Examinations of curatorial or narrative practices under the auspices of the Anthropocene are undertaken by *Synapsis* (concept: Daniela Wolf and Kirsten Einfeldt) and the crossmedia competition *Future Storytelling* (concept: Silvia Fehrmann and Eva Stein).

Such a vast, forward-looking project would not have been possible without a team dedicated to this task. In conclusion, let me thank all the people involved in *The Anthropocene Project*, especially especially Annette Bhagwati, who as project head held the diverse projects together, Alexandra Engel, artistic production manager, and the whole team of HKW who accompanied this endeavor with curiosity, critique and indefatigable enthusiasm. I would like to thank my colleagues from the board Reinhold Leinfelder and Christian Schwägerl, who supported me in getting *The Anthropocene Project* underway. The extensive *Anthropocene Project* has only been possible thanks to special funding from the German Bundestag in cooperation with the Minister of State for Culture and Media. I would like to thank all those involved. A special thanks goes to Rüdiger Kruse, who, as a Member of the German Bundestag and the Budget Committee, was quick to recognize the importance of this theme for politics and society, promoting it with great dedication.

I would also like to thank the former Minister of State for Culture and Media, Bernd Neumann, and his successor, Monika Grütters, for supporting the project.

*Translated from the German by Colin Shepherd.*

# Exhibitions

## Oct. 17–Dec. 8

Anthropocene Observatory:  
#4 The Dark Abyss of Time  
Adam Avikainen: CSI Department  
of Natural Resources  
The Otolith Group: Medium Earth

Curated by Anselm Franke

# Anthropocene Observatory

Operating as an observatory, combining documentary practices and discourses, the project traces the formation of the Anthropocene thesis across various levels, from the practices that shape landscapes and territories to those that shape political institutions and governance, both historically and today. It observes how the thesis of a man-made geological epoch is debated and employed in institutions of science and politics, particularly, but not limited to those international institutions charged with negotiating climate change and environmental politics on a supra-national scale.

Anthropocene Observatory has been in operation since early 2013 and presents its work and archives in four episodes at HKW. It combines film, photography, documentation, interviews, spatial analysis and fieldwork to form an archive and a series of installations, seminars, debates and cultural interventions. Across a number of specific international agencies and organizations, information about scientific research is acquired, registered, evaluated, processed, stored, archived, organized, and re-distributed. These complex behind-the-scenes processes and practices, which lead to the equally complex decision making procedures, form new discourses and figures of shift. The Anthropocene Observatory traces these practices in a series of short films, interviews, and documentary materials: the aim of the project is to illustrate in detail the unfolding of the thesis of the Anthropocene in its many streams of influence.

A project by Armin Linke, Territorial Agency (John Palmesino and Ann-Sofi Rönnskog), and Anselm Franke



Museum of Evolution of Life, detail, Chandigarh, India, 2014.  
Copyright Armin Linke /Anthropocene Observatory.

## Excerpts from the Anthropocene Observatory archives.

[Paul Crutzen](#) →1

**Nobel Laureate, Max-Planck-Institute for Chemistry**

"It all started in a meeting in Mexico, where people interested in atmospheric chemistry participated in major research efforts. We were talking about this, and one of the participants in this meeting kept talking about the Holocene, the geological era of the Holocene. He kept talking about observations showing that the Holocene was important. Also the person who led the discussion frequently kept talking about the Holocene, and I said, 'We're no longer in the Holocene. We are in the Anthropocene.' I think it's very important that we realize that the Anthropocene is really due to human activity which creates its own anthropogenic atmosphere, which we call the Anthropocene."

Will Steffen →2

Australian National University Climate Change Institute

"Is there a tipping point for the Earth as a whole, for the climate system as a whole? We've got a biophysical system, a climate system that has a tipping point between a wet and a dry state, and human pressures of various types. These always interact, forming not a whole array of outcomes, but only a small array of outcomes, because the whole thing interacts as a complex system."

Pavel Kabat →3

IIASA, International Institute for Applied Systems Analysis

"Is it possible that humans are becoming a force which is comparable to a geological force? We put up this hypothesis. Since then, it has become a quite common approach in the investigations into the earth system. If humans are already comparable in terms of intensity and long lasting impact of their interaction with the earth system, to geological forces and planetary forces acting over millions of years, it's still something that needs to be finally quantified. We believe that in the timescale of centuries and millennia, this is definitely the case."

Nebojsa Nakicenovic →4

IIASA, International Institute for Applied Systems Analysis  
and TU Wien

"I think what's really fundamentally different about the Anthropocene is the acute awareness of the fact that it will probably take a few decades before we cause absolutely irreversible changes. Maybe even a hundred years in some areas, and yet we know that we have to act now. I think that is fundamentally different. We have a 'beyond-personal' experience type of development that we have to anticipate that it is global. It affects the whole planet. It is no longer local."

Veerabhadran Ramanathan →5

Scripps Institution of Oceanography, University of California at San Diego

"I discovered that there are really two planets. I call one the top four billion—that's us—and then the bottom three billion, who have no access to energy. The two are co-dependent. Without the bottom three billion, there wouldn't be any cheap labour. But at the same time, the top four billion is consuming the fossil fuel. I am thinking that the problem with the top four billion is consumption, that is the Anthropocene. [...] Whereas for the bottom three billion, their problem is population, and they need clean energy access."

Jan Zalasiewicz →6

Convenor, Working Group on the Anthropocene,

International Commission on Stratigraphy

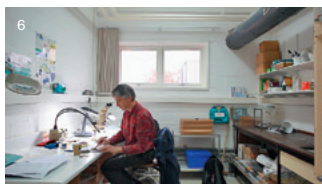
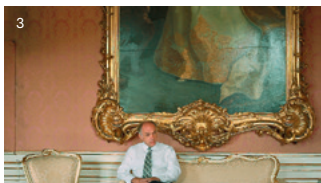
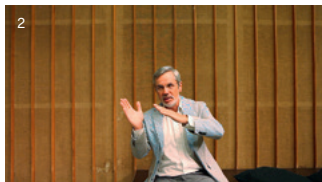
"The Anthropocene has things in it which have not happened at all in previous interglacials or in previous intervals of earth history. The urban stratum is completely new. The change to nitrogen, through fertilizers, the doubling of the nitrogen cycle is now geologically significant because there has been nothing like that throughout the ice ages. For some scientists, this is the biggest change or shift in the nitrogen cycle for one billion years or more. That is big geologically. How it is reflected in strata is a big new question."

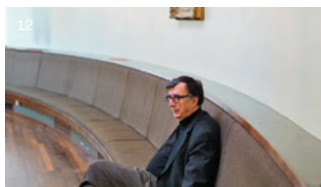
Colin Waters →7+7A

BGS, British Geological Survey, National Geological Repository

"We were the first survey in the world to recognize that artificial deposits are geology. They're not just archaeology. Quite a significant part of my work is trying to map the distribution of artificial deposits and understanding how they formed and how to classify them. I've developed a general interest in the nature of artificial deposits and, from that, an interest in the Anthropocene. [...] If you do a rough calculation, it suggests that ten times more sediment is being moved on the earth surface by humans, than what is being transported around all the rivers in the world. [...] That really means that mankind really is now one of the principal geological factors for the movement of sediment. It's the first time we have had this major change in geological processes."







[Davor Vidas](#) →8

[Fridtjof Nansen Institute](#)

“The development of international law after the Second World War until now has been very closely connected with geology. There could be quite a different relationship to geology in terms of acquiring territorial rights with the concept of the Anthropocene. That is, looking at geology not in terms of acquiring territorial rights but thinking whether our international law is actually the law of the Anthropocene or if it only refers to the epoch of Holocene. This is the key challenge today, I believe, when we introduced the Anthropocene concept.”

Julia Korshunova →9

**Sociologist, Murmansk, Russia**

"If it happens that a company intends to extract gas or some minerals, then it's necessary to make an assessment of the future enterprise, to determine in what extent the enterprise will influence the social sphere and the environment of a local population. As a sociologist who studies people's opinions about a future project and their concerns, I address questions to people. There are questions about people's daily life, for example when addressing to a small group of aboriginal people I ask whether they lead a traditional way of life. And as I'm putting questions according to an elaborated questionnaire, a structured interview, the respondents begin to think, somehow, about their way of life, how they live and how their way of life corresponds to the life image in the international context."

Farhad Mazhar →10

**Founder and managing director, UBINIG, Bangladesh**

"The river is drying out. It's not because of climate change. The river is drying out because India is holding the water. It's not releasing the water. It is upstream and it is controlling the water. So privatization of the water, taking the water away from the downstream is the biggest problem for us. And the farmers in the village right here are adapting to this disaster. This disaster is not being created by climate change but simply by the countries upstream. They would like to use the water, but for what? Not for any ecological reason. Simply because they want to divert the water for more urbanization and to supply their urban populations by producing the more modern variety of rice that requires more water."

Jonathan Lynn →11

**IPCC, Intergovernmental Panel on Climate Change**

"The IPCC is an organization set up by two bodies of the UN (UNEP and WMO). We are an organization of governments. We bring together scientists from all over the world. They don't conduct original research, they assess the science already out there, the science that has already been published, because there's so much science

related to climate change. It's impossible for only one government, only one minister or any city or authority to understand it fully. So what we do is: we examine all that and we tell people this is the current state of science and that these are the implications of what is going on."

Bruno Latour →12  
SciencesPo, Paris

"War and, of course, peace is the question here. Since ecology became a political movement, the idea was that it was not about war, but about peace. That is because nature was supposed to pacify. The first sort of mistake of many ecological interests and imagination and political movements was to say that if we elevate consciousness of people to nature, we would all agree. Because nature was supposed to be the great pacifying and unifying entity. What the Anthropocene adds is something much more conflictual, because the Möbius loop of the Anthropocene means that you never know when you are dealing with a piece of carbon dioxide or methane or fish or whatever if you are dealing with human elements or with elements of a 'former' nature. This underlines that we are not entering a domain of peace when we get into nature. [...] War was a characteristic of humans, not of nature. With the Anthropocene, you have to open up the possibility that war is part of what it means to be part of this Möbius loop. There is no arbiter: we need to define who is friend and who is enemy."

Paul N. Edwards →13  
University of Michigan

"The weak point of integrated assessment modelling is always modelling society. There is no perfect theory of social interaction and there are always random Things that happen and which can't be predicted. The results of major wars, nuclear exchanges that will, in my view, happen over the next 20 to 30 years, the mass migrations that are likely due to sea level rises. [...] Things like that, they are very hard to put into a model, although people try. But that part is always going to be weaker than the physical science side of the models."

Christiana Figueres →14

Executive Secretary of UNFCCC, United Nations Framework Convention on Climate Change

“We have moved completely away from the family unit, beyond the tribe, beyond the city state, and away from the nation state. We are pushing beyond that national boundary, towards the planet. It's a new boundary of many issues that concern government. This does not mean that we can exempt all other levels that are within that boundary from decision-making responsibility. Climate change is only an exercise in beginning to build humanity's muscle to go beyond the nation state and into a global level of governance. A new social contract needs to be built at the global level. [...] How are we going to guarantee the survival of individuals, of families, of communities?”

Prodipto Ghosh →15

TERI, The Energy and Resources Institute, New Delhi, India

“My experience really is that although the governments of the West are aware of the implications of human interference with the climate system and they are concerned about it, they do not have the political will to move forward on a basis that would be universally acceptable and which would correspond to widely shared human beliefs in what would constitute a fair outcome. And we find that attempts have been made right from the beginning to obscure this issue. I believe that as long as this approach continues it will be very difficult to reach a global agreement to protect the planet.”

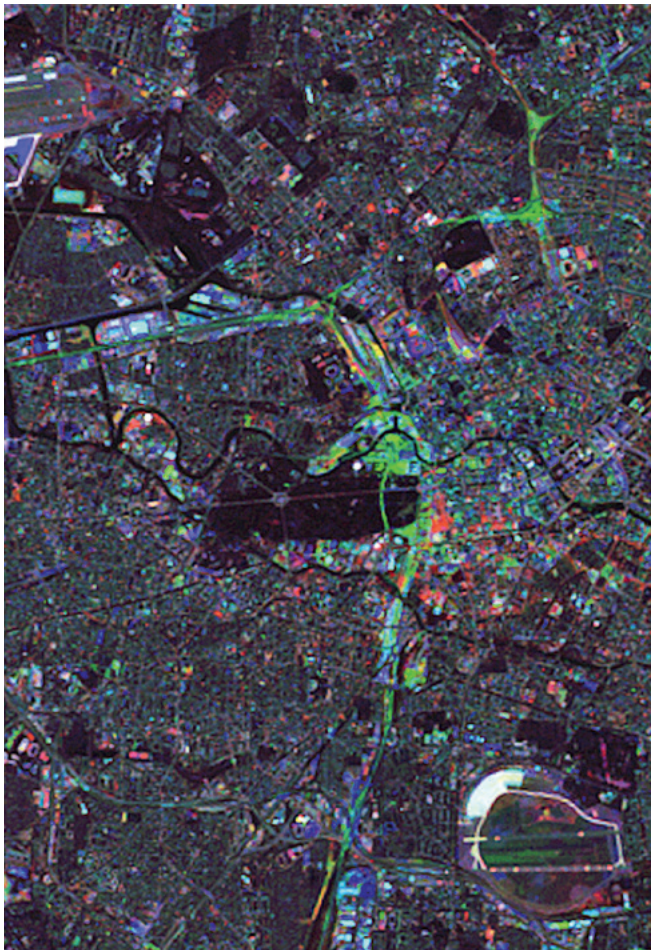
Anthropocene Observatory thanks all the people and institutions we visited and interviewed.



Above: El Ejido, Spain, 2013. Copyright Armin Linke/Anthropocene Observatory.  
Below: UNFCCC Climate Conference, Bonn, Germany, 2014.  
Copyright Armin Linke, Giulia Bruno/Anthropocene Observatory.



Multispectral analysis of impervious surfaces of Berlin, showing the transformations of the city since the fall of the Wall. Areas in red were measured in 1990, green in 2000 and blue most recently in 2010. Image elaborated by Territorial Agency based on Landsat data NASA/Anthropocene Observatory.



The Exhibitions

# Adam Avikainen: CSI Department of Natural Resources

For the painter and writer Adam Avikainen, all of nature becomes a crime scene in an ongoing story that subsumes every element of the artist's life in an expansive artistic process. *CSI Department of Natural Resources* engages with the role of natural sciences in our present, the artist as a medium and detective, and the practice of painting. Avikainen plays with scientific methods and theories as well as forensic methodologies by poetically expanding them into an ongoing narrative investigation to include causes and effects and forms of agency which traverse past, present, and future, as well as earth, living bodies, and the cosmos. For the 333 investigative episodes of the new work, the environment of the HKW has become the production site.

Adam's Apple  
Caterina Riva

*Excerpt from an essay, published in the context of the exhibition at Haus der Kulturen der Welt.*

As a reader, a viewer, or listener to Adam Avikainen's works, it is important to embrace relativism, to surrender to the feeling of never grasping the whole.

Talking to Adam Avikainen is an immersive experience, he takes you on a 360-degree journey that is geographical, chronological, linguistic, autobiographical, visual, olfactory, but that always departs from the observation of his immediate environment, and from there, expands organically and synchronically.

Adam pins his badge to the neck of his T-shirt, the badge bears his name and the dates he will be at HKW: April to October 2014. I follow him, and we wander through a corridor with many doors that Adam tells me are offices; after a few corners we come to three large rolls of canvas stacked horizontally on one side, between the floor





and the wall, a handwritten note: "Adam Avikainen" sits precariously atop them. Adam picks up the top roll and hoists it onto his left shoulder, it must measure approximately three meters in length. Taking the canvas outside requires some balance; we pass through cramped corridors and two glass doors and get to the left side of the building, in a green area, adjacent to the exhibition space where the work will be shown in October. Adam unrolls the long canvas on the grass, it is still mainly white but I can see some red pencil tracings, it looks like sanguine, the red charcoal used by Renaissance painters to prepare the scenes to be executed. The artist has been working outdoors, but he needs to bring the work inside at the end of each day since World Cup soccer matches are screened in the building; temporary metal fences have been placed to contain the soccer fans, but you never know. A strange concrete trapezoid with five irregular sides and three round holes piercing the front through to the back is there too, it looks a bit as if a flying saucer has landed and been abandoned on the less exposed side of the building.





Over the years, Adam has developed the habit of writing two, maybe three letters a day, some days none, some others, more than three. The e-mails appear inconsequential, operating as a stream of consciousness generally not requiring a personal reply, yet they are the artist's dispatch to say that he is alive and located somewhere around the globe. His latest e-mails contain reference to drones, fasting, and Ramadan. Adam always demonstrates an acute awareness of what is happening around him and has an uncanny way of metamorphosing these observations into the construction of his narrative.

Adam Avikainen's life is a history of survival, which feeds the kitting out of his art. He has been moving and making work across three continents: from his mom's womb in Minnesota, to Europe where his ancestors come from, to Asia where he spent time caring for his epos, his body, and soul, going to hot springs. He is now back temporarily in Europe, doing forensic research in Berlin.

Avikainen's body of paintings is the manifestation of an epic narrative, which manages to weave pictorial language and spoken



Adam Avikainen, "Geodermis," 2014. Courtesy and copyright the artist.

words together. In his poems, mountains, oceans, and planets constitute the artist's cosmogony and, as characters, have contributed through the years to the fabrication of a serialized science fiction novel. Within Adam's research, everything appears so disparate yet so inextricably connected; he has been creating an all-encompassing ecosystem, a life-consuming fiction, which breathes through our cells, even as I write and you read this:

"Adam thinks about survival and imagines the possibility of a natural pathogen or mutagen: for a while now he has been researching the natural properties of plants and rhizomes as a way of securing a future for our species ... The pigments' molecules on the scrolls mimic the landscape: valleys, volcanoes, gulfs, creeks, as in a topographic map. The large-scale paintings are like organic beings, they whisper to us their story and at the same time they expose the viewer to the mutagen."<sup>1</sup>

The epic of the Ginger Glacier consolidated in 2012 after Adam had lived in Japan for a few years and experienced the aftermath of



The Exhibitions



the great earthquake and tsunami of 2011 in the northeastern region of Sendai, and the constant threat of nuclear radiation in the air, water, and soil. As a survival strategy, the artist started thinking about a pathogen that could make humans physically strong enough to endure the sun when, in five billion years, it becomes too powerful and, as a result, the oceans evaporate. The Ginger Glacier was presented in Auckland, New Zealand and mutated in Taipei, Taiwan. It also travelled to Shenzhen and then to Seoul, where it was transformed and dismantled. A portion was sent to Beirut to be part of an exhibition there, but it was delayed at customs, and never made it to the gallery. The rest of the work is in a dump in Korea because transport would have been too expensive and proved too difficult considering the deterioration of materials, the volume of the paintings, and their fluctuating value.

The impression that Adam's work is cyclical is confirmed when the artist recalls how Ginger Glacier sprouted from a presentation in Berlin in 2011. A full-time English teacher in Japan at the time, Adam is invited to participate in the art fair abc, themed around painting. He had seriously been considering quitting art, this commission, though, urges him to make work again and create a new epic. During time off from teaching, he writes and draws sitting at his desk in his tiny Tokyo apartment, and during longer school breaks, goes to the countryside to paint. There he makes small-size works inspired by the Japanese watercolor tradition, which illustrate some of the stories he has been composing. A collector eventually buys one painting at the fair in Berlin, the spores of the Ginger Glacier start to circulate.

In his latest works, there are references to the American crime drama TV series *CSI*, or *Crime Scene Investigation*. The second part of the title better articulates the field of interest in which the artist is engaging: the Department of Natural Resources. In preparation for the project in Berlin, Adam has been reading scientific journals and researching new technologies, industrial mass productions in Asia, and pharmaceutical companies in Europe. In doing so, he has managed to find "sauna designers based in Minnesota with branches in Germany,"<sup>2</sup> thus connecting things and places through his own life story. For his show at HKW, he is making a new work but is also

planning to exhibit the cycle of paintings that he made in Seoul, which have already been shipped to Berlin.

The palette for CSI:DNR Seoul has orange/reddish tones, they are iron-based, inspired by rust puddles and the metal-working district Adam found himself working in, alongside blue-collar workers, alcoholism, and prostitution. From the "Oyster," he is working on a new large-scale painting employing honey, mint, and ink. His intention for CSI Department of Natural Resources is to be more clinical, and less prone to water and weather than in previous projects. He has been writing 333 episodes—each consists of a letter and a photograph—which will be on display using lightboxes resembling X-ray machines. Adam is thinking of letting light filter into the exhibition space by pulling the curtains on the window-side of the room. This gesture will also reveal the outdoor working area where the new paintings have come to life, and expose the mysterious concrete sculpture with three holes; both portals to other worlds.

Adam is convinced of the importance of viewing things from multiple perspectives, and in order to do so, believes that one needs at least three points. What he has been trying to do with his work is to offer that third- or fourth-dimension, which makes us aware of the other layers too.

*Caterina Riva (born in 1980, Varese, Italy) is a curator and writer. She is one of the founders of FormContent, London and has recently returned to Europe after being the director of Artspace NZ.*

- 1 Excerpt from a text written by the author for the exhibition Rambler's Association at Artspace, Auckland, April 2012.
- 2 From an e-mail between the artist and the author



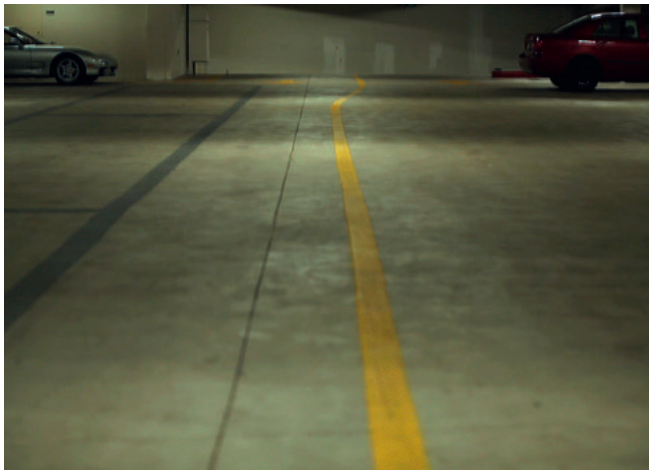
# The Otolith Group: Medium Earth

*Medium Earth* (2013) is an audiovisual essay on the millennial time of geology and the infrastructure of Southern California. Focused on the ways in which tectonic forces express themselves in boulder outcrops and the hairline fractures of cast concrete, *Medium Earth* participates in the autodidact cultures of prediction that premeditate the apprehension of seismic upheaval. The evocation of the substrata of the planet gives way to a morphological interpretation of the face of the earth. As an experiment in channeling the system of fault lines buried below California, *Medium Earth* animates the stresses and strains of physical geographies undergoing continental pressures.

The second part of the presentation, *Who Does the Earth Think It Is?* (2014) consists of redacted and scanned selections from the unofficial collection of unsolicited earthquake predictions sent by members of the public to the United States Geological Survey Pasadena Field Office at California Institute of Technology, Pasadena, Southern California, between 1993 and 2007.

## The GeoPiety of the Earthquake Sensitive Kodwo Eshun

March 5, 2013. The online issue of *Nature*, the international science weekly, reported that the subaquatic earthquake that shook Tohoku in northeast Japan on March 11, 2011, triggering a tsunami and a partial nuclear meltdown at Fukushima Daiichi Power Plant, was powerful enough to be “heard from space.” According to physicists in France and the Netherlands, the sound waves of the magnitude 8.9 quake travelled as far as a European Space Agency satellite orbiting 260 kilometers above the Earth. It generated sound waves that travelled through the surface of the Earth, producing infrasonic waves that catapulted through the ionosphere. Working with the Gravity Field and Steady-State Ocean Circulation Explorer (GOCE), which deployed its six accelerometers to monitor minute variations in gravity over the Earth’s surface, physicist Raphael Garcia and his



The Otolith Group, "Medium Earth" (film still), 2013. Courtesy and copyright the artists.

colleagues at the Université de Toulouse concluded that the GOCE had detected an infrasonic frequency of 14 millihertz occurring approximately thirty minutes after the Great Tohoku Earthquake of March 11, 2011, followed by another frequency of 6mHz approximately an hour afterwards.

GOCE had, inadvertently, become the world's first orbiting seismometer. It was the first example of what might one day become a new generation of high-altitude seismometers dedicated to monitoring earthquakes in remote locations. In that near future, satellites modeled upon the design of that first GOCE would detect the frequencies of blind-thrust faults moving far below the ocean floor. Would these instruments be able to sense the frequencies of active fault-strands before they surfaced? Could they forecast seismic activity through a process of remote infrasonic prediction?

What impact would these instruments introduce into the global infrastructure of remote sensors that produce planetary data? How would these remote readings alter the competition between opposing computer simulations of prospective earthquakes? And what unforeseen effects would infrasonic forecasting produce within the porous dimensions of the parascientific, which is not extinguished but rather stimulated by the prospect of new scientific observations? What might happen when it becomes widely understood that it is possible to predict what is imminent through what is inaudible, or when this understanding leaks into the popular appetite for disaster?

To elaborate upon these speculations, it becomes necessary to adjust scales from the planetary perspective of the GOCE to the regional scale of California via the United States Geological Survey (USGS) charged with producing seismic data on a continental scale. In the case of California, autodidactic practices of prediction license their projective imaginations through encounters with televisual reports produced by the USGS that reconstruct seismic causation. A media ecology begins to accrete in which impending tectonic activity is experienced as fear inseparable from permission. The near future is lived as a modality of dread that permits practices of magical thinking in the present.

05/07/02

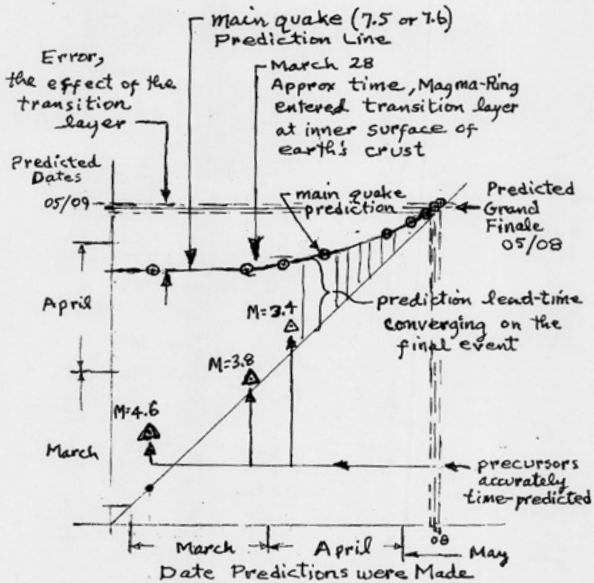


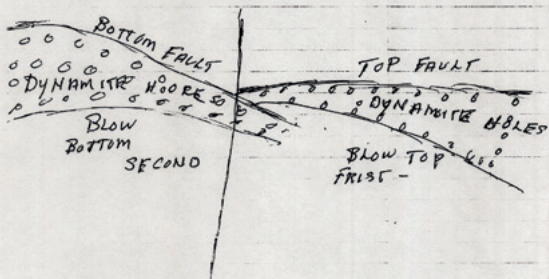
Figure 15-8 XXXXXXXXXX Quake Predictions for March, April and May 2002

JUNE 28, 1992 2:40P

### TOPIC (EARTH QUAKES)

TO HELP STOP A LOT OF EARTH QUAKES IN CALIF. & ELSE WHERE IN THE WORLD, YOU CAN CONTROL THEM BY TAKING THE TOP CRUST OF EARTH THAT IS RESTING ON THE BOTTOM AND DIGGING IT BACK SO IT CAN NOT SLIDE OR BREAK OFF WHICH MOST OF THE TIME IT DOES - THE EASY WAY TO DO THIS IS TO DRILL HOLES AND USE DYNAMITE <sup>IN</sup> IT TO CONTROL THE FAULT

### EXAMPLE



California's psychological climate is apprehensive yet permissive. It authorizes amateurs to announce themselves as practitioners of prediction, premonition, prophecy, and preemption. These unlicensed chronopolitical practices attempt to align predictability and variation in order to manage the ominous time of approaching hazard. The passionate pedagogy of the earthquake sensitive emerges from this milieu. These biological sensitives distinguish themselves from psychics by emphasizing the testable nature of their claims; this scientism rests in turn upon a mediumistic conviction that authorizes itself through bodily self-evidence. The fact that the sensitive is affected, indeed, attacked by involuntary sensations, provides its own proof, which science can affirm but not deny.

March 2, 2013. Evening. Sixty-five year-old earthquake sensitive Charlotte King is talking with Eddie Middleton, host of the Night Search radio program broadcasting live from Memphis. When Middleton asks King to identify "precursors" that might indicate that "some major quake" is about to occur "in some place in the world," King responds by saying:

"Well, we're expect—, we're expecting, uh, Oregon's stirring a little bit, because the vision's getting really bad, and Oregon is always vision. And I'm not concerned. It's just probably an aftershock to the 5.1 we had a couple days ago. And, um, left lower ribs and back are hurting again. That's Oceania, probably New Zealand, Australia, in that area, because they're due, they're also due for an aftershock that they—that's the area that's been real uncomfortable lately. And my right knee, and hip, um, leg has been hurting and that's Peru, Brazil, and Colombia."

In the body of the earthquake sensitive, seismicity expresses itself as sensations translatable into symptoms. The victim learns to read each localized pain as a symptom that anticipates specific seismic incident. The distance between the corporeal and the geographical collapses as the time between the somatic and the chronological implodes. Only days after first hearing low frequencies in 1979, forty-one sperm whales inexplicably beached in Oregon; three or four days later, the Big Bear region in San Bernardino Mountains in Southern California underwent four moderate earthquakes.

The Otolith Group, "Medium Earth" (film still), 2013. Courtesy and copyright the artists.



King realized that the low frequency that she heard was the same “subsonic sound level” heard by those forty one dying whales, which was nothing less than the sound of families of seismic faults travelling towards the surface.

King also saw the visible evidence of a pending quake in non-human behavior. Ants that left the ground to climb walls and earthworms that inched their way across the driveway outside her garage attuned her to the onset of seismic activity. The peculiar activity of whales, worms, cats, and ants provided the evidence King needed to announce the onset of a “timeline” that began to count down to a seismic incident. Severe headaches prompted her to note the onset of a symptom or a “precursor” and to link its date to global activity. Closely observing precursor activity indicated that the timeline could be moved forward by twelve, twenty-four, forty-eight, or seventy-two hours.

King announces this travelling timeline through emails posted to approximately hundred subscribers, many of whom suffer from pains similar to those King describes. This remote sympathy creates a distributed community connected by differing yet shared feelings of prospective danger. In her interview, Charlotte King speculated on the existence of “hundreds and thousands of people” that “feel the same symptom at the same time in the same part of their body, no matter where they live.” Predicting fault activity in turn requires predicting the ways in which this network of sensitives might predict faults. In her anxious plea to call at any time, day or night, one senses the ramifications generated by forecasting. By alerting each other to news from five days in the future, the sensitives were creating pockets of quasi-causality that oscillated between prediction, preemption, prevention, and premediation.

Within the constitutive interrelations of the planetary, the continental, and the regional, a new generation of Gravity Field and Steady-State Ocean Circulation Explorers capable of geoacoustically detecting the earthquakes of the future promises to complexify rather than clarify seismic apprehension. Confronted by the remote sensing technologies that measure the dynamic behavior of plate tectonics, earthquake sensitives offer a hyperbolic case study of the



encounter with the Promethean implications of global data. The sensitives neither clarify nor complicate; instead, they close the gap between expert and popular knowledge through a form of magical thinking distinct from the familiar forms of climate change denialism. They are devotees of a new geopiety that sincerely believe that they suffer the pains of the earth.

As Lorraine Daston has argued,<sup>1</sup> the Anthropocene can be characterized by the confusions generated by the collapse of the distinctions that traditionally separated the chronopolitical horizon of the human from that of the technological and the geological. The seismic sensitive inhabits that collapse, embodies its indistinction, and enacts the confusions that ensue when chronologies mould, biologies crack, technologies splinter, and geologies gleam. Charlotte King's somatic substitutions ingeniously combine the forms of misunderstanding that become widely available when and wherever infrastructures fail.

In the sliding mud that wipes away the self-portrait of man drawn in the sand, the earthquake sensitive can be glimpsed, trying to stand upright.

1 Lorraine Daston, "Objects: a Rock and a Floppy Disk," lecture delivered at Haus der Kulturen der Welt, Berlin, January 10, 2013 on the occasion of *The Anthropocene Project: an Opening*

# A Matter Theater

*"Anyone who wants to possess the knowledge of living things must rely on demonstration beginning with material things and going back towards the principle of everything."*

Michael Psellus (1017–1078, Byzantium)

The Anthropocene hypothesis declares an age in which "nature" and "culture" are no longer separate, encompassing a time and a space in which the world of things and the world of thoughts flow together. The Anthropocene points out a state of transition: it is everywhere, and yet, it cannot be isolated and demarcated. To access and address its variable phenomena, one must engage with those processes within which "stuff" is exchanged, composing a metabolic theater of materials and mysteries whereby the "age of man" may be demonstrated. We are afforded to exercise our capacities for a new *aisthesis*, that is, the original meaning of "aesthetics" as a capacity to perceive and remain sensitive to experiences of being in the world. The Anthropocene, as an aesthetic project, concerns itself with the world, with worlds, with knowing and doing the worldly. It is, perhaps, not so new as rather quite old: a common sense that we must regain through remembrance, repetition, rehearsal, and practice.

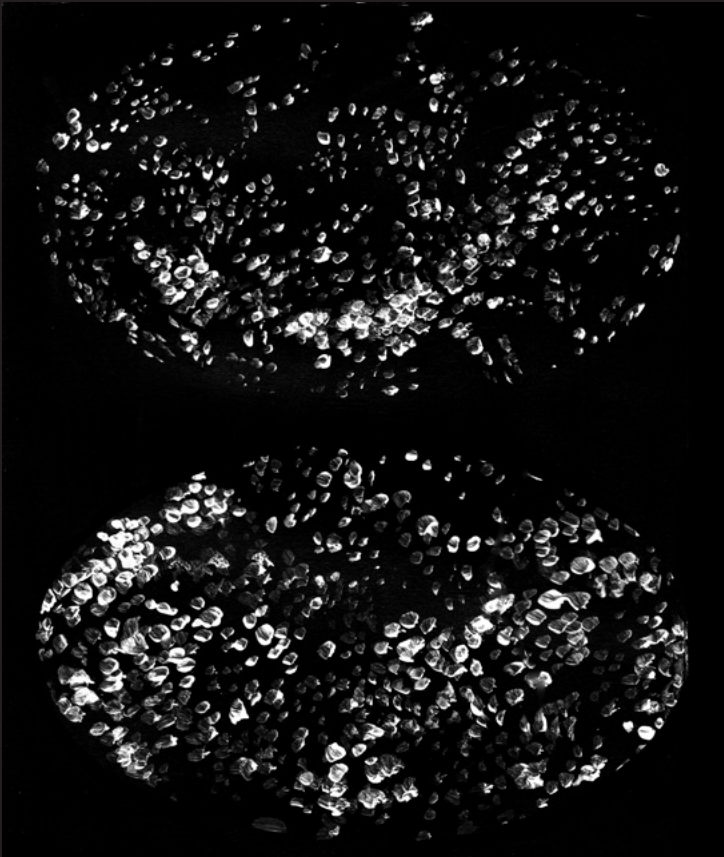
*A Matter Theater* presents a three-day situation in which anthropocenic processes are traced through a carefully choreographed series of practical and material encounters. The fluid configurations between the earthly and the human are brought forth into a space of experience, where world-forming practices are made concrete and addressed via their tools, methods, and applications. Here, the word "matter" plays on two simultaneous, entangled meanings: on the one hand, it embraces the materiality of the world, in the form of, for example, stones, plants, or organisms, the raw "stuff" of our existence; on the other hand, it refers to the problems and concerns brought to the table by a planet undergoing transition, matters such as diminishing resources, climate change patterns, rising extinction rates, and uncanny, neo-liberal self-management techniques. What drives the reconfiguration of knowledge and practice within the Anthropocene is exactly this interwoven set of urgencies and agencies, between a care for the material and those matters that matter,

between concerns that make a difference in the world and those that determine worlds.

“Theater” also takes on an expanded sense, referring less to the forms of presentation associated with the performing arts and more aligned with the sensibilities invoked in the Renaissance concept of the *theatrum mundi*, particularly the tradition of the “memory theater.” This was an idiosyncratic technique for communicating discourse through practices of visualization and demonstration, as well as a method through which memory could be spatialized, generating a wealth of material within the Renaissance and Early Modern period, from cosmological mind-maps to psychogeographic architectural plans. As part of the ancient *ars memoria*, a pedagogical mnemonics for students of rhetoric, this field of practice mediated abstract discourse with visual and spatial forms. Its various applications quickly left the academies and training halls, entering everyday life. Before the age of print and the rise of speedy information transfer, the art of memory enabled the configuration and exchange of various forms of knowledge, from philosophical treatises to grammar books, from *materia medica* to alchemical formulas, to spread between users, to be worked on and undergo transformation, re-shifting the qualities, textures, and substances within those regimes of similitude whose inherent “order” lay in the entanglement of the mind’s imaginations with the world’s materials. The “viewer” of such a theater would be its composer and architect, for he or she would act as agent of his or her own knowledge production. The exercises by which knowledge was committed to memory, inscribed into the imagination, and projected onto space would enable a practice of *anamnesis*, or, learning to remember to not forget, a crucial capacity for recalling and responding to shared traditions. These personalized memory systems gave rise in the Renaissance to practices of “knowledge architecture,” in which the space of the theater and its recorded forms and activities would designate a particular world-picture. The materialization of the memory theater was not far off, for the Early Modern period saw the construction of the *Wunderkammer* amongst the nobility and merchant class. This cabinet of curiosities displayed objects—ranging from plants and minerals to paintings and

devices—that were, epistemologically, still mobile. Categorical ordering had not yet ascribed a place and purpose to the stuff of the world, and the circulation of materials brought about by a globalizing economy still generated the wondrous and the unknown. These collections, in turn, served as the predecessor to today’s natural history museums as well as fine art collections, the material “resources” necessary for the disciplines of the arts and sciences.

*A Matter Theater*, however, does not wish to reproduce drafts for a new ordering of the world. There is no outside within the Anthropocene, and thus, that hallmark of Modern science, the Archimedean point of an observer standing above the world can no longer be rightfully maintained. Each individual human agent is immersed within and implicated by the constantly dynamic processes of transformation and transition that the earth system—a geological totality consisting of variable forces, from the tectonic to the anthropogenic—is currently exhibiting. Thus, the human finds itself in a state of immanence: its knowledge of the world and its actions within the world can no longer be separated. In sum, the geological within the Anthropocene is always a question of civilization: if the earth system displays a departure from the “norm” and a transition towards the unknown, then our civilization may also long be over, and the metabolic mix-up we inhabit may indeed be a ruin from which a future must be reimaged. We are demanded to put our sensibilities, abilities, and know-how to use—not only as a civilization, but as individual practitioners—in order to recompose the ways in which we want to live. “A Matter Theater” responds to these conditions by emphasizing the practices and techniques afforded by a sensory experience of the world, in particular, the means whereby processes of planetary transition, as a movement of phase-change, may be sensitized, rather than symbolized. The goal of this *aisthesis* is a sensibilization towards the process-based conditions of matter. Whether sensed as flow, perturbation, dispersion, or aggregation, the reconceptualization of all matters as mobile, bound to a cycle of transmutation and re-substantiation, certainly challenges our forms of knowledge—so comfortable with static entities and clear-cut boundaries—as well as our modes of practice—so teleologically



fixed as they are on completion and realization. Such an aesthetic project would necessitate us to think and act with a deeper, depersonalized sense for scale and impact, as well as a more lighthearted *Gelassenheit* towards impermanence and change. It would require of us, no less, to collectively negotiate an altogether different civilization.

*A Matter Theater* doesn't start from scratch. The situation departs from contributions to the publication *Textures of the Anthropocene: Grain Vapor Ray*, itself an output of the two-year Anthropocene Project at HKW. Based on a collection of historical documents that span the history of imagination—that is, the narratives of our worldly encounters with matter and the matters such sensory experiences give rise to—the three volumes of the publication work together to compose a sensibility for the dynamic as the fundamental basis of all knowledge. The story of the smallest entity expands to take into account the scale of an entire world, where a grain of sand in the Sahara Desert presents itself as a critical agent in the nutrition cycle of the Amazon rainforest, or where the literary figure of an unknown creature haunts the imagination with existential concerns regarding the survival of the human species as a whole.

*A Matter Theater* also turns its attention to the knowledge forms inherent in the geosciences, specifically the expertise of those practitioners whose work involves reading and articulating within the material of the Earth itself the innumerable transformations matter has undergone, in the deep time of the geological past, as well as the anthropogenically-mediated time of the Anthropocene present. The Anthropocene Working Group of the International Commission on Stratigraphy, convened by geologist Jan Zalasiewicz, has taken upon itself the task to prepare a formal proposal for considering the Anthropocene as the current age within the Geological Time Scale. Indeed, such a task faces the same great challenge that the Anthropocene hypothesis poses to all fields of knowledge-production, as well as to all political bodies responsible for deciding on the course of actions necessary for organizing human activity. The boundaries distinguishing the natural, social, and historical sciences are up for debate and discussion, that is clear, yet even more radical are the necessary inquiries into the norms and means for generating scientific

knowledge altogether. Methods, disciplines, and established practices must be re-examined, in order for collaboration between various forms of expertise to effectively take place.

Contributors to the publication *Textures of the Anthropocene: Grain Vapor Ray*, members of the Anthropocene Working Group, as well as a broad range of numerous practitioners from between and within the arts and sciences come together in *A Matter Theater*, in order to test out a space for a *theatrum anthropogenicum*, wherein the entanglements of sensation, knowledge, and practice may be sounded out. The situation presents itself across three different formats: *Demonstrations*, *Practices*, and *Exchanges*, which the pages that follow will present in further detail.

Curated by Katrin Klingan, Ashkan Sepahvand,  
Christoph Rosol, and Janek Müller





Program  
Thu Oct. 16 –  
Sat Oct. 18

Opening: A Report  
Thu Oct. 16, 6pm, Auditorium

Opening: A Matter Theater  
Thu Oct. 16, 7:30pm

6pm, Auditorium

## Opening: A Report

Welcome: Bernd M. Scherer (Haus der Kulturen der Welt, Berlin)

“Man as a Geological Agent: Historical and Normative Perspectives on the Anthropocene,” keynote Naomi Oreskes (Department of the History of Science, Harvard University, Cambridge, MA)

The idea of the Anthropocene has led to arguments about its status as an analytical or normative category, and if the latter, whether it is good or bad. This lecture steps back from the debate to examine how, why, and when the concept emerged as a category of scientific analysis, and what scientists thought they were achieving by developing it. It highlights the huge practical departure from geological tradition, in which geology was defined as a science that focused on the history of the planet before humans became important agents. More deeply it represents a huge conceptual shift, insofar as generations of aspiring earth scientists have been taught that the contribution of geology is the recognition of human insignificance.

If humans are no longer insignificant, this raises at least two important challenges for geology as a science. The first is that its subject has changed. Indeed, topics that include the human impact on the globe are now rightly understood as part of the science, so this challenge seems to have been accepted and embraced. The second challenge however, is more complex. If humans are geological agents and conscious of their own impact it inevitably invites discussion as to whether this impact is good or bad. And if the latter, it invites discussion of what one should do about it, and whose responsibility that is. This introduces the possibility that moral and ethical questions now fall within the rubric of “geological science,” a suggestion that makes natural scientists uncomfortable and puts their long-held concept of value neutrality at stake.

THURSDAY, OCTOBER 16

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## DEMONSTRATIONS

*Showing and doing, demonstrating and experimenting, experiencing and sensing: how to sense anew, how to arrive at knowledge, how to play with stuff?*

*Demonstrations* are a mode of experimental, sense-based presentation. Playing approximately 30 minutes with materials and the different senses they evoke, *demonstrations* aim to expose the step-by-step composition of knowledge. *Demonstrations* point out something not seen before, as in a scientific experiment. They also refer to figures occupying the boundary zone of imagination, such as the monster, the presence of something intuitively known but not yet understood. What *demonstrations* have in common is their challenge to the imagination. The practice of demonstrating involves setting up a situation, playing with materials, generating sensations, and following hunches towards a particular argument. Thus, *demonstrations* redistrib-

ute what is considered sensible and re-attune the sense apparatus to the ever-changing complexity of the world and its forms. Particularly well-suited to the Anthropocene, as characterized by a massive transfiguration of metabolic flows, *demonstrations* offer practical, if not idiosyncratic, approaches to articulating new forms of knowledge outside of pre-established methods. At once speculative, performative, and collaborative, involving a variety of actors, from physical bodies to inanimate objects, *demonstrations* chart out a constellation of possible means for communicating the particularity of things. Participants are encouraged to approach the unknown and sensory in their material inquiries, while the public is immersed into a flow of varying impulses, each a proposal for a re-sensitization towards earthly matters.

7:30pm, Auditorium

## Demonstrations

### The Fog of Meaning in a Voiceless Demos

Elizabeth A. Povinelli (Department of Anthropology,  
Columbia University, New York)

A performance. The protagonists: a meteorological entity and a geological entity. The problem: how do the differences among such entities become a difference that makes no difference under the pressure of the Anthropocene? The apparatus: an aquarium populated by plants and a little frog; a large handheld magnifying glass; a blindfold; a mortar and pestle; a digital projection. What results: a transformation.

### Begin, Seedy Being!

Geoffrey C. Bowker (School of Information and Computer  
Science, University of California at Irvine)

This *demonstration* approaches seeds as simultaneously points of origin and ending. In a performative reading of a set of seeds, cycles of growth, regeneration, and extinction are considered as a motion that propels itself forward, while also rewinding back. A set of observations will be developed while handling the seeds, reflections on temporal alignment, timescales, and material processes of inscription.

### A Politics of Departure, it Effects in Being Affected

Ayreen Anastas and Rene Gabri (artists, New York),  
and Ben Morea (activist, USA)

A politics of departure is a politics that attempts to destitute the anthropos of capitalism: a politics that affirms the belonging together of life and form, being and use; in which the fundamental concepts are no longer production and praxis, but unworking, use, becoming-with; which does not separate the vital and reproductive activities as unpolitical; and/or a politics no longer centered on the human.

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## PRACTICES

Practices are a series of intensive, collaborative sessions that present cross-disciplinary approaches to doing knowledge in the Anthropocene. For these sessions, practitioners working between and across the arts and sciences come together with invited guests to examine and exchange their respective "practices."

These unconventional constellations of work and research propose a matrix of possible, experimental activities: the development of exercises, the setup of an atmosphere, the staging of documents, or a re-application of knowledge. The development of new "practices" within the Anthropocene is paramount to the opportunity posed by the age: the processes whereby the planet experiences its systemic transition simultaneously introduce a volatile instability to our received forms of knowledge, our established disciplines, and our basic notions around production, mediation, and impact. Our

concepts alone no longer suffice; scientific, technical, and transversal operations must be considered, incorporated, and dynamically employed to develop a practical field of constant experimentation and innovative collaboration. Fundamental ideas around life, the body, technology, sensation, and experience must be re-examined: not as theoretical disputes within the realm of ideas, but as material and historical flows that generate unresolved problems within social life. Each session aims to cultivate a capacity for a wide variety of incongruent concerns to co-exist, as seen in the respective pairings. This heterogeneous foundation to problem-solving demands a range of practical means necessary for being in the world together, for redoing the world of the Anthropocene.

9pm, Auditorium

## Practice Wonder

Molly Nesbit (Department of Art, Vassar College, Poughkeepsie, NY), Tomás Saraceno (artist, Berlin), and guests

What is the initial experience of knowledge? In going back to our encounters with the wondrous, the joy of being in the world resounds as a “gay science,” where all that is creative counts as knowledge. No longer delegated to the pejorative category of pathos and tragedy, our common sense for wonder re-emerges from its modern hibernation and embraces the unknowability of the world: although we may know “facts,” we still tell stories. Though science clarifies and enlightens, its deeper inquiries cross the threshold of the aesthetic, filling both expert and layman with awe or stupefaction. Wonder serves as a fundamental quality to our sensible education—the “school of life,” where a walk in the woods, a body’s transformation, a life-changing lecture, or a blinding love all serve to teach, to change. Wonder influences our decisions, informs our modes of expression, and impacts our knowledge. Thus, it carries the potential of utopia, the unreachable elsewhere towards which all projects of transformation strive. And so, we depart from this horizon of possibility.

The evening will open out into a string of encounters: a concert of ideas, a troupe of social spiders, music, drama, webs, dreams, messages and unannounced guests arrive. Together we will weave. We will wonder about the fate of the Anthropocene.

Hard questions will be planted onstage. Nietzsche’s question marks hover in the wings. He would want us to set our perspectives coldly and gaily. Like him, we seek the conditions of freedom as we travel on. The old question of utopia comes back in new form. It’s a tough one:

What is a sustainable aesthetics?

THURSDAY, OCTOBER 16

9am–2pm, Theater Hall

## Human Impacts and Their Consequences

A Forum on the Occasion of the First Meeting of the Anthropocene Working Group (see pages 70–77)

3–10pm, Auditorium

## Demonstrations

### Measuring Infinity: A Test Arrangement

STRATAGRIDS (artist collective, Berlin)

How to measure the immeasurable? According to most physicists, our universe consists of 95 percent dark matter and energy, phenomena that cannot be observed, only indirectly traced and described. This paradox serves as a point of departure for a performative inquiry involving a careful staging of tools and techniques for measurement: a sonic diagram, a computer simulation, a video animation. A point of gathering for thinkers and viewers alike, akin to an infinite bonfire in the darkness of space.

### Age of the Catalyst

Benjamin Steininger (researcher and curator, Vienna)

This presentation considers the chemical catalyst's role in mediating the Anthropocene. Three different temporal regimes compose a triangular relation between the chemical, geological, and human-historical, as new elements are introduced over the course of the 20th century into the Earth's metabolism, such as fertilizers, fossil fuels, and plastics, significantly impacting the force of the Great Acceleration.



## BOTANICAL HACK\_Berlin

Etienne Turpin (anexact office, Jakarta) and Stefania Druga (HacKIDemia, Berlin)

Urban land reclamation for food production requires the development of accessible research tools to help assess soil properties. The network HacKIDemia develops DIY soil sensors to enable communities to plan and plant civic gardens and at the same time analyze and monitor potential sites for growing consumable plants. This *demonstration* consists of a collaborative assembly process, applied research, and a public proposition in the form of a group report, a detailed park-to-garden proposal.

## Liberation into Matter: The Temporalities of Individual and Planetary Becoming in Twenty-Second-Century Mangalayana Buddhism Bronislaw Szerszynski (Department of Sociology, Lancaster University)

Using the materials and instruments employed in funerary rites in late 22nd century Martian settlements, this *demonstration* addresses how Mangalayana (“Mars vehicle”) Buddhism radically transformed conventional understandings of the relationship between matter and time, planets and space, the finite and the infinite, and moratlity and immortality. This imagined future is set within a context of a revolution in consciousness, through which human society, the evolution of the Earth, and our wider astral environment are entangled.

### The Wax Slicing Machine

Flora Lysen (art historian and curator, Amsterdam)

The invention of X-rays in 1896 initiated public excitement about the possibility of visually recording the inside of the skull. Would it be possible to take an image of an active brain to capture thought altogether? This *demonstration* addresses experiments in animation and some of those “failed” machines, scientific-artistic hybrids that generated new visions of interiority, from a Berlin laboratory to a bathtub in Munich.

### Floating Selection

Bettina Vismann (architect, artist, and researcher, Berlin), dramaturgy and scenography: Elise von Bernstorff (dramaturg, Berlin)

We are used to perceiving dust as a nuisance. In science, however, these miniscule particles carried by the air are used consistently to model reality, generating cosmological figurations not based on order, but rather contingency. This lecture performance assesses the cosmogenic processes that inform our sense of reality and its creative emergence, taking the “smallest entities” that hover amongst us into a deeper consideration.

### Enquiry into Understanding Cosmic Scale

Andrew Gregory (Department of Science and Technology Studies, University College London), invited by Margarida Mendes (curator, Lisbon)

This *demonstration* examines the analogy of macrocosm/microcosm and how this has historically been used to model the heavens, as well as the earth's weather cycles, in relation to the human mind and body. Inviting historian Andrew Gregory to address how sympathy and harmony have been employed to mediate the relations between the macro and the micro, this *demonstration* contextualizes these arguments and approaches its applications. An ongoing set of imaginations between philosophy and astronomy, cosmology and medicine, with various historical figures from Aristotle to Giordano Bruno to William Harvey act as interlocutors.

### Swinging: Commented Physical Exercise with Curving Lines

Torsten Blume (researcher and artist, Stiftung

Bauhaus Dessau) with Peter Wagner (performer, Berlin)

Exploring the elegance of the flowing line as it applies to the movements of a body, this *demonstration* exercises principles of flexibility and economy inherent in the human physical apparatus' capacity for swinging motions. With the aim to experiment and explore possible ranges of movement, a combination of physical methods, observational commentary, and drawing instruments will translate the scale and sense of corporeal lines in motion.

### Glass

Allen S. Weiss (Tisch School of the Arts, New York University)

Considering the evolution of material, form, and function in Japanese drinking vessels, this *demonstration* examines how the transmogrification of earth (mud) into artisanal ceramic objects, traditionally made of clay, maintains traces of both earthly matter and embodied touch, such that imperfections are of the essence. To confront the materiality of a cup, be it plastic, glass, or clay, is to unravel modalities of social relations, contradictory aesthetic forms, and urgent imperatives towards an ecological consciousness.

### de paso

Natascha Sadr Haghigian (inquirer, Berlin)

Tracing the stories that animate and are animated by an "object" and its global performance, the collision of a standard hand luggage trolley and a plastic water bottle gives voice to the polyvalent utterances of capital. The crushing sound of plastic expands into ever-changing rhythmic patterns as it reverberates and resounds in the space. Two objects, a sound installation, and a presentation of footnotes from the objects' travelogue trace the appearances of the water we drink, the ways we move between places, and the means whereby we commune with things en route.

### The Exhibition

Dorothea von Hantelmann (documenta-Visiting Professor, Kassel), set up by Tino Sehgal (artist, Berlin)

From the perspective of cultural history, the exhibition format can be seen as a highly flexible, individualized, and in this sense, very modern ritual. As such, its basis lies upon the principle of separation, from which an object is removed from its network of connections, and through which the senses, and the capacity for perception and recognition, are partitioned amongst the exhibition goer. This *demonstration* considers the social, political, and economic implications such separation affords.

### Tea Garden

Open for visitation and retreat during the *demonstrations* on 16.10 and 17.10

Benjamin Alexander Huseby (artist, Berlin/London/Oslo) in collaboration with Denise Palma Ferrante (food enthusiast, Berlin)

A sensory and material situation, herbarium and tearoom, where a collection of wild-foraged and locally grown leaves, flowers, seeds, and fungi are available for bespoke botanical infusions. Individual consultations ensure that every tea is blended to guests' needs, taste, and mood. Temperament and temperature determine the experience, gently initiating guests into long-standing traditions of fortification and restoration centered on drink—from magic potion to elixir of life, ritual beverage to sign of hospitality.

10pm, Auster-Restaurant

## Practice An/Aesthetics

Luis-Manuel Garcia (Faculty of Arts, University of Groningen)  
and Brandon LaBelle (artist and writer, Berlin)

What is an experience? Seemingly numb due to the overload of information, stimuli, and sensory possibilities that characterize our contemporary world, where experiences are packaged, sold, and consumed, the question of “aesthetics” emerges with ever greater urgency today. What is good and beautiful, what counts as authentic? Are these concepts still relevant? Rather than arguing for an ideal of experience, or a universal measure, perhaps it is worth going back to the physicality of being in the world, a “bass materialism” that addresses the incessant noise of the world and our immersion within its soundstream. Vibrations connect and collect us. They help us make sense of movement, tracing the resonances that exist between material and immaterial, psyche and flesh. In this session, we will traverse a range of experiential modes, pulsing instances of “being alive” through encountering music, sound, vibration, touch, and forceful impact. In exploring how vibrations propagate, radiate, and strike an ever-expanding field of “vibrant matter,” we aim to better understand how vibration can bring a heterogeneous set of actors into synchrony and mutual resonance. A key aspect of this dynamic is the shared experience of vibration: even if the qualities of this experience vary from one perceiver to another, the mere fact of being together in the event provides a ground for articulating a sense of collectivity, an aesthetics based in the tangible, material world.

FRIDAY, OCTOBER 17

11am, Auditorium

## Practice Corporeality

Yannis Hamilakis (Department of Archaeology at Southampton University, Southampton), Rana Dasgupta (author and essayist, New Delhi)

The notion of “body” moves beyond anthropocentric reductionism and instead seeks to articulate the finer distinction between “having” a body and “being” a body, between corporeal embodiment and carnal accident. The human body, as such, unfolds and reconfigures itself in its interactions with matter, taking on hybrid extensions, cyborg modifications, animal-becomings, and vibrant entanglements with the stuff and substances of the world. This session follows the affective impacts corporeal narratives have on the body, approaching the body as a sensorial regime challenged by social forces and shape-shifting technologies. Moving between notions of the primitive and the primordial, a supposed “state of nature” inherent to *Homo sapiens*, the thread that connects the seemingly stable past with an uncertain future is traced along its historical, literary, and archaeological materials. The sensory experience is, perhaps, what unites the archaeologist’s task of materially reconstructing a bygone world and the writer’s imaginative invocation of *dramatis personae* into a fictive, parallel universe. Examining the evolution of the body in relation to its historicity, this session aims to posit bodies as assemblages of humans, things, and ideas, as physical processes of entangled flows, determined by the divergent qualities of touch, emotion, and memory.

SATURDAY, OCTOBER 18

2pm, Auditorium

## Practice Apparatus

Natascha Sadr Haghigian (inquirer, Berlin), John Tresch (Department of History and Sociology of Science, University of Pennsylvania), and guests

An apparatus is a *dispositif*, a framework for reflecting on the assemblage of practices between technique, technology, and perception. As such, an apparatus can be examined as a cosmogram, a material inscription of the world that projects a particular sense of order, purpose, and meaning. The thermometer may, in the case of the Anthropocene, be the most enduring tool for communicating a concrete assessment of climate change. This “instrument” speaks with a combination of agencies, its parts and pieces unfolding to reveal socio-culturally negotiated ways of seeing and sensing, scientific fact-fictions, and the techno-spiritual infusion of participating observers. Mercury, as the thermometer’s primary (and historical) medium, is the focus of this session’s material inquiry. In form of the thermometer, mercury measures the dynamic state of bodies, mapping the sensible distinction between temperature and temperament. As an element, mercury carries with it the operations of numerous *dispositifs* within our assemblage of technical world-pictures: quicksilver, substance, poison—indispensable for alchemists of the past—a catalyst, always in-between, with no shape or form, an entire history of means and methods to describe it, capture it, tame it, put it to use, stimulate transformation. If “fever” is a metaphorical anamnesis for our planet, what practices must be afforded to address the totality of climate change without relying on representations?

SATURDAY, OCTOBER 18

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## EXCHANGES

*Exchanges* initiates a set of dialogues between members of the Anthropocene Working Group and social scientists, thinkers, and artists, a serial thread of conversations that draws from a vast range of expertise, various disciplines, and practices. Its aim is to reflect on the “what” and “how” of knowledge-articulation in the world, taking the material Earth and its combined history with the “human” as a starting point and combining it with an idea of the academic as a concerned citizen. Each dialogue addresses the concrete range of hands-on practices that emerge from epistemic infrastructures and worldviews in place, hence engaging with research methods in the lab or field, at the desk or in the studio. These dialogues ask how such varied practitioners from the sciences, humanities, arts, and activism make use of their “everyday” matters, how their diverse practices are affected and what they effect. What informs their concepts and what are

the differences in their respective terminologies? How do these undergo transformation in their encounters with other knowledge-forms? And how can such movements of flux between and across specificities of expertise configure possible pathways for establishing modes of collaboration?



5pm, Auditorium  
Exchanges

Petrogeology and Denial

Naomi Oreskes (Department of the History of Science, Harvard University, Cambridge, MA) and Colin P. Summerhayes (Scott Polar Research Institute, Cambridge, UK)

One of the most perplexing issues of the Anthropocene is that the political-industrial complex appears not only apathetic in its response to the crises at stake, but utterly keen on maintaining the status quo of their vested interests. This *exchange* approaches this subject from the intricate nexus of petroleum geology and the de-facto success of global warming denialism, a nexus that lets the world continue on with “business as usual.” It also discusses the somewhat schizophrenic position of geology between an applied science in the service of extraction and the insights gained by their colleagues on the devastating effects.

Archaeology and Aesthetics

Chus Martínez (Art Institute, FHNW University of Applied Sciences and Arts Northwestern Switzerland, Basel) and Matt Edgeworth (School of Archaeology and Ancient History, University of Leicester)

The intensive encounter with materiality has profound resonance in two seemingly very different fields: archaeological excavation and curatorial practice. Excavating the past—in between geological and human-modified strata—is a very matter-sensitive act. The curatorial, on the other hand, appears often as a means of approaching the knowledge-strata of aesthetic forms from a thingly basis. How does the sensual practice of contact with the buried play out in relation to working on and exhibiting contemporary artefacts? Curator Chus Martínez and archaeologist Matt Edgeworth converge from two different angles onto the vitality of matters.

### Technosphere and Technoecology

Peter K. Haff (Nicholas School of the Environment, Duke University, Durham) and Erich Hörl (Institut für Kultur und Ästhetik Digitaler Medien, Leuphana Universität, Lüneburg)

This conversation revolves around the different epistemic ways of assessing the agency of technology, technology seen here as multi-scalar system affecting and transforming both environment and theory. The “Technosphere,” a term put forward by the geomorphologist Peter K. Haff, is the quasi-autonomous system of energy-metabolizing technologies that acts itself as a geological agent. Meanwhile, his dialogue partner Erich Hörl ascertains a third stage of cybernetics, “neocybernetics,” as a general mode of “ecologizing” the coupling between human and technology. How do the modes of measuring and modeling, as well as those of describing and historicizing, inform our view of the transformative power of technology?

### Water and Law

Joyeeta Gupta (Amsterdam Global Change Institute) and Davor Vidas (Fridtjof Nansen Institute, Oslo)

Water, the most pivotal resource. Under the premise of rapid environmental changes we see an increasingly important legal framework created around this contested element—no matter whether it being the access to and protection of fresh or fossil water reserves or the international regulation of the world ocean. What is the place of water in the political discussion on global commons and what are the legal practices enforcing a responsible handling of this crucial element? This dialogue brings together two experts on the fluid realm: the political scientist Joyeeta Gupta, taking the perspective on water as an object of governance, geopolitical cupidity, and international development and the legal scholar Davor Vidas taking the perspective of the marine space as a historically-formed framework that might be readjusted according to current environmental changes but also to recent geoscientific scholarship.

### Stratigraphy and Urbanism

Simon Price (British Geological Survey, Keyworth) and Etienne Turpin (architect, writer, and artist, Jakarta)

What is the geological character of a city? Excavating and analyzing the subsurface zone of the urban landscape, the applied geoscientist Simon Price establishes an underground morphology of anthropic centers. His dialogue partner, theorist and architect Etienne Turpin, advocates “a geologic turn in architecture,” promoting a more speculative, multidisciplinary, and activist research practice at the intersection of the urban, the environmental, and the political. Comparing their empirical fieldwork, this dialogue traces the methods and practices that inform approaches to the city as both an archival assembly of the Anthropocene as well as the ground for politicized architectural theory.

### Geoarchive and Laboratory

Irka Hajdas (Ion Beam Physics, ETH Zurich) and Geoffrey C. Bowker (School of Information and Computer Science, University of California at Irvine)

Earth's history is stored in the geoarchive: the rock strata, the ocean sediments, and the air bubbles captured in what used to be “perpetual” ice. Laboratory measurements make possible to reconstruct this history. This dialogue sets out to ponder the many practical dimensions of dating, calibrating, and synchronizing the chronologies of the geoarchive by transferring it into the data-based temporalities of the (virtual) laboratory. How does the interplay of these “time zones” form a coherent picture that might eventually help us to portray another time, the time of our future? The paleoclimatologist Irka Hajdas, well-experienced with preparing and analyzing sediment samples extending from archaeological times to deep-time, and Geoffrey Bowker, who studies the application and epistemological implications of digital environments, together discuss their respective approaches to deciphering such measures of time.

*Et sic in infinitum*

*Et sic in infinitum*

*Et sic in infinitum*

*Et sic in infinitum*

Robert Fludd: History of the Macrocosm and Microcosm, 1617-1621

8 pm, Auditorium

## Practice A Life

Elizabeth A. Povinelli (Department of Anthropology, Columbia University, New York) and Franck Leibovici (artist and poet, Paris) with Jan Zalasiewicz (Department of Geology, University of Leicester) and Matt Edgeworth (School of Archaeology and Ancient History, University of Leicester)

"A life," impersonalized to a degree zero of thermodynamic activity, expands biopolitical inquiry to the forces that animate and conjure life, as well as those that transform what it means to be *living*. On the one hand, current neoliberal conditions demand modes of production based on principles fundamentally antithetical to life, arguably energized by a morbid emphasis on death: regimes of inclusion and exclusion, processes of abandonment, and operations demanding superhuman endurance give rise to a biopolitics based on mere survival, where the fittest and strongest will prevail. Examining the practices necessary for recording such narratives of struggle is part of this session's inquiry. On the other hand, "forms of life" go beyond the human register to include various agencies, such as a scientific idea. The Anthropocene can be approached along these lines, as an idea animated and maintained "in life" through the diverse agents of its generation: scientists, data, sediment, documents, all acting as the productive forces that feed the nascent age, and in turn, are fed by its emergence. It turns out that the *virtual* quality of a life expands our political and ethical concerns towards a consideration of the complex ecosystems in which forms of life integrate and interact. This session argues for a new ecological approach towards our being in the world, one that involves sustained collaboration between the activist and the scientist, or the ethnographer and the poet.

SATURDAY, OCTOBER 18

# Human Impacts and Their Consequences

A Forum on the Occasion of  
the First Meeting of  
the Anthropocene Working Group

Fri Oct 17, 9am

How does the recent cognition of the immense quantitative shift in the biophysical conditions of the Earth affect both scientific research and a political response to these changes? Does the Anthropocene also pose a profound qualitative shift, a paradigm shift for the ways in which science, politics, and law advance accordingly?

The Anthropocene Working Group (AWG) is an interdisciplinary body of scientists and humanists working under the umbrella of the International Commission on Stratigraphy and tasked with developing a proposal for the formal ratification of the Anthropocene as an official unit amending the Geological Time Scale. On occasion of its very first meeting, the AWG together with HKW convene a socio- and science-political forum, bringing together scientific experts, political stakeholders, media outlets, and an interested public. The forum presents insights into current scientific findings in defining a global impact of human activities and debates the far-reaching implications of the Anthropocene hypothesis for science and society alike.

The debate about the determination of an official onset of the Anthropocene not only involves knowledge about past and present environmental changes but also entails general considerations of the intricate dependencies between cultural, juridical, technological, and political questions. In fact, amending the geological time scale with a formal unit that bears the name of "humankind" exacts a more-than-technical debate on geoscientific evidence that goes significantly beyond the confines of traditional stratigraphic practices. When geohistory enters human history, a qualitative modification in the basic definition of both seems expedient.

Based on a series of short presentations by members of the AWG and further input statements by invited speakers from the humanities, the social sciences, and political fields, the forum discusses both the extraordinary changes to the Earth system as well as its consequences in setting new agendas for governing, researching, and disseminating crucial knowledge.

Participation is limited and by registration only:  
[awgforum@hkw.de](mailto:awgforum@hkw.de)

Human Impacts and Their Consequences

9am, Theater Hall

# Human Impacts and Their Consequences

With Matt Edgeworth, Michael Ellis, Joyeeta Gupta, Rüdiger Kruse, Reinhold Leinfelder, Naomi Oreskes, Jürgen Renn, Andrew C. Revkin, Daniel D. Richter, Bernd M. Scherer, Christian Schwägerl, James P.M. Syvitski, Colin Waters, Mark Williams, and Jan Zalasiewicz

## Welcome Address

Bernd M. Scherer (Director, Haus der Kulturen der Welt), Rüdiger Kruse (Member of the Budget Committee of the Deutsche Bundestag)

Reinhold Leinfelder (Freie Universität Berlin and Rachel Carson Center for Environment and Society, München; Board *The Anthropocene Project*) and Christian Schwägerl (journalist and author; Board *The Anthropocene Project*)

## Introduction

**The Anthropocene considered as a stratigraphic unit** presented by Jan Zalasiewicz (Chair Anthropocene Working Group; Department of Geology, University of Leicester)

## Cases I

This session discusses three different perspectives on the Anthropocene as a significant transition of planetary scale. It presents two distinct proposals for a beginning of the Anthropocene and puts the proposed epoch into a broader geohistoric perspective.

FRIDAY, OCTOBER 17



### Evidence for a mid-twentieth century boundary for the start of the Anthropocene

Presented by Colin Waters (Secretary of the Anthropocene Working Group; British Geological Survey, Keyworth)

### The archaeosphere and Earth's Critical Zone in a time-transgressive Anthropocene

Presented by Matt Edgeworth (School of Archaeology and Ancient History, University of Leicester) and Daniel D. Richter (Nicholas School of the Environment, Duke University, Durham)

### Will human-induced planetary change rank with fundamental step changes seen in the Earth's deep history?

presented by Mark Williams (Department of Geology, University of Leicester)

Moderated by Jan Zalasiewicz

### Cases II

This session focuses on the effects of human activities on the atmosphere, ocean, and river systems. By highlighting the strong interlinkages between these different realms it demonstrates the global impact and the fundamental changes underway.

### Connecting climate change and the Anthropocene

Presented by Michael Ellis (British Geological Survey, Keyworth)

### The Oceans in the Anthropocene—from the demise of coral reefs to the rise of plastic sediments

Presented by Reinhold Leinfelder (Institute of Geological Sciences, Freie Universität Berlin; Founding Director, Haus der Zukunft Berlin)

### Changes in fluvial systems, river sediments and deltas

Presented by James Syvitski (Chair International Geosphere-Biosphere Program; University of Colorado)

Moderated by Colin Waters

## Consequences

This session discusses the magnitude and quality of the shift posed by the Anthropocene and critically assesses (science-) political solution pathways and a combined research agenda, linking scientific practice with societal relevance and local to global strategies of knowledge production.

### Sharing our Earth in the Anthropocene

Joyeeta Gupta (Amsterdam Global Change Institute, Vrije Universiteit, Amsterdam)

### Anthropocene: a confrontation of scientific evidence with political irreality

Naomi Oreskes (Department of the History of Science, Harvard University, Cambridge)

### Towards a new integration of the sciences and the humanities

Jürgen Renn (Max Planck Institute for the History of Science, Berlin)

### Anthropophilia

Andrew Revkin (dot.earth blog, New York, Future Earth Interims Committee)

Moderated by Bernd M. Scherer and Jan Zalasiewicz

Anthropocene Observatory is documenting and filming the first meeting of the Anthropocene Working Group.

# A Beginning to the Anthropocene?

Jan Zalasiewicz

The Earth's history stretches back a little over four and a half billion years, beginning with the mysterious Hadean eon, from which little remains. From the beginning of the subsequent Archaean eon, some 3.8 billion years ago, there are preserved rock strata, from which past states of the Earth can be gleaned—the result of much painstaking and ingenious detective work carried out by many geologists over the last two centuries or so.

This history is enormous, and encompasses a seemingly countless succession of changes in geography, landscape, sea level, climate, biology. For almost all of it, there have been no human observers to watch and record it (hence the interrogation of those rock strata). But, without documented observations, how does one build a coherent time framework for that long history?

Over the first century of serious geological study, the measure of choice of the human historian—the year—was simply impossible to apply. In the nineteenth century, the enormous scale and complexity of Earth's history was becoming apparent. Yet the length of that history remained frustratingly opaque, despite ingenious attempts to measure it (how long might it take the Earth to cool down, for instance, or the oceans to become salty). Estimates ranged from a few million years to many billions of years—but no one really knew. Therefore, that history was resolved into a succession of dynasties of Earth time, characterized by different physical, chemical and (especially) biological states, all deduced from those information-packed strata. These were given names such as Cambrian, Jurassic and Pleistocene, with large units (e.g. eons) being successively divided into smaller units—eras, periods, epochs and ages.

The history grew complex, and still no one knew how long a time it represented. Then, early in the 20th century, Henri Becquerel's discovery of radioactivity was exploited to establish the duration of those time divisions in millions of years.

Geologists, did not, though, discard their elaborately compiled dynastic framework to simply use numerical time (although suggestions to that end were made). Those stratal dynasties proved too useful—and their reflection of real genuine changes in Earth state made them into a kind of convenient aide memoire of the major phases of Earth history. Besides, the means to trace those historical events around the Earth to construct a four-dimensional history, notably through the use of fossils as relative time markers, was usually easier and more effective than direct numerical dating of rocks, which remains time-consuming and expensive.

Hence, those labels—Jurassic, Pleistocene and so on—persist as the primary units of geological time. For the last half-billion years of Earth time, since fossils became plentiful, these units are defined by physical reference points, carefully selected (after decades of intense debate) within *one* stratal level at *one* place in the world, to represent the time instant when one epoch, or era, or period, gave way to the next. These are the “golden spikes” that define geological time units, more formally known as Global Stratotype Sections and Points (GSSPs). For older rocks, that represent the time before fossils became plentiful, more or less arbitrary numerical boundaries are chosen, that geologists try to work with as best they can. The boundary between the Archaean and Proterozoic eons, for instance, is set at 2.5 billion years ago. These are Global Standard Stratigraphic Ages (GSSAs).

Enter the Anthropocene, very recently—proposed in 2000 by Paul Crutzen and Eugene Stoermer as the newest epoch of geological time. The Anthropocene is still informal, but is being analyzed to see whether it might become a formal part of the Geological Time Scale. It is remarkable in many ways, reflecting the dramatic, and geologically rapid, human-driven reshaping of the Earth’s physical, chemical and biological characteristics. It is by far the shortest of the Earth’s epochs. There are still debates about where its boundary should be placed, but there is a growing consensus that it should be associated with the mid-twentieth century “Great Acceleration” of global economic activity, and the beginning of the nuclear age. If so, the Anthropocene is currently less than 70 years old, compared

with the average length of a geological epoch at something over ten million years. It is at its very beginning: human action has irrevocably changed the course of Earth history, even if we do not know exactly how that future history will unfold.

How, then, should the Anthropocene be defined? One possibility is to establish, somewhere, a GSSP or golden spike for it. Perhaps this might be in the layers of sediment within a lake or an undisturbed deep sea, or even within the annual layers of ice and snow that have accumulated on a major icecap (the “golden spike” marking the beginning of the Holocene epoch has been placed within Greenland ice layers, for instance). As with more ancient geological time boundaries, considerable research would be needed to identify the best location for such a ‘spike’.

The Anthropocene, though, coincides with a very precisely dated observational and historical record—constructed, of course, by humans. Therefore, it may well be simpler and more pragmatic to simply select a numerical date of the human calendar and use that as the time boundary—that is, a GSSA. Again, in detail, there are discussions as to what might be the most appropriate date. It might be 1945, perhaps, to mark the first scattering of atom bomb-derived particles across the world, or 1950 (neatly bisecting the century, and being the ‘base date’ for radiocarbon dating).

As with much else with the Anthropocene, this is work in progress. The Anthropocene represents an extraordinary, unprecedented and *important* phase of Earth history. It is also ferociously complicated in detail. Defining it precisely will not be easy.

# Textures of the Anthropocene Grain Vapor Ray

Edited by Katrin Klingan,  
Ashkan Sepahvand, Christoph Rosol,  
Bernd M. Scherer

The MIT Press (2015)  
Revolver Publishing (2014)

*The publication engages with earthly conditions and human imagination in a discursive, transhistorical experiment. Departing from a corpus of historical documents spanning several centuries, scholars, theorists, practitioners, scientists, and artists have been asked to grapple with the constantly shifting qualities of the particular, the fleeting, and the energetic, presenting new positions on the textures and forms that knowledge takes on within the Anthropocene.*

## MUD: All worlds, all times!

*Extract from the Editorial Essay to Textures of the Anthropocene: Grain Vapor Ray  
Ashkan Sepahvand, Christoph Rosol, Katrin Klingan*

In the three volumes “Grain,” “Vapor,” and “Ray” our intention is to experiment with and on the specific textures that compose the mud in which we find ourselves. This is meant figuratively, but also in a very material sense: grains, vapors, rays. These three registers, as heuristic tools, represent certain distinctive, yet interrelated, qualities of temporal–spatial circulation and exchange. We wish to address, namely, 1) the movement of the particular or granular; 2) the phase-change and dispersal of the vaporous; and 3) the energetic flux of the radiant. In their capacities as activities, grain, vapor, and ray help us to resensitize ourselves toward the transformative processes that constitute the Earth and our being-in-the-world. Concordantly, these textures help to sense and make sense of the pulpy compositum, the kakosmos of the Anthropocene, as it evolves, a realm yet unconsolidated. Highly sensitive to ruptures and perturbations, the three offer opportunities to sound out and requalify our readings of the earthly transition we are currently experiencing.

Our aim abjures any dissection of the anthropogenic mud into its constitutive parts, an approach that would repeat the analytical divide-and-conquer mistakes of modernity. The Anthropocene cannot be grasped by the myriad of different parts and individual

changes involved. A more promising task, we find, is to follow the many imaginations of how change is brought about, the stories that neatly describe procedures of stability-giving and stability-taking. Each of these instances within the historical record implicitly asks itself how to describe the indescribable. Thus, upon closer examination, history—presented here, as histories of imagination—is full of entry points into the realms occupied by grains, vapors, and rays. It serves us well, then, to mention a few words about the ways in which each texture translates within the world-composing narratives we have assembled.

Grain displays the dynamism of the particular in its aggregated state: the constant flow, circulation, and translocation of myriad granularized bits, whether concrete particles, such as grains of dust or pollen, or abstract entities, such as units of account or points. Rather than departing from the problematic notion of “solidity,” the granular is characterized as a quantifiable density of aggregation, which lends itself to a specific logic of movement and morphology. As such, it distances itself from a clear demarcation of boundaries, a finite “edge,” and instead establishes dynamic ways of mixing, recomposing, and dispersing: the operative figures of the mud. Some of the keywords might be dust, ash, sand, soot, colloids, aerosols, molecules, pollen, points, dots, and pixels ...

As Vapor, motion frees itself, flowing up, across, between. Due to a fundamental phase-change, which simultaneously involves matter and energy conversion, solidity disintegrates; density loosens up, disperses, and undergoes diffusion. The particular unfolds toward an expanding generality, an active process of “undoing.” The constant motion of expansion exhibited by the vaporous gives it an ephemeral character: eventually, its constituents will no longer be there, or one vapor degrades and dissolves into another. Vapor counteracts setting, aggregation, and sedimentation, delineating change and, thus, marking time. Indeed, it is one way to think about entropy, the irreversible dissipation of usable energy as times goes by. Keywords are fluids, whether gaseous or liquid, vapors, phase-change, thermodynamics, convection, turbulence, breaths, and smells ...



Primal and ancient in usage, both the concept and imagination of Ray give “shape” to a shapeless stream, a form to “un-form,” which transduces. In fact, rays go far beyond any geometrical purity, and instead refer to the materialization process of a field, electromagnetic, and otherwise. It is a field within which the entirety of the cosmic dance elaborates itself, a field of vision and non-vision, mind and idea, sensation and reverberation. Realized as visible light, magnetic forces, or blazing heat, bodies and things are constantly interacting with, producing, channeling, and responding within such energetic fields. A “ray” is an act of propagation and diffusion, yet this action may as well not exist if it were not for the simultaneous, immediately observable effects it has on the material world. Energy and matter are co-constitutive. Keywords here might be fire, light, electromagnetic fields, radiation, energy (balance), reflection, and interference ...

With this publication, we propose a rereading and reassembling of the history of imagination, according to the textures felt out within these three mundane registers. Packed with an idiosyncratic combination of modern metaphysics and ancient hard science, poetic experiences, and graphic experiments, this publication presents traces within the mud—that is, with the ground of the Anthropocene—as a collection of excursions through the stories that worlds and times have called into being. Our method of collecting these “documents” avoids sequential argumentation, instead circumnavigating various points of consideration through novel associations, unexpected connections, and instances of wondrous reenchantment.

We have invited a range of thinkers and practitioners—scientists, artists, writers, curators, and humanists—to respond, respectively, to a specific entry within our proposed collection. Each historical source is paired with a contemporary reflection. The authors were given free reign in their approaches, some directly approaching their material, others departing from it; thus, the responses exhibit a broad range of address, from analyses to far-flung associations.

# GRAIN VAPOR RAY

The “anthropos” appears within the knowledge ascribed to its movements and matters; yet, it must also be composed. The Anthropocene as Aesthetic Project calls forth into the age a creature with a porous sensibility toward what is shared within the world—with all the variations of mingling, mixing, and transforming that qualify the mud within which it has been immersed and must sense again, this time as a common concern.

## Grain

Robert Smithson/Sverker Sörlin, Alfred Russel Wallace/Gloria Meynen, Christian Gottfried Ehrenberg/Jan Zalasiewicz, Lennart von Post/Geoffrey C. Bowker, Harold C. Urey/Kodwo Eshun, Walter Behrmann/Timothy Ingold, Lucretius/Bettina Vismann, Denis Diderot/Dorothea von Hantelmann, Jorge Luis Borges/STRATAGRIDS, Rudolf von Laban/Cecelia Watson, Kushim/Jürgen Renn, John Maynard Keynes/Adrian Lahoud, Roland Barthes/Allen S. Weiss, Georges Bataille/Etienne Turpin

## Vapor

Franz Kafka/Jane Bennett, Hippocrates/Elizabeth A. Povinelli, Italo Calvino/Stefan Helmreich, Nathaniel B. Ward/Paulo Tavares, Zahir-ud-din Muhammad Babur/Natasha Ginwala, US Strategic Bombing Survey/Benjamin Steininger, Haber-Bosch Process/Bernd M. Scherer, Richard Buckminster Fuller/Christina Vagt, Horst W. J. Rittel and Melvin M. Webber/John Law, Nicholas Georgescu-Roegen/Elmar Altvater, Thomas Bayes/Armin Haas, Ludwig Boltzmann/Dietmar Dath, John Wilkins/John Tresch, James Clerk Maxwell/Goldin+Senneby with Jo Randerson (playwright) and Regus (virtual office)

## Ray

Edwin Abbott Abbott/Margarida Mendes, Baruch de Spinoza/Akeel Bilgrami, Moshe Feldenkrais/Torsten Blume, Douglass Crockwell/Flora Lysen, Jacques Lacan/Josh Berson, Abu Ali al-Hasan ibn Al-Haytham/Natascha Sadr Haghghian, Bardo Thodol/ Bronislaw Szerszynski, Paul Klee/Erich Hörl, George Kubler/Molly Nesbit, Heinrich Hertz/Ayreen Anastas and Rene Gabri, Wilhelm Ostwald/Peter Sloterdijk, Thomas Pynchon/Friedrich Kittler, John Archibald Wheeler/Dorion Sagan, Athanasius Kircher/Michel Serres

# Extracts from the volume “Vapor,” pp. 31f and 34–36

## Breaths

### Hippocrates

#### I.

There are some arts which to those that possess them are painful, but to those that use them are helpful, a common good by laymen, but to those that practice them grievous. Of such arts there is one which the Greeks call medicine. For the medical man sees terrible sights, touches unpleasant things, and the misfortunes of others bring a harvest of sorrows that are peculiarly his; but the sick by means of the art rid themselves of the worst of evils, disease, suffering, pain and death. For medicine proves for all these evils a manifest cure. And of this art the weak points are difficult to apprehend, while the strong points are more easy; the weak points laymen cannot know, but only those skilled in medicine, as they are matters of the understanding and not of the body. For whenever surgical treatment is called for, training by habituation is necessary, for habit proves the best teacher of the hands; but to judge of the most obscure and difficult diseases is more a matter of opinion than of art, and therein there is the greatest possible difference between experience and inexperience. Now of these obscure matters one is the cause of diseases, what the beginning and source is whence come affections of the body. For knowledge of the cause of a disease will enable one to administer to the body what things are advantageous. Indeed this sort of medicine is quite natural. For example, hunger is a disease, as everything is called a disease which makes a man suffer. What then is the remedy for hunger? That which makes hunger to cease. This is eating; so that by eating must hunger be cured. Again, drink stays thirst; and again repletion is cured by depletion, depletion by repletion,

fatigue by rest. To sum up in a single sentence, opposites are cures for opposites. Medicine in fact is subtraction and addition, subtraction of what is in excess, addition of what is wanting. He who performs these acts best is the best physician; he who is farthest removed therefrom is also farthest removed from the art. These remarks I have made incidentally in passing to the discourse that is to come.

## II.

Now of all diseases the fashion is the same, but the seat varies. So while diseases are thought to be entirely unlike one another, owing to the difference in their seat, in reality all have one essence and cause. What this cause is I shall try to declare in the discourse that follows.

## III.

Now bodies, of men and of animals generally, are nourished by three kinds of nourishment, and the names thereof are solid food, drink, and wind. Wind in bodies is called breath, outside bodies it is called air. It is the most powerful of all and in all, and it is worth while examining its power. A breeze is a flowing and a current of air. When therefore much air flows violently, trees are torn up by the roots through the force of the wind, the sea swells into waves, and vessels of vast bulk are tossed about. Such then is the power that it has in these things, but it is invisible to sight, though visible to reason. For what can take place without it? In what is it not present? What does it not accompany? For everything between earth and heaven is full of wind. Wind is the cause of both winter and summer, becoming in winter thick and cold, and in summer gentle and calm. Nay, the progress of sun, moon, and stars is because of wind; for wind is food for fire, and without air fire could not live. Wherefore, too, air being thin causes the life of the sun to be eternal. Nay, it is clear that the sea, too, partakes of wind, for swimming creatures would not be able to live did they not partake wind. Now how could they partake except by inhaling the air of the water? In fact the earth too is a base for air, and air is a vehicle of the earth, and there is nothing that is empty of air.

# Breathing In, Breathing Out

Elizabeth A. Povinelli

## The Addict

I always think of fracking as a form of extreme heroin addiction. The veins have collapsed. The joy is long gone. The addict is simply trying to hold off the severe pain about to overtake her body. But this analogy is wrong. The addict gave up the illusion long ago that an ontological gap separates her vein and the needle, cold blood and hot liquid.

## The Greek

The sophist author of "Breaths" proposes that wind (πνεῦμα) is the seat of all human pathologies, though it is called different things when inside (φῦσα) or outside (ἀήρ, the dim, lower atmosphere) the human body. Wind is the most powerful of the three kinds of nourishment, a need for which men and animals share, the others being food solids and water to drink. The sophist proves this point through simple observation. When a meteorologically ill-wind passes, it tears up trees by their roots and tosses vessels of vast bulk about as if they were frail twigs. And deny a person food for months or water for days and she will live. But if the wind-passages (πνεύματος) into the body are cut off for even the briefest time she will die. Wind is so fundamental to human existence one hesitates to say that it is not part of the human body. Is wind not the extimate human body? What wonder πνεῦμα would become the word those who loved our archipelago minds used for God-as-Spirit and unfolding *Geist*? In us, through us, but for whom is the wind?

## The Theorist

Why do we desperately insist that life is that which is able to compartmentalize itself, both functionally and structurally, from its surrounding environment when it's not hard to notice what everyone has noticed; what the Sophist whose text was smuggled into the

Hippocratic corpus also noticed; what Aristotle, whose father was a doctor and whose teacher struggled against the sophists knew, namely: that air is the clearest sign that something is wrong with this model? And still we hold on to this distinction—life/nonlife. Sure, if pushed to an extreme, we will give up our transcendent gods, and say, okay, yes, we are nothing more than organ-sacks, but we are organ-sacks. And this sack is alive, a life, locatable through simple observation. If I prick your skin, you will experience a specific drama that began with your birth and will end with your unique, individual, and singular death. Deny you air and your organ sack and no other organ sack will shift from one state to another. Alive one minute, dead the next. Life/death gives us life/nonlife as surely as I am standing here.

### The Addict

I cannot breathe. The winds are so strong that my windpipe and lungs cannot compete—and then this suffocating sauna that is settling over everything. For fuck's sake, I don't have gills. I wheeze much as I did on days when I was young in the American South, before air-conditioning made breathing easier, but was also creating a heavier swelter just over the horizon. But now there is no horizon and the more we remove the moisture with our annual trillion-kilowatt and growing air-conditioning addiction, the more moisture we are making. Garbage bags surround me, stuffed with discarded asthma inhaler canisters. I shake each one hoping a little liquid-life remains long after my health insurance has given out. I think of a movie I saw, In *Vanda's Room*, about a heroin addict in the slums of Lisbon surrounded by bags of discarded BIC lighters. She shook each one hoping for enough lighter fluid to cook her residue.

### The Greek

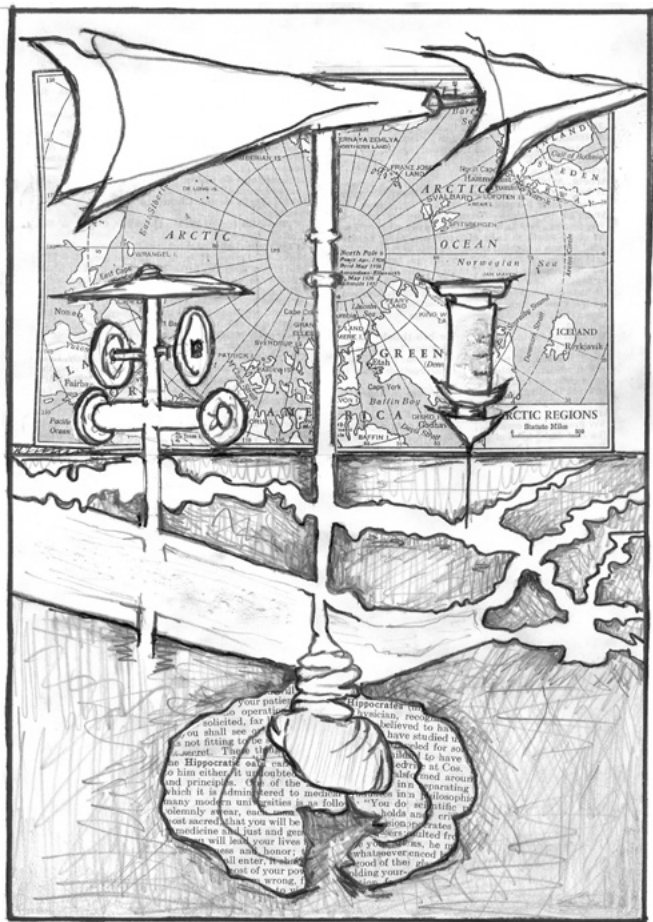
"Breaths" is resolutely about the health of human bodies—and secondarily concerned with other living things with lungs. What makes lunged things fall ill and die? What causes them to breathe their last; give up the ghost; expire (*ex-spirare*)? The editor of Hippocrates, Volume II, published under the imprint of the Loeb Classical Library, where we find this text, is confident that the rhetorical sophist who

penned “Breaths” mobilized Diogenes, revival of the doctrine that “air is the primal element from which all things are derived.” The editor also notes that the sophist did not think it was necessary to muster any evidence to support his claim that “air is the prime factor in causing disease.” Like the Hippocratic School in general, “Breaths” is concerned with generating a general pathology based on logic not evidence. But our sophist diverged from the Cos School in so far as he seemed uninterested in prognosis. Nevertheless, I wonder, what would he have said if I walked into his bibliotheca and asked, “Tell me doc, does it look good for me?”

### The Theorist

Being and non-being: how did this become the question, and with it finitude, infinitude, nonfinitude, the drama of the end, the problem of the beginning, of birth, and then death? Sure, deny a lung air and the immediate apparatus undergoes a state-shift. But finitude? Surely, shifting from breathing to rotting is dramatic, but in what sense is it an instance of finitude? I know—from the point of view of the subject—that it is the existentially experienced truth of life. Some say ethics is the mobilization of the subject vis-à-vis her unique relation to her specific end. Birth begins something whose end we cannot avoid. All it takes is a water-hose and a cloth covering my face and the vulnerability that is life appears. How can we use our unique predisposition to vulnerability and suffering to mount a new ethical and political way of life? As we say in American English, how do we use the vulnerability inaugurated by our skin to stop just looking after our own skins? I ask you, seriously, what is the prognosis? That our vulnerability will lead to a post-human, pro-Gaia arrangement? Climate scientists tell us it's not looking good.





Textures of the Anthropocene

Anthropocene  
Curriculum  
&  
Anthropocene  
Campus

# Anthropocene Campus

November 14–22

Demanding structurally novel commitments, the Anthropocene predicament offers the opportunity to make previously uncharted, transdisciplinary connections visible and to experiment with new forms of higher education. A deep integration of cross-disciplinary thinking, mutual learning, new modes of research, and civic commitment seem key for the future of universities, academies, research platforms, and cultural institutions as situated spaces of knowledge production and its dissemination. The Anthropocene Curriculum is probing the collaborative potentials of learning under Anthropocene auspices.

The establishment of this project originates from a longer thread within *The Anthropocene Project*. A series of workshops in 2012 as well as *The Anthropocene Project: An Opening* in 2013 have been convened to discuss ongoing aspects of research and to collect visions to explore alternative forms of knowledge production and collaboration. In unique constellations, these workshops fuelled a lively discussion on the future design of a scientific community that lives up to the challenge of the Anthropocene.

Going beyond these interdisciplinary exchanges, the urge behind the Anthropocene Curriculum project was to enter a phase of productive collaboration and make interdisciplinarity an operative tool. Thus, HKW invited a range of distinguished scholars from the sciences, humanities, the arts, architecture, and design to form a temporary faculty that traverses a broad spectrum of disciplines and expertise. The task now became to strive for a cross-fertilization of different research topics and methodological approaches and to combine the diversity of methods and materials into a coherent curriculum that would be sensitive for the specificities of a world outside academia that is rapidly changing.

The general aim for this project is to formulate modes and contents of a corpus of knowledge that is re-attached to our “earthbound situation” and helps to readjust the human position within a broader geo-fabric. The set of nine exemplary seminars that have been collaboratively crafted over the last year by the temporary faculty are not meant to give a comprehensive *tour d’horizon* of the Anthropocene. Instead, they aim for a kaleidoscopic and resourceful approach that emerges from the glaring necessity to build a knowledge-base that is broad in its disciplinary perspectives and attends to real matters of concern.

At the Anthropocene Campus, the exemplary curriculum will be simultaneously tested and further developed. One hundred international young researchers from the sciences, humanities, and the arts as well as actors from outside of academia will engage in this curricular experiment, contributing their own perspective and expertise. Accompanied by a public program and closing off with a larger public forum, the specific role of education in the collaborative development of vital cross-topics for future engagement will be extensively discussed. Hosted on non-academic terrain, this negotiation presents a rare opportunity to work out a pedagogically feasible design for knowledge building and knowledge transfer.

After the Anthropocene Campus, a compilation of seminar materials and multimedia documentation will be presented on the project website in order to provide an accessible and growing repository for future realizations and enhancements of the curriculum in other contexts around the globe. As a central element, this website will include an open access publication of an Anthropocene Coursebook edited by the participants of the Campus.

*Project Head: Katrin Klingan (Haus der Kulturen der Welt), scientific conception: Christoph Rosol (Max Planck Institute for the History of Science/HKW), scientific advice, moderation: Roman Brinzanik (Max Planck Institute for Molecular Genetics)*

Developed by

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Libby Robin (*Fenner School of Environment and Society, Australian National University, Canberra/Division of History of Science and Technology, Royal Institute of Technology, Stockholm*), Wolfgang Schäffner (*Cluster of Excellence "Image—Knowledge—Gestaltung. An Interdisciplinary Laboratory," Humboldt-Universität zu Berlin*), Sverker Sörlin (*Environmental Humanities Laboratory, Royal Institute of Technology, Stockholm*), Will Steffen (*Climate Change Institute, Australian National University, Canberra*), Bronislaw Szerszynski (*Department of Sociology, Lancaster University*), Helmut Trischler (*Deutsches Museum/Rachel Carson Center for Environment and Society, Munich*), Eyal Weizman (*Centre for Research Architecture, Goldsmiths, University of London*), Jan Zalasiewicz (*Department of Geology, University of Leicester*)

# Soundbites from the Anthropocene Curriculum in the Making

Roman Brinzanik

The Anthropocene Curriculum spanned a process over several months in which an adequate academic response to the Anthropocene predicament was debated, devised, and put into an operational mode by over 30 international researchers and scholars. Developing a curriculum in collaboration with so many practitioners from diverse academic backgrounds, cultures, and geographical regions meant confronting a number of practical and theoretical challenges: how to find a common ground to jointly identify Anthropocene-specific curricular contents and approaches? How to cooperate with co-instructors, most of which you never met before, spread over various institutions and time zones? Apart from face-to-face encounters during a workshop held in Berlin and numerous emails, telephone conversations, and video conferences, a collaborative website was set up as a common discussion forum to exchange ideas, proposals, and arguments. While providing a platform for the deliberative process, this online communication tool accumulated the recurring questions and central concepts that shaped the alignment of the Curriculum project in general and the current set of nine Anthropocene seminars in particular: how to arrive at a common language given the constitutional role of interdisciplinarity and transdisciplinarity, how to link the spheres of the nonhuman and human, the natural and the cultural, how to teach the skills necessary to cope with the Anthropocene in an open-ended process of co-developing and co-researching as well as enable the participants to responsibly co-shape the Anthropocene transformations? The ongoing exchange and discussions document the making of an exemplary experiment of producing, teaching and learning knowledges in a new way to prepare a whole new scientific generation for the challenges and opportunities of the Anthropocene.

## Crossing Disciplines

"It has become increasingly difficult for, say, a historian to speak with an ecologist, or a sculptor to speak with a physicist. If we are to make a common curriculum work for something as cross-disciplinary as the Anthropocene, then we have to address this problem. One way to do it is to provide a glossary of vital terms from all disciplines for the Anthropocene. The other means is by consciously translating these terms into everyday language." Jan Zalasiewicz, geologist

"Beyond the question of *which* knowledges should be combined, there is also the question of *how* they are combined. We should try to avoid some well-catalogued syndromes such as the subordination of one discipline as a 'feeder' discipline to another and encourage more expansive, generative relationships between knowledge types." Bronislaw Szerszynski, sociologist

"The basic idea of transdisciplinarity is a co-generation of knowledge between researchers and stakeholders together, making use of the knowledge that's outside of a traditional academic field and bringing that together in the entire research process, from defining the problem through bringing knowledge into society for change and to bringing the change back into knowledge." Mark Lawrence, atmospheric scientist

## Producing Knowledge

"The Anthropocene forces us to redefine the actors and experts as well as the objects of research. I look at the Curriculum project as an experimental arrangement where new modes of knowledge production can be tested in a public setup." Bernd M. Scherer, philosopher (director, HKW)

"Knowledge infrastructures—robust assemblages of people, institutions, devices, and ideas—underlie today's understanding of the planetary atmosphere and the Earth system. After making global data, we have to make data global. To me, Anthropocene observatories would be places where the assembly of global knowledge could take place and help relate global data to regional and local decision making." Paul N. Edwards, historian of technology

“You cannot have science without having many forms of knowledge underneath it, surrounding it, embedding it, some even on top of it. Science and knowledge should be seen in their contexts. We have to be aware that many of the Anthropocene concepts come from outside academia, from environmental grassroots initiatives.”

Jürgen Renn, science historian

“Who counts as an expert? What constitutes scientific authority? I'd like to strengthen the project's commitment to democratizing the dialogue to include other knowledge producers, placing the scientists along with many different kinds of citizens.” Amita Baviskar, sociologist

### Representing

“We must seek remedies because just stating that problems have no solution is not a solution. However, in the Anthropocene we are facing ‘wicked problems’ without a single answer. What counts as a solution depends on how the problem is framed and vice versa and who is speaking.” Miriam Diamond, chemical engineer

“Representations are guiding our actions. And some of the agencies of the world can be captured by models. It is important to teach natural science students that real systems are more complex than the models, but it is also important that social science students know about modeling.” Pablo Jensen, physicist

“How can one appreciate the scale and rate of geological change currently taking place on Earth? It is something that our personal experience as humans does not help with: our personal struggles and problems tend to override considerations of global phenomena.”

Jan Zalasiewicz, geologist

“How can we combine the temporalities of the human, or national, local, individual life forms and practices—and politics—with the one(s) of the Anthropocene?” Sverker Sörlin, environmental historian

“So far the imaginations of the Anthropocene are mostly focusing on climate change and change of the biosphere. But man will be less effected directly by climate change but by the change of civilization driven by climate change.” Philipp Oswald, architect



## Connecting

"No matter whether we perturb the telluric balance by the accelerated expansion of the technosphere into the geosphere including its irreparable impacts on the biosphere, or whether we satisfy basic human needs in accordance with an appropriate use of resources: We are writing history! The future is now affected by resource strategies, which by themselves produce natural and cultural histories." Armin Reller, materials scientist

"I am interested in moving from observatory to laboratory, where we experiment with societal and ecological transitions analyzed as an integral and integrated process through a combination of legal studies and socio-ecosystemic accounting tools." Ioan Negrutiu, biologist

"Material flow analyses and ecological footprint accounts constitute nature as another form of value: a resource; a consumer good; a risk. What are the consequences of such tools? Is planetary control the most promising goal to pursue, or do we need to think about other forms of social-natural interaction?" Sabine Höhler, science historian

"Does a 'safe operating space' of human development even exist? And under what conditions of social organization and technological innovation?" Wolfgang Lucht, earth system scientist

## Claiming

"Understanding the nature and trajectory of the human response to the Anthropocene is essential to carrying out Earth System science. It is as important as the radiative forcing of carbon dioxide, the circulation of the oceans, or the control of Earth's great element cycles by the biosphere. It is also essential to inform the developing societal narratives around the question: just where on Earth is humanity going?" Will Steffen, earth system scientist

"Who is this *anthropos*? Who is the 'we' in the Anthropocene? An emphasis on humans as a species can hide differences in power, class, gender. We need a re-politicization of the Anthropocene, a re-politicization of nature!" Marco Armiero, environmental historian

“What are the ways for us as scientists and aesthetic practitioners to intervene given the notion of the Anthropocene? I am interested in the intersection of science, politics, and law and the impacts on human rights. I want to see knowledge that is mobilized, a science that is committed.” Eyal Weizman, architect

“With an exploration of historical and prehistorical human ecologies we could lay foundations for a post-natural human nature. Which strategies should we adopt in our engagement with landscapes: stewardship, design, or emergence?” Erle Ellis, landscape ecologist

“Policies are translated into practices by bodies. We should identify good Anthropocene practices giving voice to local forms of knowledge which, by exploiting global infrastructures, can be amplified to make global impacts.” Elena Bougleux, cultural anthropologist

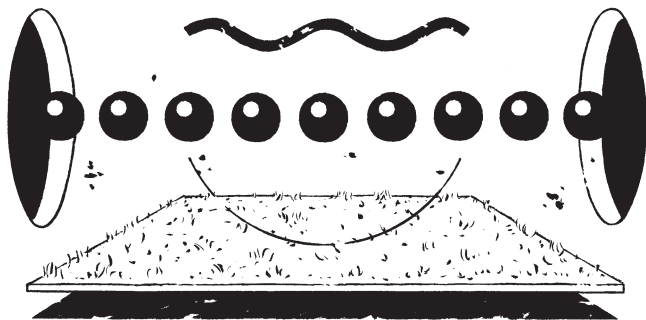
### Teaching and Learning

“We should set the seminars around specific problematics, real-world case studies to make them less abstract and more relevant. It's the problems out there in the world that force a reorganization of the knowledges and of ourselves.” Adrian Lahoud, architect

“The questions of how to teach and how to do science in the Anthropocene should be combined. A new way of knowledge production should start with a new pedagogy. We could add project-based, open-ended, collaborative experimentations to the curriculum.” Eyal Weizman, architect

“The Anthropocene is based on a changing earth system as a complex system. We can also look at the Campus as a complex system. I think we should let the participants enough freedom to self-organize, because that's what a complex system does.” Will Steffen, earth system scientist

“What about designing small-scale experiments in which we use our bodies, the medium of our own lives, our own experiences, and practice the material reorganization? That's how we represent the complexity without it being just a graph of dots and lines.” Natalie Jeremijenko, artistic researcher



# Anthropocene Campus

Program  
Fri, Nov. 14 – Sat, Nov. 22

## Opening: Anthropocene Campus

What does earthbound knowledge consist of? Which ways of communicating knowledge are appropriate? The opening weekend of the *Anthropocene Campus* is structured along the three topical clusters that lend sequence to the *Anthropocene Campus: Representing, Connecting, Claiming*. The Cluster *Representing* engages in the medial and scientific forms of representation: objects, imaginaries, and system models create scenarios by which the multifaceted phenomena of the Anthropocene can be put to the test. *Connecting* sounds out the interrelations between disciplined topics and methods on matters of temporal scale, the valorization of natural resources, and the epistemic interlocking of social evolution and technology. *Claiming* at last addresses the political impact of the Anthropocene, the shifts of perspective between the individual and the collective, between global scale and local interests, and their manifestations in socio-political contexts. The instructors of the Campus present and discuss the topics and methodical approaches of their seminars based on specific case studies. These examples highlight the array of real-world problematics that necessitate a new way to think about forms of learning and teaching in the Anthropocene.

FRIDAY, NOVEMBER 14 + SATURDAY, NOVEMBER 15

4.30pm, Auditorium

## Welcome

Bernd M. Scherer (Haus der Kulturen der Welt, Berlin)  
and Jürgen Renn (Max Planck Institute for the History of  
Science, Berlin)

5pm, Auditorium · Presentations & Discussion

## Representing

### Slow Media

Presented by Libby Robin (Fenner School of Environment and Society, Australian National University, Canberra/Division of History of Science and Technology, Royal Institute of Technology, Stockholm) and Helmuth Trischler (Deutsches Museum/ Rachel Carson Center for Environment and Society, Munich); co-developed with Reinhold Leinfelder (Institut für Geologische Wissenschaften, Freie Universität Berlin/Rachel Carson Center for Environment and Society, Munich)

Slowing down to the pace of a museum visit or engaging with physical or visual objects offers an alternative to the “sound byte” approach of commercial media to communicating complex ideas. The concept of the Anthropocene demands an extended understanding of presence in terms of a “long now” that comprises several lifetimes and a “big here” that conceives locality on a planetary scale. The aim is to establish a sense of global citizenship and a consciousness of an observer that includes coming generations.

### Imaging the Anthropocene

Presented by Wolfgang Lucht (Potsdam-Institut für Klimafolgenforschung/Geographisches Institut, Humboldt-Universität zu Berlin) and Philipp Oswald (architect, Berlin); co-developed with Sverker Sörlin (Environmental Humanities Laboratory, Royal Institute of Technology, Stockholm)

The concept of the Anthropocene as developed by science still remains peculiarly flat and colorless, lacking cultural nuance and historical depth. By exploring the history of images and diagrams of the Earth, charting how the scientific realization of Earth as a complex planet with a convoluted history has unfolded, the seminar sharpens its perspective on imaginaries of alternative futures in a warmer, less stable, highly utilized world that might see a transformation of social patterns and infrastructures much deeper than commonly discussed.

### Modeling Wicked Problems

Presented by Paul Edwards (Science, Technology & Society Program, University of Michigan); co-developed with Miriam Diamond (Department of Earth Sciences, University of Toronto) and Pablo Jensen (Institut rhônalpin des systèmes complexes, École normale supérieure de Lyon)

Most Anthropocene concerns are “wicked problems,” complex problems that defy a single answer and may never be solved definitively. They involve highly complicated systems that are impossible to fully know, much less control. Applying trans-disciplinary systems models to problems such as climate change, biodiversity loss, transition to renewable energy sources, or global food supply gives us useful heuristics while forcing us to think about complexity and to witness non-linear and counter-intuitive outcomes.

## Connecting

### Disciplinarity

Presented by Bronislaw Szerszynski (Department of Sociology, Lancaster University); co-developed with Mark Lawrence (Institute for Advanced Sustainability Science, Potsdam) and Wolfgang Schäffner (Cluster of Excellence “Image—Knowledge—Gestaltung. An Interdisciplinary Laboratory,” Humboldt-Universität zu Berlin)

Blurring the distinctions between Earth processes and human history the Anthropocene incites us to learn new habits and practices of knowledge production. While the seminar looks at what it is to “know” something but also how knowing in and of the Anthropocene centrally involves issues of non-knowledge in all its diverse forms, it experiments with “transdisciplinary,” sometimes even “undisciplinary” combinations of knowledge-skills, not to throw out deep disciplinarity, but to better capitalize on it.

SATURDAY, NOVEMBER 15



### Valuing Nature: Beyond The Vital Balance Sheet

Presented by Sabine Höhler (Environmental Humanities Laboratory, Royal Institute of Technology, Stockholm) and Ioan Negrutiu (Institut Michel Serres, École normale supérieure de Lyon); co-developed with Natalie Jeremijenko (Environmental Health Clinic, New York University)

Nature's values can be manifold: aesthetic, emotional, traditional, recreational, and monetary. Economically understood valued nature is turned into resource, with accounting tools from "polluter-pays" principles to "carbon-offset" schemes as common instruments to balance the human-nature relationship. But can and should we rely on such evaluation and exchange systems to break even with anthropogenic environmental change? Combining different knowledges and tools, the seminar makes a case for the inter- and transdisciplinary experiment to develop accounts that are socially, politically and economically accountable.

### Technosphere/Co-Evolution

Presented by Jürgen Renn (Max Planck Institute for the History of Science, Berlin), Manfred Laubichler (School of Life Sciences/Center for Social Dynamics and Complexity at Arizona State University, Phoenix), and Armin Reller (Lehrstuhl für Ressourcenstrategie, Institut für Physik, Universität Augsburg); co-developed with Jan Zalasiewicz (Department of Geology, University of Leicester)

In order to begin to grasp the processes underlying the Anthropocene it is useful to reanalyze major changes in deep-time as well as historical time as the result of co-evolutionary dynamics and system transformations. While for most of Earth's history the biosphere has been a continuous, highly active component we are now faced with the emergence of another sphere: the technosphere, a technology-based system that not only affects Earth surface processes but challenges us to think about the material, cognitive, and social dimensions of knowledge.

## Claiming

### Geo-Politics: Conflict and Resistance in the Anthropocene

Presented by Adrian Lahoud (The Bartlett School of Architecture, University College, London); co-developed with Eyal Weizman (Centre for Research Architecture, Goldsmiths, University of London)

Cases of “environmental violence”—situations where climate change and political or armed conflict get entangled—demand a shift in explanatory models and structures of causation. Allowing us to connect individuals, environments, and artifices, field causality models and forensic methodologies are used to articulate the material basis for the imperative to fundamentally reconfigure the political field and to investigate what should be our political or juridical response to this new understanding of violence.

### Filtering the Anthropocene

Presented by Marco Armiero (Environmental Humanities Laboratory, Royal Institute of Technology, Stockholm) and Will Steffen (Climate Change Institute, Australian National University, Canberra); co-developed with Amita Baviskar (Institute of Economic Growth, Delhi)

Large, overarching global issues are closely connected with people's concerns, livelihoods, well-being, etc., that matter at local and regional levels. Physical events and extreme climate phenomena can be understood in terms of their interaction with different positions in social settings and biophysical landscapes. The seminar examines how anthropogenic experiences like these are filtered through the lens of the Anthropocene by selective processes, themselves being shaped by the politics of knowledge as well as preexisting ideas and societal frame conditions.

## Anthropogenic Landscapes

Presented by Elena Bougleux (Research Center on Anthropology and Epistemology of Complexity, University of Bergamo), Arno Brandhuber (Akademie der Bildenden Künste, Nuremberg/ architect, Berlin) and Erle Ellis (Department of Geography and Environmental Systems, University of Maryland, Baltimore)

Being at once local and global, background and foreground, human and natural, nurturer of humanity and nurtured by humanity, anthropogenic landscapes have emerged across the Earth as the result of sustained direct human interactions with ecosystems. Ranging from stewardship to emergence, engineering and design, the seminar explores modes of engagement in shaping a better Anthropocene by co-creating landscapes within which both human and non-human nature can thrive.

6.30pm, Auditorium · Lecture

## Anthropocene Observatory

Armin Linke, Territorial Agency (John Palmesino and Ann-Sofi Rönnskog)

The Anthropocene Observatory—a knowledge station, a constantly expanding reservoir—pursues and documents the thesis of the “age of man” and its political, practical, institutional, and cultural formulation in international climate policy, among other areas. It enters institutions, laboratories, and workplaces worldwide that are normally the area of specialists, where it portrays the increasingly complex relationship between abstract models, concrete places, and social organizations (see pp. 13ff).

## An Ecosystem of Excess

Pinar Yoldas (Programme for Visual & Media Arts, Duke University, North Carolina) and Regine Hengge (Institut für Biologie, Freie Universität Berlin)

The Turkish artist Pinar Yoldas centers her work on The Great Pacific Garbage Patch, a garbage vortex made up of several million tons of plastic waste in the North Pacific. According to the "primordial soup" theory, life on earth began four billion years ago in the oceans, when inorganic matter turned into organic molecules. Today, the oceans have become a plastic soup. Pinar Yoldas asks what life forms would emerge from the primeval sludge of today's oceans. With "An Ecosystem of Excess" she created a post-human ecosystem of speculative organisms and their imagined environment, an evolutionary experiment running during her exhibition at the Schering Foundation in 2014. Regine Hengge, professor of microbiology, has isolated and grown the bacteria from Yoldas' "Plastic Soup" and includes them in a demonstration of the visual wonders of bacterial microfilms. Although invisible, bacteria colonize every spot on earth, including the human body. They can adapt to most extreme changes of their environment and have played a key role in shaping our current atmosphere.

8pm, Auditorium · Presentation and Artist Talk

## The Otolith Group

Kodwo Eshun and Anjalika Sagar

Founded in 2002 by Anjalika Sagar and Kodwo Eshun, The Otolith Group's work investigates the histories and potentials of science fiction and Tricontinentalism. In their essay film *Medium Earth*, The Otolith Group explores the earthquake endangered geology of California as well as the spatialized unconscious of capitalist modernism in the form of underground parking lots. The film dramatises ongoing audiovisual research into the geopoetics of prediction and premonition that claim to detect the earthquakes of the future. Listening to its deserts, translating the writing of stones and decoding the calligraphy of the earth's crevices, *Medium Earth* attunes itself to the seismic psyche of the state of California through images and sounds that confront the senses and the voices of mediums whose bodies are sensitive to seismic occurrences (see pp. 33ff).

WEDNESDAY, NOVEMBER 19

# Earthbound Knowledge: A Forum

## Co-Producing a Curriculum for the Anthropocene

The *Anthropocene Campus* draws to a close with an open hearing: what knowledge forms and driving themes inform the drafting of a curriculum for the future, one in which earthbound knowledge is inscribed? Reflecting on the experiences within the pedagogical experiments—both in teaching as well as in learning—held at the Campus, questions concerning conceptual foci, relevance, methodological approaches, and the conditions that frame knowledge and its mediation will be debated. What consequences can we distill from the alarming rift that has emerged between our institutional education systems and the challenges posed by the Anthropocene? How can we reorganize epistemic fields and modes of knowledge transfer?

With: Amita Baviskar (Delhi), Elena Bougleux (Bergamo), Arno Brandlhuber (Berlin), Miriam Diamond (Toronto), Erle Ellis (Baltimore, MD), Lesley J F Green (Cape Town), Sabine Höhler (Stockholm), Maya Kóvskaya (Beijing), Christoph Küffer (Zürich), Manfred Laubichler (Phoenix, AZ), Wolfgang Lucht (Potsdam/ Berlin), Philipp Oswald (Berlin), Matteo Pasquinelli (Berlin), Jürgen Renn (Berlin), Emily Eliza Scott (Zurich), Jorg Sieweke (Charlottesville, VA), Bryndís Snæbjörnsdóttir (Reykjavík), Sverker Sörlin (Stockholm), Will Steffen (Canberra), Bronislaw Szerszynski (Lancaster), Zev Trachtenberg (Norman, OK), Stella Veciana (Berlin), Jan Zalasiewicz (Leicester) and others

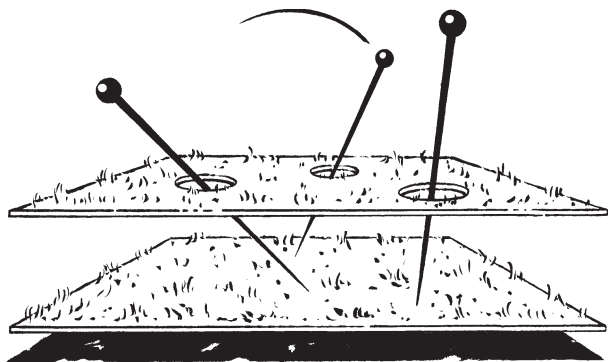
NOVEMBER 21-22

### Friday, 8pm, Auditorium · Introduction, Table Talks, Discussion Earthbound Knowledge: A Forum I

The Forum opens with reflections upon the plurality of knowledge forms: what particular qualities do we invoke and what characteristics are we referring to when we speak about knowledge and its mediation? Knowledge does not float in some universal space; rather, it is predetermined by and situated within specific experiences, bound to ongoing discussions, and implicated by its own limitations. Intense conversations between instructors from the Anthropocene Campus and external guests will address topics such as the institutional construction of certainties, the public organization of knowledge and its application, and a conscientiously responsible means of working with uncertainty.

### Saturday, 11am–4pm, Auditorium · Hearings Earthbound Knowledge: A Forum II

In a parallel series of hearings, thematic foci that have been identified at the Campus—that is, foundational concepts for an anthropogenic knowledge, crystallized from the collective development of the curriculum—will be thoroughly discussed and analyzed. Is it possible to identify a set of overarching terms from which one may then depart in the preparation of future curricula? Would such a “working language” allow for a productive transversality between fields of knowledge as well as an urgent, problem-centered approach towards educational content to take shape? Insistently recurring concepts such as scale, complexity, experiment, or global ethics will be highlighted and utilized by participants of the Campus, placed into perspective, stretched and tinkered with to prove their flexibility, measure, and appropriate potential for the dynamic generation of knowledge forms yet to come.





# Teaching the Anthropocene from a Global Perspective

Manfred D. Laubichler and Jürgen Renn

*In memory of Yehuda Elkana*

The Anthropocene is a geological epoch defined by the consequences of human activity. As such, its reach is global, even planetary. Yet, despite the dramatic impact of human activities, themselves a consequence of human knowledge, and, at the same time, lack of knowledge, most knowledge related activities are still fragmented and discipline-bound. We train our students in specific domains, we organize research activities according to disciplinary questions and standards and we evaluate students and researchers on how well they fit within the traditional system of academic specialization.

At the same time we are well aware that all real world problems do not fall within the boundaries of disciplinary separation. They require interdisciplinary or transdisciplinary approaches. In response, broad research projects are organized to tackle these issues. Each time the researchers involved have to spend a considerable amount of time trying to understand each other and to realize different sets of expectations, concerns and standards. And if they succeed, and this is still a big “if,” they face the additional challenge of communicating their findings to a public even less prepared to understand and appreciate the complexities of today's problems. We only need to point to the regular ritual of misinterpreting the IPCC reports to make our case.

While the research system is slowly moving towards transdisciplinary approaches and researchers are learning to work together in interdisciplinary teams our educational systems are lagging behind. In the midst of all the dramatic changes in knowledge dissemination afforded by the digital revolutions our universities are faced with an intellectual crisis. It is a crisis of purpose, focus and content, rooted in fundamental confusion about all three. As a consequence, curricula are largely separate from research, subjects are still taught

in disciplinary isolation, knowledge is conflated with information and is more often than not presented as static rather than dynamic. Furthermore, universities are largely reactive rather than providing clear forward-looking visions and critical perspectives. The crisis is all the more visible today, as the pace of social, intellectual and technological change inside and outside the universities is increasingly out of step. While universities worldwide are undergoing many, often radical, structural transformations, much less attention has been paid to university curricula. But for the university as a community of scholars and students, that is its central function and the key to its internal renewal. Universities are embedded in multiple institutional, economic, financial, political, and research networks. All of these generate pressures and constraints as well as opportunities. The curriculum, however, is the core domain of the university itself.

How, then, can the universities respond to the challenges of today, the challenges of the Anthropocene? We are, of course, not the only ones who have been thinking about this. There are many forward looking initiatives and experiments under way.

Here we report about one particular initiative that grew out of deliberations by a working group of scholars organized by the late Yehuda Elkana (1934–2012), former professor of Science Studies at the ETH Zürich and rector of the Central European University in Budapest that met at the Wissenschaftskolleg zu Berlin during the academic year 2009/10. The group of participants represented diverse disciplines (from the natural and social sciences and the humanities), geographical origins (Europe, North America, and India) as well as career stages (from former university presidents to students). It initially proposed a set of eleven overlapping principles designed to inform an international dialogue and to guide an experimental process of redesigning university undergraduate curricula worldwide. There can, of course, be no standard formula for implementation of these principles given the huge diversity of institutional structures and cultural differences amongst universities but these principles, we believe, provide the foundational concepts for what needs to be done.

- I. As a central guideline teach disciplines rigorously in introductory courses together with a set of parallel seminars devoted to complex real life problems that transcend disciplinary boundaries.
- II. Teach knowledge in its social, cultural, and political contexts. Teach not just the factual subject matter, but highlight the challenges, open questions and uncertainties of each discipline.
- III. Create awareness of the great problems humanity is facing (hunger, poverty, public health, sustainability, climate change, water resources, security, etc.) and show that no single discipline can adequately address any of them.
- IV. Use these challenges to demonstrate and rigorously practice interdisciplinarity, avoiding the dangers of interdisciplinary dilettantism.
- V. Treat knowledge historically and examine critically how it is generated, acquired, and used. Emphasize that different cultures have their own traditions and different ways of knowing. Do not treat knowledge as static and embedded in a fixed canon.
- VI. Provide all students with a fundamental understanding of the basics of the natural and the social sciences, and the humanities. Emphasize and illustrate the connections between these traditions of knowledge.
- VII. Engage with the world's complexity and messiness. This applies to the sciences as much as to the social, political and cultural dimensions of the world. This will contribute to the education of concerned citizens.
- VIII. Emphasize a broad and inclusive evolutionary mode of thinking in all areas of the curriculum.
- IX. Familiarize students with non-linear phenomena in all areas of knowledge.
- X. Fuse theory and analytic rigor with practice and the application of knowledge to real-world problems.
- XI. Rethink the implications of modern communication and information technologies for education and the architecture of the university.

Curricular changes of this magnitude and significance both require and produce changes in the structural arrangements and institutional profiles of universities as well as other avenues for higher learning. *The Anthropocene Curriculum* clearly falls within the latter category as it is a highly unusual experiment, both in its approach—the long interdisciplinary deliberations leading up to it—and in its composition of “students.”

The *Anthropocene Curriculum* is but one of a number of curricular experiments. And, while all of the issues raised in the manifesto are relevant for teaching the Anthropocene, the global dimension of knowledge in and about the Anthropocene is especially important. To this end we designed the Global Classroom Experiment that initially began with a collaboration between Arizona State University (the largest public university in the United States) and Leuphana Universität in Lüneburg, Germany. Both universities are among the first who focused on sustainability as a subject for both research and education. In this context we designed a three semester research based curriculum on the topic “Sustainable Cities: Contradiction in Terms?” The program takes full advantage of new technologies to facilitate learning, discussions and research collaboration. Online resources, generated by us and others provide multiple perspectives on issues of urbanization and its problems, video conferencing allowed us to conduct joint seminars (across a nine hour time difference) and our international student teams to work on their projects, social media and also face to face meetings in form of exchange visits deepened the collaboration and enabled our students to design and execute their research projects of the highest quality.

But even though these projects yielded impressive results, these are not the most important educational accomplishments of the Global Classroom. In the course of three semesters our students developed a number of skills (from time management to teamwork) that will help them throughout their career. But they also gained first-hand experience with differences in values, assumptions and cultural norms that influence what is considered knowledge and an acceptable solution to a problem in different contexts. In other words, they gained a deeper understanding of the global dimensions of the

Anthropocene. But even though students in the Global Classroom come from different disciplinary backgrounds this experiment is still confined to universities. Here the Anthropocene Curriculum takes the necessary next step in enlarging the base of participants to include artists and other non-academics in its effort to yet again broaden the discussion.

Future Storytelling

Synapse

intercalations: a paginated  
exhibition series

Anthropocene –  
An Encyclopedia

On Research III

Resource Area

# Future Storytelling

## A Media Competition

What stories can be told about the Anthropocene if we abandon familiar surroundings and turn to the shores of a transmedia world? Texts, films, and theatrical works are instructions for action: after a few minutes, the reader or spectator knows whether he is dealing with a conventional protocol or should be ready for different expectations. In cross media narratives, we are not trained as readers, users, or players. What kind of narrative emerges when the medium is not yet saturated with its own history?

The media competition *Future Storytelling* called on journalists, designers, filmmakers, media artists, and other artists to develop cross-media stories based on the thesis of the Anthropocene. 90 project sketches were submitted, 12 were chosen. This resulted in a wide variety of narrative artifacts that speculate about what the future tells us about the present and what the past tells about tomorrow.

For her installation *Future Wunderkammer*, Valentina Ciarapica and Alessia Rotondo have a scholar from the distant future assemble a cabinet of curiosities with objects from our present. With *PHASO*, Sarah Mock explores the research results of a fictional post-human archeological studies organization that presents relics of human life to an intelligent post-human world population.

While media artist Gabriel Moses develops a scenario of a mono-cultural age in his graphic novel *Enh@ncement* where the excessive misuse of social media leads youth to a new form of brutal thoughtlessness and delinquency, in her utopia Linda Havenstein invents a jointly thinking collective named *Ariha* that sets an entire city in flight from the consequences of climate change.

“Im Äther herrscht Raumnot,” literally translated: “There is a shortage of space on the airwaves”: this is how a Cologne legal studies expert described the conditions of peripheral radio stations on

artificial islands on the open sea in 1969. In the audio play *Radio Wars* by Chrizzi Heinen, the analog radioscape becomes once again a conflicted space, because in a near Anthropocene future electromagnetic waves will be seen as a natural resource and thus become relevant in terms of culture policy and aesthetics.

In *Nur der Fortschritt* (Only Progress), Frédéric Jaeger and Nino Klingler illustrate the proposition of the philosopher Günther Anders, who already foresaw in 1959 that the human being “cannot imagine what he is creating.”

Game designer Georg Boch and painter Tijmen Brozius explore the artistic implications of the Anthropocene by developing a virtual reality experience for the Oculus Rift DK2 (*My Heart Is a Wildfire*)

Facebook is the platform of the project *What Are You Doing Tomorrow?*, which presents an Avatar from the year 2055, his friends and status reports, his home and his surroundings (Christian Mahlow, Anna Edina Devánszki, Sinja Marie Krüger, Annika Stadler, Joe Kienast, Marcus Nebe).

Other scenarios are developed by the participants in Future Storytelling in games, apps, and blogs with the help of data banks. The *Augmented Commodity Fetishism* app by Eirik Høyer Leivestad und and Bård Hobæk will provide access to all information on Anthropocene influences, by documenting ever step in a commodity chain, from production via distribution and consumption to the after-life of the used objects.

The project *Anthropocene: A Data Visualization* proceeds in a similar way. What factors of human history have influenced the state of the world until now the most? With the help of mathematical formulas that define our influence on the environment, the study is intended to allow for a realistic look into the future.

Who is a victim, who is a villain in the competition for water as the basic requirement for life? Cecilia Antoni's blog *2041* investigates the future of the Antarctica.

Rafael Dernbach and Milosz Paul Rosinski present in *The Anthroposcale* six portraits of people who are already thinking and acting “anthropocentrically” today.



Recently, the British writer Adam Thirlwell suggested that we take hold of the digital in the face of the monopolization and surveillance of digital space. The projects of Future Storytelling illustrate the possibilities of a radical appropriation.

*Silvia Fehrmann, Eva Stein*

Sunday, October 19

5pm Future Storytelling: Presentation and Award Ceremony

Moderated by Andrea Thilo

The three best crossmedia productions, selected by a jury of prominent figures, will be awarded a prize and the longlist of 12 projects will be presented.

## intercalations: a paginated exhibition series

This book-as-exhibition series is conceived as a curatorial-editorial space to both host and critically reflect on the collaborations among members and affiliates of *SYNAPSE—The International Curators' Network* at HKW, while enabling explorations of the book as a form of exhibition venue in relation to other aesthetic practices in the Anthropocene. The series aims to expand the discourse of curatorial knowledge production within a broader multidisciplinary field of research and experimentation and will gradually establish a compact library of its own. The *intercalations* series was conceived by *SYNAPSE* members Anna-Sophie Springer and Etienne Turpin. Edited in association with Kirsten Einfeldt and Daniela Wolf, the series will be published and distributed internationally by K. Verlag and HKW as both paperbacks and web-based open access publications. [www.k-verlag.com/intercalations](http://www.k-verlag.com/intercalations)

*I. Fantasies of the Library* inaugurates the intercalations series of paginated exhibitions by discussing the bibliological imaginary of the library from the perspective of the curatorial. Virtually stacked alongside Anna-Sophie Springer's feature essay about unorthodox responses to the institutional ordering principles of book collections, the volume includes a conversation with Rick Prelinger and Megan Prelinger of the Prelinger Library in San Francisco; reflections on the role of cultural memory and the archive by Hammad Nasar, Head of Research and Programmes at the Asia Art Archive, Hong Kong; and a discussion between K's co-director Charles Stankieveh and platform developer Adam Hyde on radically new approaches to digital publishing in science and academia. The photo essay, "Reading Rooms Reading Machines," presents views of unusual historical libraries next to works by artists such as Rodney Graham, Alexander Rodchenko, Veronika Spierenburg, and others. *Forthcoming October 2014.*

II. *Land & Animal & Nonanimal* turns from the built space of cultural repositories to the postnatural landscapes of planet Earth. In his interview about urban soils of the Anthropocene, landscape architect Seth Denizen considers a history of land use practices that is also reflected in artist Robert Zhao Renhui's photographs of Singapore as a scenario of continuous development. Inspired by a recent visit to the environment of Wendover in the Utah desert, Richard Pell and Lauren Allen of Pittsburgh's Center for Post Natural History make a case for a postnatural imprint upon the geologic aspects inherent in the concept of the Anthropocene. While curator Natasha Ginwala's image-based contribution turns to cosmological and ancestral human-animal scenarios, *intercalations* co-editor Etienne Turpin adds a layer of commentary on textual selections from Aristotle, St. Francis of Assisi, Carl Linnaeus and Étienne Geoffroy Saint-Hilaire. *Forthcoming November 2014.*

III. *Reverse Hallucinations in the Archipelago* examines the mobility of colonial collections and the environmental transformations they co-produced. The main protagonist in this volume is Alfred Russel Wallace—the British naturalist who explored the Southeast Asian Malay archipelago in the mid-nineteenth century gathering 125,660 animal specimens and subsequently developing the theory of evolution by natural selection. Considering the deep connections between historical land use, scientific collecting, contemporary exhibition culture, and the ongoing socio-ecological transformations in the rainforests of Indonesia, this book-as-exhibition brings together artists, curators, and scientists, while presenting a selection of archival materials. With contributions by George Beccaloni, Fred Langford Edwards, Matthias Glaubrecht, Renate Sternagel, Wahana Lingkungan Hidup Indonesia, and exhibition co-curators Anna-Sophie Springer and Etienne Turpin, it asks if the history of colonial science can be re-appropriated to address the current planetary ecological collapse and the struggles for land, life, and knowledge, which this crisis continues to intensify. *Forthcoming May 2015.*

## From Amazement to Action: “A Report” for Kids & Teens

Can ground erosion or climate change be felt? Can people build up new ecological systems? How can we know what to do in the face of accelerated metabolisms? In artistic workshops, HKW invites young people to practically engage with the Report and the idea of the Anthropocene.

In collaboration with artists, on Sundays children can become researchers of the Anthropocene. The exhibitions in *A Report* offer the illustrative material. Children ages eight and over draw the sound traces of earthquakes (*It rocks! Die seismografische Aufzeichnung* with CHRS SMTHNG) or find out how the planet can once again become a livable place after an environmental catastrophe (*Die grüne Wolke* with SuperFuture); young teenagers write program codes that make electronic devices work differently (*Anders ticken. Wir programmieren selber*).

In 2013 and 2014, classes from seven schools in Berlin have explored what knowledge about the world is relevant for our future and how social knowledge changes our actions in artistic research projects with the exhibitions *The Whole Earth* and *Forensis*. On a joint project day, they pursue the approach further and test artistic approaches to develop new knowledge. The task: how can food be produced in urban areas?

# The Anthropocene Project: An Encyclopedia

Stupidity, forensics and cybernetics, Californian ideology, climate crimes and epistemology, network capitalism, beauty, metabolism, and bearing witness. The Anthropocene Project's core terminology appears incomprehensible and impenetrable at first. The encyclopedia, currently under development as an online presentation at [buro.eta.boeklund](http://buro.eta.boeklund), is dedicated to this vocabulary. It offers sidelong glances that can help to illuminate the jungle of discourse and show the beauty of the Anthropocene Project's terminology in a clear and easily understandable fashion. Like every system of classification, this project calls into question our world's unspoken habits when it comes to categorization.

[hkw.de/anthropozaen.glossar](http://hkw.de/anthropozaen.glossar)

## On Research III

A two-day workshop (OCTOBER 18 + 19) offers insights into the curatorial conception of the Anthropocene Project. The workshop will center around the curator as a mediator between complex realities and increasingly manifold forms of knowledge production (invited participants only).

## Resource Area

With a wide range of publications, background information, and film material never shown before, the *Resource Area* provides a comprehensive insight into the content, curatorial approaches, and references between the numerous individual projects and formats of *The Anthropocene Project*, developed since 2013. In their very own Resource Area, the young visitors can engage with stories, graphic novels, and films dealing with the subject of the Anthropocene.



# Appendix

# Contributors

Ayreen Anastas was born in Bethlehem, Palestine and currently lives in Brooklyn. She is one of the organizers of the 16 Beaver group, an artist community that functions as a social and collaborative space in downtown Manhattan, where the group hosts panel discussions, film series, artist talks, radio recordings, reading groups, and more.

Rene Gabri was born in Tehran and now lives in New York. He is interested in the complex mechanisms which constitute the world around us. His works employ a wide array of means, often loitering at the thresholds of cultural practice, social thought, and politics. Together, Anastas and Gabri form an artist collective.

Marco Armiero, Director of the Environmental Humanities Laboratory at KTH Royal Institute of Technology, Stockholm, is an environmental historian. He is one of the founders of the environmental history field in Italy, focusing on the history of environmental conflicts over property rights and access to common resources, the politics of nature and landscape in Italian-nation building, and the environmental history of mass migrations.

Adam Jacob Avikainen / Blood type: B Negative / Organ donor / 3 nipples... more common than you think...look on your milk-line....a faint blemish...and hair. / Likes snow crab and lemonade. / Had a dream last night that I drove a 1980's model Oldsmobile Cutlass so far off the gravel roads until I was surrounded by wild horses and jackrabbits. There was a bridge, too...maybe for flash floods.

Amita Baviskar is Associate Professor of Sociology at the Institute of Economic Growth, Delhi. Her research focuses on the cultural politics of environment and development, resource rights, subaltern resistance, and cultural identity, urban environmental politics, especially bourgeois environmentalism and spatial restructuring in the context of economic liberalization in Delhi.

Elise von Bernstorff is a dramaturge, performer, researcher, and writer based in Berlin. She is currently working on her Ph.D.-project "The Performance of the Court," a transdisciplinary study between art, science, and society.

Torsten Blume is a researcher and artist currently at Stiftung Bauhaus Dessau. Since 2007, he has been working on the project Play Bauhaus, with dance and movement installations, workshops, and exhibitions with the goal of bringing the Bauhaus stage up to date as a form of experimentation. Torsten Blume is a member of the Cluster of Excellence Image-Knowledge-Gestaltung: An Interdisciplinary Laboratory, Humboldt-Universität Berlin.

Elena Bougleux is Associate Professor of Cultural Anthropology at the University of Bergamo and teaches anthropology of science at the Research Center on Anthropology and Epistemology of Complexity. Physicist as well as cultural and gender theorist by training, her research interests have focused on the ethnographic and epistemological implications of the strategies of knowledge construction from a constructivist and multicultural perspective.



Geoffrey C. Bowker is Professor at the School of Information and Computer Science, University of California at Irvine, where he directs the Values in Design Laboratory. Recent positions include Professor and Senior Scholar in Cyberscholarship at the University of Pittsburgh iSchool and Executive Director at the Center for Science, Technology and Society, Santa Clara.

Arno Brandlhuber is a Berlin-based architect, founder of the architectural firm brandlhuber+, and lecturer at the Akademie der bildenden Künste, Nuremberg, whose practices reach beyond architecture and urbanism. His internationally acclaimed work has been shown in exhibitions such as the Venice Biennale of Architecture. He is Director of the Nomadic Master's Program a42.org and co-founder of the public seminar Akademie c/o.

Roman Brinzanik is a physicist, computational biologist, author, and researcher at the Max Planck Institute for Molecular Genetics, Berlin. He co-authored the transdisciplinary interview book *Will We Live Forever?* (2010) about the technological manipulation of humans and is working on the follow-up volume *Will We Save the Earth?* (2015), including interviews with Paul J. Crutzen and writer T.C. Boyle. He also launched cross-media and participatory discussion events about these topics.

Rana Dasgupta is a novelist and essayist. His texts concentrate on issues of home and homelessness as well as rootedness and motion in a globalized world. Rana Dasgupta is winner of the Commonwealth Writers' Prize for Solo in 2010. Having grown up and studied in the UK, France and the US, he now lives in New Delhi.

Miriam Diamond is Professor at the Department of Earth Sciences at the University of Toronto with cross appointments in Chemical Engineering and Public Health. With expertise in environmental chemistry, engineering and ecology, she founded the Diamond Environmental Research Group that aims to develop evidence-based strategies to minimize human and ecosystem exposure to trace chemical contaminants. In 2007 Canadian Geographic named her Canadian Environmental Scientist of the Year.

Stefania Druga is founder of HackI-Demia and Afrimakers. In the summer of 2012, she was the Education Teaching Fellow at the Singularity University of NASA. In the past six months, she travelled to eight African countries and trained local teams to design and create hands-on projects that could solve local challenges like access to electricity, clean water, and health care.

Matt Edgeworth is a practicing field archaeologist and Honorary Research Fellow at the School of Archaeology and Ancient History, University of Leicester. He has directed archaeological investigations throughout Britain and excavated as far afield as Carthage in North Africa and the Orkney Islands in Scotland. He has a particular interest in complex urban stratigraphy, and in the mixture of human and natural agencies. He wrote the book *Fluid Past: Archaeology of Flow* (2011).

Paul N. Edwards is Professor at the University of Michigan, teaching in the interdisciplinary School of Information, the Department of History, and the Science, Technology & Society Program. His research concerns the history

and social dynamics of knowledge-infrastructures, especially in climate science and meteorology. He works with climate software developers on better information systems.

Erle Ellis is Associate Professor of Geography and Environmental Systems at the University of Maryland, Baltimore County, Director of the Laboratory for Anthropogenic Landscape Ecology, and a Visiting Associate Professor of Landscape Architecture at Harvard Graduate School of Design. He studies the ecology of human landscapes at local to global scales to inform sustainable stewardship of the biosphere, using anthrome mapping, global synthesis of local knowledge (GLOBE), and 3D ecology (Ecosynth).

Michael Ellis is the Science Director of the Climate and Landscape Change Research Group at the British Geological Survey, where he leads several research teams in investigations of environmental response to climate change, the dynamics of past rapid climate changes, and carbon-cycle processes within the near-surface (the critical zone) environment.

Luis-Manuel Garcia is an ethnomusicologist and Lecturer in Popular Music at the Faculty of Arts, University of Groningen. He has been a post-doctoral research fellow at the Max Planck Institute for Human Development as well as the Berlin Program for Advanced German and European Studies of the Freie Universität Berlin. He is currently conducting fieldwork on "techno-tourism" in Berlin while also preparing his first book manuscript, entitled, *Together Somehow: Music, Affect, and Intimacy on the Dancefloor*.

Lesley J. F. Green is Professor for Anthropology in the School of African and Gender Studies, Anthropology and Linguistics at University of Cape Town. She directs the Environmental Humanities Initiative, developing research methods and approaches appropriate to retheorizing social science and humanities research for the Anthropocene in the South.

Andrew Gregory is Reader in History of Science in the Department of Science and Technology Studies at University College London. He has published widely on science in the ancient world and the history of astronomy and cosmology, his books including *Plato's Philosophy of Science*, *Ancient Greek Cosmogony and The Presocratics and the Supernatural*. He is currently working on a book on Anaximander.

Joyeeta Gupta works on global concerns in climate governance, water law, and sustainable development. She is Professor of Environment and Development in the Global South at the Amsterdam Institute for Social Science Research of the University of Amsterdam and UNESCO-IHE Institute for Water Education in Delft. She is also a member of the Amsterdam Global Change Institute.

Peter K. Haff is Professor of Geology and Civil Engineering in the Nicholas School of the Environment at Duke University. Haff trained in physics and has done research at the Niels Bohr Institute, Yale University, and the California Institute of Technology. His research interests are in geomorphology and in developing a non-anthropocentric framework for the Anthropocene.

Irka Hajdas is a physicist by training, applying her expertise in radiocarbon analysis to problems of geochronology, archaeology, and environmental studies. She earned her master's degree in physics at Jagiellonian University, Cracow, Poland, followed by doctoral studies at ETH Zurich, Switzerland, where she now lectures at the Earth Sciences Department and conducts research at the Accelerator Mass Spectrometry facility.

Natascha Sadr Haghighian's research-based practice encompasses a variety of forms and media to create situations in which experiences and propositions resulting from her research can be shared; among them are large (sound) installations, texts, and performance as well as video. Among other things, her work explores the socio-political implications and constructions of vision.

Yannis Hamilakis is Professor of Archaeology at the University of Southampton, UK. He researches and writes on corporeality and the bodily senses, on the contemporary meanings and social roles of ruins, and on the politics of archaeology. His books include *The Nation and its Ruins: Antiquity, Archaeology, and National Imagination in Greece* (2007, 2009), and more recently *Archaeology and the Senses: Human Experience, Memory, and Affect* (2013).

Dorothea von Hantelmann is documenta Visiting Professor at Kunsthochschule/ Universität Kassel. An art historian, her teaching and research focuses on issues of contemporary art and the contemporary transformation in the social function of exhibitions. Her publications include *How to Do Things with Art* (2007, 2010) and *Die Ausstellung: Politik eines Rituals* (ed. with Carolin Meister, 2010).

Regine Hengge is Professor of Microbiology at Humboldt-Universität Berlin. Her scientific research deals with signal transduction mechanisms and regulatory networks in bacterial biofilm formation and stress responses. Following her interest in novel approaches in science communication she is also pursuing a long-term Science & Theatre project in collaboration with the English Theatre Berlin.

Sabine Höhler is Associate Professor of Science and Technology Studies at KTH Royal Institute of Technology, Stockholm. Trained as a physicist and historian, she focuses on the sciences and technologies of earth exploration in the 19th and 20th centuries. Her work on "Spaceship Earth" studies the discourse on environmental life support between 1960 and 1990.

Erich Hörl is Professor of Media Culture at the Institute of Culture and Aesthetics of Digital Media (ICAM) at Leuphana Universität Lüneburg. He is Director of the program "Re-thinking the Technological Condition" at Leuphana's Digital Culture Research Lab (DRCL). Until 2014 he was Associate Professor of Media Philosophy and Technology at Ruhr-University Bochum, where he founded and directed the Bochum Colloquium Media Studies (bkm).

Benjamin Alexander Huseby is a Norwegian artist who explores botany and nature in his photography, food, and garden planning. He is interested in plants normally considered weeds, how we divide plants and nature into concepts of "wild," "native" and "foreign," and the practical, edible and medicinal uses of plants. He is just about to publish a book called *Weeds & Aliens: An Unnatural History of Plants*. He has exhibited at Whitechapel, KW, the ICA, Artist Space, and Kunsthall Oslo.

Pablo Jensen is Director of Institut rhônalpin des systèmes complexes (IXXI) in Lyon. He is a physicist by training and currently working at the fringes of the social and natural sciences. In an ongoing collaboration with Bruno Latour's team, he explores the use of social data to improve our knowledge of the social world. He has published a "realistic" popularization of condensed-matter physics and is a columnist for several periodicals including *Le Monde diplomatique*.

Natalie Jeremijenko is Director of the Environmental Health Clinic at New York University. An artist and experimental designer her background includes studies in biochemistry, physics, neuroscience, and engineering. In her public experiments she focuses on structures of participation in the production of knowledge and the social possibilities of information technologies. Her projects have been exhibited at museums such as the Whitney Museum, and *I.D.* magazine named her one of the 40 most influential designers.

Maya Kóvskaya is a political cultural theorist, art critic, curator, and independent scholar who has published widely on Chinese and Indian arts and culture. Her epistemological investigations address the "performative politics" of knowledge that conjoin art, political ecology, and the public sphere, within the context of ecological crisis and the geopolitics of natural resources in Asia.

Christoph Küffer is a plant ecologist working at the Department of Environmental Systems Science, ETH Zurich. His research interests include novel ecosystems on oceanic islands, global change impacts on mountain ecosystems, biodiversity conservation, plant invasions, and interdisciplinary research on emerg-

ing new ecologies in the Anthropocene ("ecological novelty").

Brandon LaBelle is an artist and writer working with sound culture, voice, and questions of agency. His books include *Lexicon of the Mouth* and *Diary of an Imaginary Egyptian*, among others. He lives in Berlin.

Adrian Lahoud is an architect and teacher currently leading the MArch Urban Design at The Bartlett, University College London. His research sets out a philosophical, scientific and architectural history of scale, using case studies of post-war urban planning, territorial governance and climate modeling. He has written extensively on questions of spatial politics and urban conflict with a focus on the Arab world and Africa.

Manfred D. Laubichler is President's Professor of Theoretical Biology and Director of the Center for Social Dynamics and Complexity at Arizona State University (ASU). Trained as a biologist, zoologist, philosopher, and historian of science his research field spans from theoretical and evolutionary developmental biology, complexity theory, and the cultural history of science to digital humanities and computational methods.

Mark Lawrence is Director of the cluster Sustainable Interactions with the Atmosphere (SIWA) at the Institute for Advanced Sustainability Studies (IASS), Potsdam. SIWA focuses on the impacts and mitigation of pollutants in the face of global urbanization, and the impacts, uncertainties, and risks of "climate engineering." Lawrence has published widely and serves on various international committees, most notably the United Nations Environment Programme (UNEP).

Franck Leibovici approaches his artworks as sensitive atmospheres where the participation of a public is crucial. His project a mini-opera for non-musicians creates tools of redescription of "low intensity conflicts" based on notational systems from experimental music, dance, science studies, or conversation analysis. *Main publications: 9+11* (2005), *Des documents poétiques* (2007), *Lettres de Jérusalem* (2012), (*des formes de vie*)—*une écologie des pratiques artistiques* (2012), *Filibuster* (une lecture) (2013).

Reinhold Leinfelder is Professor for Geology at Freie Universität Berlin, with a focus on Anthropocene research, and Affiliate Professor at the Rachel Carson Center Munich (RCC), through which he is curating the joint RCC-Deutsches Museum exhibition *Welcome to the Anthropocene* (starting Dec 2014). Since Sept 2014, he has been Director of Haus der Zukunft Berlin, a new communication space on the world of tomorrow.

Armin Linke is a photographer and filmmaker combining a range of contemporary image-processing technologies to blur the border between fiction and reality. He is currently Professor at the HfG Karlsruhe. His works have been shown in solo exhibitions at MAXXI, Roma (2010), Museum für Gegenwartskunst Siegen (2009), and in group exhibitions such as Moscow Biennale of Contemporary Art, Haus der Kunst, Munich (2011), Bienal de São Paulo (2008). His multimedia installation was awarded at the 9th Venice Biennale for Architecture (2004) and at the Graz Architecture Film Festival (2006).

Wolfgang Lucht co-chairs the Department of Earth System Analysis at the Potsdam Institute for Climate Impact Research (PIK), teaches sustainability

science at the Department of Geography, Humboldt-Universität Berlin, and is a member of the German Committee for Future Earth. Trained as a physicist, his research concerns human transformations of the biosphere, the earth as a complex system, and the transformative potential of planetary boundaries for global societies.

Flora Lysen is a researcher at the Universiteit van Amsterdam and is interested in the popular imagination of the brain in the mid-twentieth century. She writes about artists and scientists exploring the brain and mind sciences and the politics and aesthetics of scientific visualization. Other peripheral curiosities include: histories of color, psycho-pharmaceuticals, and animation.

Chus Martínez is Head of the Art Institute at the Fachhochschule Nordwestschweiz FHNW. She has a background in philosophy and art history. She was DOCUMENTA (13) Head of Curatorial Department and Member of Core Agent Group. Previously she was Chief Curator at MACBA – Museu d'Art Contemporani de Barcelona, Director of Frankfurter Kunstverein, Frankfurt and Artistic Director of Sala Rekalde, Bilbao.

Margarida Mendes researches the transformations of material dynamics and their impact on cosmogonies and societal structures. She is interested in the fields of astronomy and geophilosophy and their resonance with occultism and cultural production. In 2009 she founded the project space the Barber Shop in Lisbon, where she curates seminars and events concerned with philosophy and artistic research practices. Mendes holds an MA in Aural and Visual Culture from Goldsmiths, University of London.

Ben Morea was one of the protagonists in *Black Mask* and *Up Against the Wall Motherfucker*. Ben and "The Family," in which he played a critical role, were among the key proponents of anarchist thought, action, and art as embodied in the 1960s counter-culture and political radicalism. His life has been immersed over the last 40 years in the practices, thought, and life of several indigenous communities and peoples of the West and Southwest of North America.

Molly Nesbit is Professor in the Department of Art at Vassar College. Her books include *Atget's Seven Albums* (1992), *Their Common Sense* (2000) and *The Pragmatism in the History of Art* (2013). Since 2002, together with Hans Ulrich Obrist and Rirkrit Tiravanija, she has co-curated *Utopia Station*, a collective and ongoing book, exhibition, seminar, website and street project.

Ioan Negrutiu is Professor of Biology at *École normale supérieure de Lyon* and a former member of the *Institut Universitaire de France*. He is Director of the *Institut Michel Serres* dedicated to resources and public goods. As such, he coordinates the work of students and colleagues from life sciences, economy, and legal studies towards an integrated approach to the natural resources problematic.

Naomi Oreskes is Professor of the History of Science and Affiliated Professor of Earth and Planetary Sciences at Harvard University, where she recently moved after 15 years as Professor of History and Science Studies at the University of California, San Diego, and Adjunct Professor of Geosciences at the Scripps Institution of Oceanography. Oreskes' research focuses on the

earth and environmental sciences, with a particular interest in understanding scientific consensus and dissent.

Philipp Oswalt, architect and writer, is Professor for Architectural Theory and Design at Universität Kassel and former Director of Stiftung Bauhaus Dessau. He co-founded and curated several interdisciplinary projects such as *Urban Catalyst*, *Shrinking Cities*, and *Volkspalast*. He has published widely on urban planning and architecture and has worked for the architectural magazine *Arch+* and the office of O.M.A.

The Otolith Group is a London-based, award-winning, artist-led collective founded by Anjalika Sagar and Kodwo Eshun in 2002. The Group's work explores the legacies and potentials of liberation struggles, tricontinentalism, speculative futures and science-fictions. In 2010, The Otolith Group was nominated for the Turner Prize.

Denise Palma Ferrante, food enthusiast, started *Bistro*, a monthly dinner, with Benjamin A. Huseby, now running *Die Gegabelte Hand*, a monthly dinner with guest collaborators; Food Curator/Gastro-nomic Director of Foreign Affairs Festival at Haus der Berliner Festspiele; caterer; kitchen-tyrant and bio-fundamentalist; food activist and naturalist; barman and tea drinker.

Matteo Pasquinelli is a philosopher who writes at the intersection of philosophy, media theory and the life sciences. He wrote the book *Animal Spirits: A Bestiary of the Commons* (2008) and edited the anthology *Algorithms of Capital* (2014). Together with Wietske Maas he wrote the *Manifesto of Urban Cannibalism*. At NGBK Berlin he co-curated the exhibition *The Ultimate Capital is the Sun*.

Elizabeth A. Povinelli is Franz Boas Professor of Anthropology and Gender Studies at Columbia University, where she has also been Director of the Institute for Research on Women and Gender and Co-director of the Center for the Study of Law and Culture. Her work focuses on developing a critical theory of late liberalism that would support an anthropology of the otherwise.

Simon Price was team leader for urban geoscience at the British Geological Survey, where he worked on applied geoscience projects in cities. His research interests include anthropogenic geology and geomorphology, 3D geological modelling of variability in the ground beneath cities, and Sustainable Drainage Systems (SuDS). He is currently a Ph.D. student at the University of Cambridge.

Armin Reller is Professor for Resource Strategy at Universität Augsburg. His research focuses on the synthesis and properties of functional materials relevant for energy and environment technologies, more specifically, on the ecological and socioeconomic impacts of exploring and applying strategic resources. He coordinates a research program for the Swiss Federal Office of Energy, Bern, and is member of the Environment Agency, Umweltbundesamt in Berlin.

Jürgen Renn is Director at the Max Planck Institute for the History of Science leading the department Structural Changes in Systems of Knowledge. In addition, he teaches at Berlin's Humboldt-Universität and Freie Universität Berlin. His research interests include the long-term development of systems of knowledge, the intercultural exchange of knowledge, and the transformation processes of structures of knowledge and their social conditions.

Andrew C. Revkin is a science and environmental writer. A reporter for the New York Times from 1995–2009, he currently writes the Dot Earth environmental blog for The Times' Opinion Pages. Revkin is also Senior Fellow for Environmental Understanding at the Pace Academy for Applied Environmental Studies at Pace University, New York, and a member of the Future Earth Interim Engagement Committee.

Daniel D. Richter is Professor of Soils at Duke University, and lead investigator of the Calhoun Critical Zone Observatory in South Carolina, where he and colleagues study biogeochemistry as a function of historic and contemporary land use and abuse. He is author of *Understanding Soil Change* (2007) and Director of the International Network of Long-Term Soil Experiments (LTSEs).

Libby Robin teaches at the Division of History of Science, Technology and Environment, KTH Royal Institute of Technology, Stockholm, at the Fenner School of Environment and Society at the Australian National University (ANU), and is Senior Research Fellow at the National Museum of Australia. Her research interests include Environmental History, Museum studies, History of Science, Ecological Humanities, World History, and the History of Nature Conservation.

Tomás Saraceno is a visual artist based in Berlin, best known for large-scale installations involving networks, membranes and topological surfaces that are accessible to the public and engage with critically reshaping urban ecologies and modes of participation. His works have been featured at major exhibitions and museums, including Berlin's

Hamburger Bahnhof in 2011, New York's Metropolitan Museum of Art in 2012, Milan's HangarBicocca in 2012, and Düsseldorf's K21 in 2013/2014.

Wolfgang Schäffner, historian of science and media technologies, is Professor at Humboldt-Universität Berlin, teaches at the Universidad de Buenos Aires, and is Director of the Cluster of Excellence Image-Knowledge -Gestaltung. An interdisciplinary laboratory and the Hermann von Helmholtz-Zentrum für Kulturtechnik (HZK), Berlin. He investigates material epistemology, architectures and the global transfer of knowledge, and the history and theory of analog code and structures.

Emily Eliza Scott is a postdoctoral fellow in the Architecture Department at ETH Zürich, and founding member of World of Matter, an international art and research platform on global resource ecologies, and the LA Urban Rangers. She recently completed a co-edited volume, *Critical Landscapes: Art, Space, Politics*, and her publications have appeared in *American Art*, *Third Text*, *Art Journal*, and *Cultural Geographies* and in numerous anthologies.

Jorg Sieweke is landscape architect, urban planner, and Professor at the School of Architecture at the University of Virginia. He is Director of ParadoX-city, a design-research initiative, comparing patterns of modernization of delta cities like Venice, New Orleans, Baltimore, and Hamburg. It deals with the question how urban form and urban metabolism can be organized and sustained relative to the accelerated changes of swampy and shifting ground.

Bryndís Snæbjörnsdóttir is an internationally-renowned artist who collaborates with artist Mark Wilson on installation-based works. With a strong research grounding, their socially-engaged projects explore contemporary relationships between human and non-human animals in the contexts of history, culture and the environment.

Sverker Sörlin is Professor of Environmental History at the Environmental Humanities Laboratory, KTH Royal Institute of Technology, Stockholm. His main research interests address the role of knowledge in environmentally-informed modern societies and research and innovation policies, a field in which he also serves as a policy analyst and advisor. His current research projects encompass the role of models in climate science and policy and historical images of Arctic futures.

Will Steffen is an earth system scientist based at the Australian National University (ANU) and is also a Senior Fellow at the Stockholm Resilience Centre. He has written on adapting land use to climate change, bringing human processes into the modeling and analysis of the Earth System, and the relationship between the natural world and humans. Alongside Paul Crutzen, Steffen has been a prominent advocate of the concept of the Anthropocene.

Benjamin Steininger is a cultural and media theorist, historian of science and technology, and exhibition organizer in Vienna. His main research fields are the cultural history of acceleration, and the history and theory of the materials of modernity: building materials, fuels, and fossil raw materials. He is currently directing an exhibition project on 100 years of the oil industry in Austria.



STRATAGRIDS is a Berlin-based group founded by Florian Goldmann, Max Stocklosa and Daniel Wolter in 2012. As a "collaborative endeavor," STRATAGRIDS develops a phenomenology of landscape by investigating and filtering the dynamic flows of human and non-human agencies which join forces in order to create new assemblages beyond the confirmed order of things.

Colin P. Summerhayes is a geochemist and expert at determining past climate from the character of marine sediments. Now Emeritus Associate at the Scott Polar Research Institute, University of Cambridge, he was formerly Director of the international Scientific Committee on Antarctic Research, Director of UNESCO's Global Ocean Observing System Project, and Director of the UK's Institute of Oceanographic Sciences Deacon Laboratory.

James P.M. Syvitski's specialty is the global flux of water and sediment (river and ocean-borne) and its trends in the Anthropocene. He uses data from ground stations, orbital sensors, and modeling, combining all three into a re-analysis product. He is chair of the International Geosphere-Biosphere Programme and connects with the social dimension through the International Human Dimensions Programme and now Future Earth.

Bronislaw Szerszynski is based at Lancaster University, UK. Combining the social sciences, humanities and earth sciences, his research places changing human-technology-environment relations against the background of the *longue durée* of human and planetary history. His collaboration with Bruno Latour on the Anthropocene Monument will be staged at Les Abattoirs, Toulouse this autumn.

John Palmesino and Ann-Sofi Rönnskog established Territorial Agency, an independent organization based in London that combines architecture, analysis, advocacy and action for integrated spatial transformation of contemporary territories. Their work has been presented in international exhibitions and they lecture world-wide. They are affiliated with the Architectural Association in London, Goldsmiths, University of London, and AHO Oslo.

Zev Trachtenberg is Associate Professor of Philosophy at the University of Oklahoma specializing in social and political philosophy. He has participated in various interdisciplinary teaching and research projects related to environmental issues, including the Interdisciplinary Perspectives on the Environment program at OU, and studies of collaborative watershed management. He is currently developing a blog about the Anthropocene.

John Tresch is Associate Professor of History and Sociology of Science at the University of Pennsylvania and the author of *The Romantic Machine: Utopian Science and Technology after Napoleon* (2012). His current research topics include the scientific writings of Edgar Allan Poe, the neuroscience of meditation, and a comparative study of cosmograms, or representations of the universe.

Helmuth Trischler is Head of Research at Deutsches Museum and Professor of Modern History and History of Technology at Ludwig-Maximilian-Universität and serves as Co-director of Rachel Carson Center for Environment and Society (RCC), Munich. He has worked in the fields of social history, the history

of science and technology, transport history, and environmental history and is in charge of the joint RCC-Deutsches Museum exhibition *Welcome to the Anthropocene* (opening Dec 2014).

Etienne Turpin is Director of an exact office, a design research practice committed to multidisciplinary urban activism, artistic and curatorial experimentation, and applied philosophical inquiry. He is a Vice-Chancellor's Postdoctoral Fellow at the SMART Infrastructure Facility, Faculty of Engineering and Information Sciences, University of Wollongong. He lives and works in Jakarta, Indonesia.

Stella Veciana is founder of the Research Arts platform ([www.research-arts.net](http://www.research-arts.net)) focusing in her transdisciplinary research on artistic cooperative practices and participatory scientific approaches towards transformation to a sustainable society. She works for Forschungswende, a German public participation platform on civilian involvement in science, supported by the Federation of German Scientists, and is teaching at Leuphana Universität Lüneburg.

Davor Vidas is Research Professor of International Law and Director of the Law of the Sea Programme at the Fridtjof Nansen Institute, Norway. He has been engaged in research linking the Anthropocene and international law since 2009 and is currently the Principal Investigator of a major international project sponsored by the Research Council of Norway, on Climate Change and Sea-level Rise in the Anthropocene: Challenges for International Law in the 21st century.

Bettina Vismann is an architect, artist, and researcher based in Berlin. Educated as an architect, her practice examines the description of physical models, starting with the research of the smallest matter. In addition to theoretical approaches, she collaborates with neuroscientists (Neurotopographics), investigating economic, cultural, and political impacts of spatial conditions (*Waste Economy*).

Colin Waters, Principal Mapping Geologist with the British Geological Survey, is Secretary of the Anthropocene Working Group. Areas of interest include application of stratigraphy to the Anthropocene, mapping and classification of artificially modified ground, the nature and flux of artificial deposits and human influence on the subsurface.

Allen S. Weiss is a polymath whose interests range from feast (*Autobiographie dans un chou farci*) and folly (*Comment cuisiner un phénix*) to music (*Varieties of Audio Mimesis*) and fiction (*Le Livre bouffon*), puppets (*Theater of the Ears*) and performance (*Danse macabre*) to philosophy (*Métaphysique de la miette*) and gardens (*Zen Landscapes*).

Eyal Weizman is an architect, Professor of Visual Cultures, and Director of the Centre for Research Architecture at Goldsmiths, University of London. Since 2011 he has also been directing the European Research Council project Forensic Architecture on the place of architecture in international humanitarian law and co-curated the exhibition *Forensis* at HKW. He is a founding member of the architectural collective DAAR in Beit Sahour, Palestine and Global Professor at Princeton University.

Mark Williams is Professor of Palaeobiology at the University of Leicester. With a focus on Palaeoenvironments and –climates, his main research interests address current environmental change from a geological context, the interactions between biosphere and the evolution of the Earth system, as well as the utilization of Pliocene climate as a scenario for late 21st century climate and global warming.

Pinar Yoldas is a cross-disciplinary artist and researcher focusing on social and cultural systems in relation to biological and ecological systems. Born in Turkey, Yoldas is currently a Ph.D. student in Media Arts and Science at Duke University while also completing her degree at the Center for Cognitive Neuroscience.

Jan Zalasiewicz is Senior Lecturer in Geology at the University of Leicester and Chair of the Anthropocene Working Group of the International Commission on Stratigraphy. A field geologist, paleontologist, and stratigrapher, he teaches and publishes on geology and earth history, in particular on fossil ecosystems and environments that span over half a billion years of geological time.

## Artistic Direction and Curators

Silvia Fehrmann has been a member of the Artistic Board of Directors at Haus der Kulturen der Welt since 2008, responsible for communication and cultural education. Her work at HKW has included curating the literature festival Gegengelesen. *Literatur aus Argentinien*, the conference *Südafrika: Zumutungen und Versprechen der Demokratie* and conceiving the educational program for *The Anthropocene Project*, including the media competition *Future Storytelling*. She is co-editor of *1989—Globale Geschichten* (2009, with Bernd M. Scherer, Susanne Stemmler, Valerie Smith).

Anselm Franke is a curator and critic based in Berlin. He has edited numerous publications and regularly contributes articles to magazines such as *Metropolis M*, *e-flux journal*, and *Parkett*. Curator of the 2012 Taipei Biennial, in January 2013 he took over as Head of Visual Arts and Film at Berlin's Haus der Kulturen der Welt. There he curated *The Whole Earth* together with Diedrich Diederichsen, *After Year Zero* together with Annett Busch (both 2013) and recently *Forensis* (2014) together with Eyal Weizman. He is chief curator of the Shanghai Biennale 2014.

Katrin Klingan is a literature scholar, curator, and producer of arts and culture projects. She is Head of Literature and Humanities at Haus der Kulturen der Welt, Berlin. Between 2003 and 2010 she was Artistic Director of *relations*, an international arts and culture program initiated by the German Federal Cultural Foundation. She has conceived and organized diverse cultural events in Vienna, and was dramaturge at the Vienna Festival from 1998 to 2001. Klingan lives and works in Berlin. She is curator of *The Anthropocene Project* at HKW.

Janek Müller is a dramaturge, director, and curator. The co-founder of the performance collective Theaterhaus Weimar, he has also conceived and organized several international festivals. Between 2009 and 2012 he worked as a dramaturge for international projects at the Volksbühne, Berlin and as a dramaturge and curator for the project *Über Lebenskunst* at HKW. He was a curator for the Prague Quadrennial of Performance Design and Space 2011. He conceives and organizes workshops and events that particularly focus on culture and sustainability.

Christoph Rosol is a historian of science, technology, and media. His main focus is on the histories, epistemologies, and media technologies that have shaped the climate sciences. He is Research Fellow of The Anthropocene Project at HKW and Research Scholar at the Max Planck Institute for the History of Science, Berlin. Having studied in Berlin and Toronto, he held fellowships at the graduate research program Media of History, History of Media in Weimar and at the German Historical Institute in Washington, DC.

Ashkan Sepahvand is a writer, translator, and researcher. His interests trace associations from within the histories of somatics, the sensory, transformation, pedagogy, utopia, queerness, collectivity, ritual, performance, and the self. He studied art history at Vassar College and philosophy at the European Graduate School. Currently, he is Research Fellow for *The Anthropocene Project* at HKW. His work and writings have been presented at dOCUMENTA (13), Former West, Tanz im August, Sharjah Biennial X, Homeworks 5, Jerusalem Show V, Qalandiya International, Kunsthau Brezgenz, and Museu d'Art Contemporani de Barcelona (MACBA).

Bernd M. Scherer is Director of Haus der Kulturen der Welt. Previously, he served as the Goethe-Institut's Director of the Arts Department for the main office in Munich. His theoretical work focuses on aesthetics, philosophy of language, semiotics, and international cultural exchange. He has curated and co-curated several cultural and art projects, such as Agua-Wasser, *Über Lebenskunst*, and now *The Anthropocene Project*. Since January 2011, he has also been Professor at the Institut für europäische Ethnologie, Humboldt-Universität, Berlin.

# Credits

*The Anthropocene Project* is an initiative of Haus der Kulturen der Welt in cooperation with the Max-Planck-Gesellschaft, Deutsches Museum, the Rachel Carson Center for Environment and Society, Munich and the Institute for Advanced Sustainability Studies, Potsdam.

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Anthropocene Observatory: #4 The Dark

Abyss of Time / The Otolith Group:

Medium Earth / Adam Avikainen: CSI

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