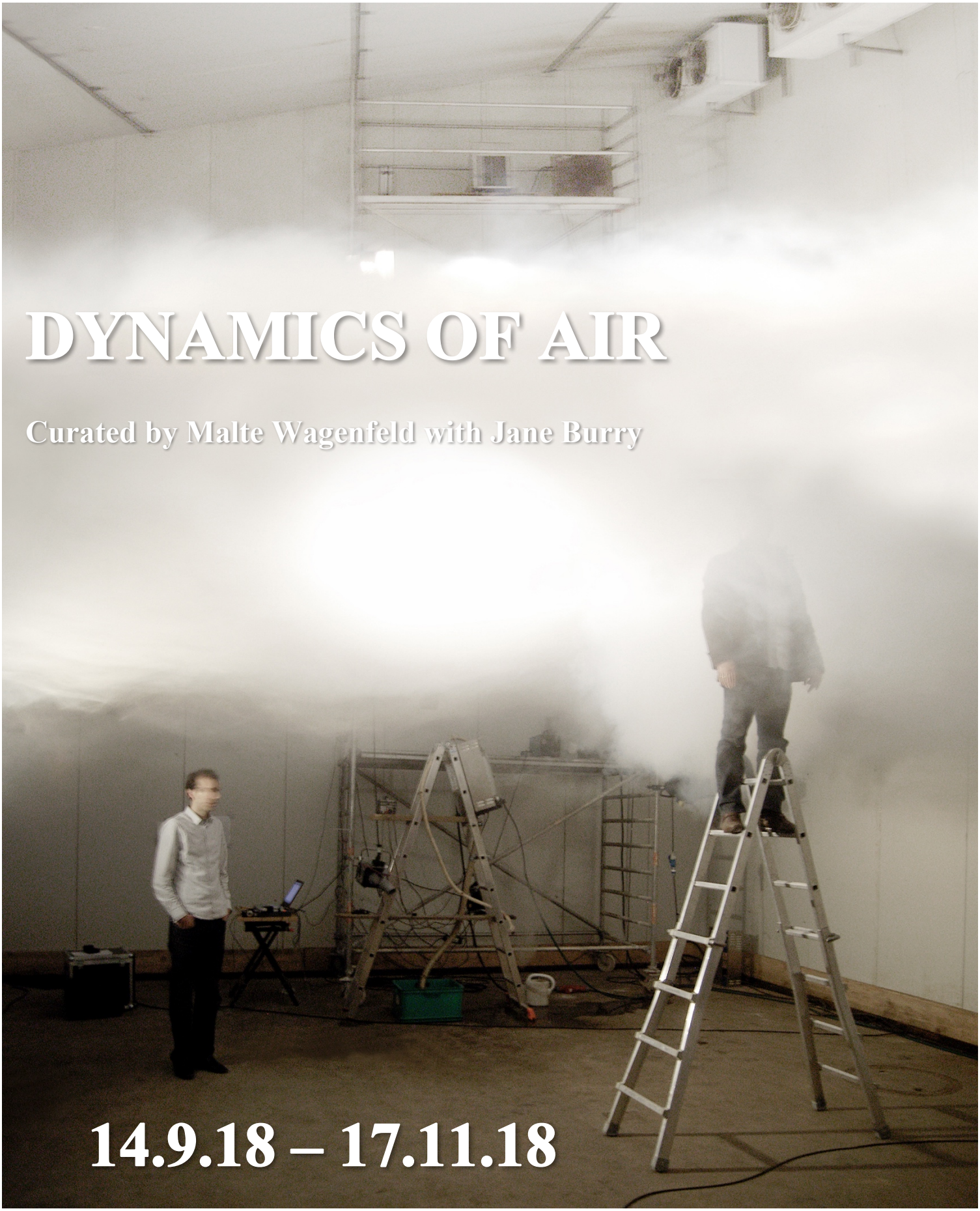
RMIT UNIVERSITY Gallery

GOETHE INSTITUT



DYNAMICS OF AIR

Curated by Malte Wagenfeld with Jane Burry

14.9.18 – 17.11.18

EDUCATION RESOURCE

Target audience: Upper secondary school level and tertiary students

Artists: Transsolar: Thomas Auer (Germany)**; Breathe Earth Collective:** Lisa Maria Enzenhofer, Markus Jeschaunig, Bernhard König (Austria); Friedrich von Borries (Germany); **CITA:** Phil Ayres (England), Danica Pistekova (Slovakia), Maria Teudt (Denmark), Petras Vestartas (Lithuania); Chris Cottrell (New Zealand); Edith Kollath (Germany); Mikael Mikael (Germany); **Philippe Rahm Architects** (France / Switzerland); Enric Ruiz-Geli (Spain); **Little Wonder:** Gyungju Chyon (Korea), John Sadar (Canada); **From Australia:** Jane Burry, Helen Dilkes, Leslie Eastman, Natasha Johns-Messenger, Mehrnoush Latifi, Phred Petersen, Daniel Prohasky, Cameron Robbins, Malte Wagenfeld, Simon Watkins.

Curators: Malte Wagenfeld and Jane Burry

Education resource authors: Evelyn Tsitas and Christine Gjelstrup

The material in this resource is designed to provide a deeper understanding of the exhibition Dynamics of Air, and is to be used in conjunction with other resources generated by RMIT Gallery for the exhibition – the exhibition catalogue, didactic labels, artworks, videos, podcasts and virtual tour.

INTRODUCTION

About the exhibit

Dynamics of Air is a new exhibition showcasing specially commissioned works by designers, creative practitioners and engineers that captures the beauty, dynamics and sensuality of air in our built environment and its critical role in designing for a zero carbon future. The exhibition explores radical innovations for creative sustainability in design and the built environment, and brings together leading local and international artists and designers.

About the curator

Dr Malte Wagenfeld is Senior Lecturer of Industrial Design at RMIT University as well as a researcher and practicing industrial designer whose explorative designs and texts have been internationally exhibited, distributed and published. In addition to the design of furniture, products and appliances, he investigates how to design the 'immaterial', such as interior climates. The aim is to create healthier spatial environments for relaxed, productive, environmentally responsible surroundings.

Wagenfeld also recently completed a PhD entitled 'Aesthetics of Air'; a phenomenological investigation into sensual and perceptual atmospheric encounters (sound, light, air, breezes, smells, humidity and temperature). The projects, experiments and installations that resulted from this research have been widely exhibited and published.

Professor Jane Burry is the Dean of the School of Design in the Faculty of Health Arts and Design at Swinburne University of Technology, formerly Professor and Director of the Spatial Information Architecture Laboratory (SIAL) at RMIT University. Jane's research focuses on mathematics and computing in contemporary design. She has practiced, taught, supervised and researched internationally, including many architectural projects.

About RMIT Gallery

RMIT Gallery is the University's premier exhibition space. It presents an engaging and thought provoking program of exhibitions and events; featuring emerging and established Australian and international artists working across visual art, new media, sonic art, design, fashion, technology and popular culture. RMIT Gallery is committed to showcasing RMIT research outcomes and cultural stories, and to presenting exhibitions and events that are relevant to the student population and experience.

About the Goethe-Institut

Goethe-Institut is the Federal Republic of Germany's cultural institute, active worldwide. It promotes the study of German abroad and encourages international cultural exchange.

Since 1997, RMIT Gallery has teamed with the Goethe-Institut to present 24 touring exhibitions, including a survey of Gerhard Richter (https://rmitgallery.com/exhibitions/gerhard-richter-survey/), drawings by Klaus Rinke (https://rmitgallery.com/exhibitions/klaus-rinke/) and the popular 2017 exhibition Fast Fashion: The dark side of fashion (https://rmitgallery.com/exhibitions/fast-fashion/).

About curating

Lighting:

We use ERCO gallery track lighting which is a flexible lighting system that allows us to add and remove lights, manipulate their positions and strengths.

https://www.erco.com/products/indoor/track-system/erco-track-104/en/

OH&S issues:

RMIT Gallery encounters OH&S issues, but they vary depending on the exhibition and the environments. Our priority lies with the safety of the artworks and the visitors. We ensure that exhibition spaces are accessible for large groups, wheelchair users and prams; monitor low lighting levels for people with low vision, and ensure the floors are stable and dry. Some contemporary artworks have particular challenges involved, like strobe lighting, water or heat.

Conservation and Preservation:

RMIT Gallery works to international museum standards of best practice. All our artworks are stored in specially designed artwork storage spaces and are handled by trained technicians. If an artwork needs repairs or conservation, we will send it to a conservation specialist.

https://commercial.unimelb.edu.au/gccmc-conservation-services

Promotion of exhibitions:

RMIT Gallery utilises owned, earned, bought and shared media across all platforms – print/ digital/online.

Owned – our own rmitgallery.com website; RMIT Gallery university website; RMIT Gallery, YouTube Channel, RMIT Gallery soundcloud; EDMs (Electronic Direct Mailouts)

Earned – response from media via sending out media releases, approach to media and reviewers

Bought – paid advertising in art magazines, online listings, radio ads

Shared media – active in social media: Instagram/Facebook/Twitter/LinkedIn

Temperature, humidity and pest control:

RMIT Gallery maintains the gallery environment at a temperature between 18-22'C. A stable temperature is very important to maintaining the condition of artworks, particularly if the works are old or in a fragile condition.

We also have IPMS (Integrated Pest Management Systems) that monitors pests and hygrothermagraphs monitoring the relative humidity of the gallery spaces.

Transportation of art works:

We use specialist artwork transport companies to transport artworks, whether that be locally, nationally or internationally. By using specialist freight companies, we are ensured that our artworks will be cared for. These companies use humidity controlled trucks, have qualified art handlers as staff, and take extra special care of the cargo.

International Art Services: https://www.iasdas.com.au/

Artwork Transport: https://www.artworktransport.com.au/

King and Wilson Essential Art Services: https://art.kingandwilson.com.au/

Storage of art works:

Artworks are wrapped in specialist materials (tyvek, glassine, bubble wrap) and stored so that we can rest assured that their condition is stable. Our collections storage sites are temperature controlled; the 2D works are hung on storage racks and 3D works are usually stored in crates.

AIR AS SUBJECT

The invisible element essential for life – air. That is the inspiration behind the exhibition Dynamics of Air at RMIT Gallery, and curator Malte Wagenfeld has been investigating air and design over a long period. Wagenfeld explores its experiential qualities and microclimates; he investigates how these can be manipulated as 'design material' to create healthier, liveable and engaging spatial environments for relaxed, productive and environmentally responsible habitation. Within this exhibition audiences will be able to 'feel' and experience different environments and be challenged through the very act of breathing. All while encountering different concepts and visualisations of this invisible medium.

Exploring Air:

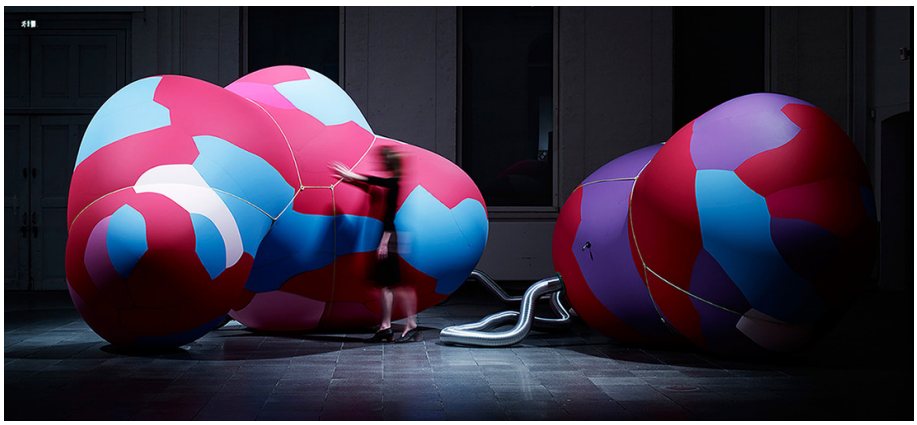
→As air is invisible, we take it for granted until something goes wrong. It's only when pollution clogs the atmosphere, smog obscures the horizon and people struggle physically during cold snaps and heat waves that we focus on what we can't see.

→ The space around us as we sit at a desk, sprawl on the couch or lie in bed — has a life of its own. We might not see it, but this space is a complex eco-system. Think of the muggy, steamy bathroom after a hot shower and how you have to wipe the mirror clean of condensation, or your warm breath visibly escaping as vapour on a winter's morning. *"We are all air dwellers and air makers,"* explains curator Jane Burry. *"Every individual has an impact on the environment, simply from the act of breathing."*

→ When investigating the nature of something as seemingly unremarkable as a breeze, we discover that it is always changing direction and intensity, it is unpredictable and aperiodic. But most surprisingly, it is incredibly localised. A simple observational experiment will reveal this: study the leaves on a tree and you will find one leaf that is flittering in the breeze whilst its immediate neighbour might be entirely still.

→ Referring to Danish science author Tor Nørretrander who said: "*When you take a breath, you touch a part of the planet, with the inside of your body"* it is becoming even more clear how our bodies, lungs, skins, senses and emotions are in continuous exchange with the ecosphere.

→ Artist Phred Petersen points out that the technique of Schlieren photography, which he applies in his work, "*allows us to see things that are transparent and normally pass us by completely because our eye doesn't pick it up. When you add high speed imaging on top of that, it allows us to dissect vents that happen too fast for us to perceive in a normal timeframe."*



CURATING AIR

"As designers, how do we design to investigate climate change and use less energy and resources whilst simultaneously creating more pleasurable and healthy interior environments? How can we communicate this to audiences and encourage them to think about how we are going to be living in a changing climate?" These are some of the questions that curator Malte Wagenfeld wants to highlight with the Dynamics of Air exhibition.

Wagenfeld says that audiences will be able to 'feel' and experience different environments relating to cities heating up because of climate change, and plunge themselves into momentary 'thermal shock' going from air conditioned to hot environments.

The exhibition will allow audiences to engage with the interface of air, lived space and architecture. They will be able to move through experiential environments and atmospheres, interact with inflatable structures, and experience microturbulence. Helping audiences visualise the invisible will be achieved through works that utilise augmented reality to allow people to feel and sense the environment.

Exploring the Works

→ As part of the exhibition, there will be an experiential environment in the gallery that simulates the type of microclimatic perceptual experiences that might be encountered in outside environments — such as a park, a forest, the beach, or a combination of such settings. But there are many challenges in creating such an environment inside a gallery. Firstly, the gallery as a building needs to be fully air-conditioned, so the installation must work with this reality, harvesting the cool dry air to power part of the system. Heat-pumps, UV lamps, misters, humidifiers and fans all controlled by microprocessors and specially coded algorithms will form part of the magic.

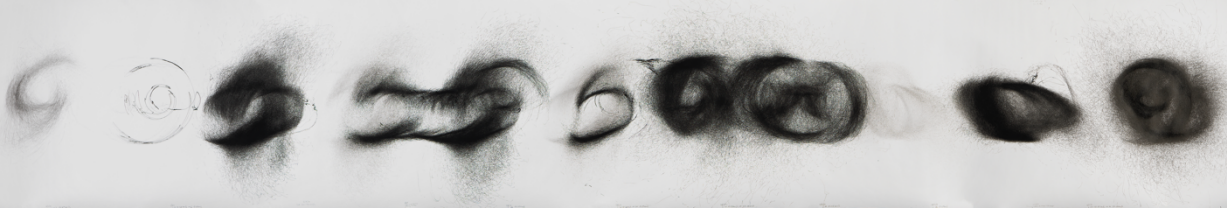
→ The Breathe Earth Collective are building a climatic installation, inspired by the 'Gradierwerk' tower typologies. The installation investigates the evaporation processes and the conditioning of air with natural essences and aerosols. Visitors are invited to smell, experience and inhale the breathable saline aerosols and ethereal oils. The installation aims at contributing to a critical debate on how the quality of air impacts our health, as well as highlighting the potentials of reinventing low-tech air conditioning prototypes in the context of current planetary challenges like climate change and air pollution.

→For Dynamics of Air, Daniel Prohasky presents a wind tunnel along with what he calls a pulsometer — a machine that translates thermal comfort into quantifiable metrics for implementation in architectural design. At its most basic, thermal comfort is the degree to which people may feel comfortable in ventilated environments, and not comfortable in stagnant environments. Prohasky aims to create environments that feel natural, hence his interest in the physiological resonance of transient airflow.

→Simon Watkins enhances drones through biomimicry — design modelled on biological entities and processes — so they can better cope with instabilities in air turbulence. During the exhibition, Watkins will demonstrate these principles by flying a drone through RMIT Gallery at public events, as well as exhibiting state-of-the-art modelling of air turbulence around buildings, using Computational Fluid Dynamics.

→ Berlin based artist, Edith Kollath will exhibit four works. In 'Nothing Will Ever be the Same', a delicate almost transparent sheet will gently fall from the ceiling only to be resurrected and then fall again. In 'Limits of Breath', five videos play simultaneously, with five people passing breath to each other, visualised through exploding blown glass bubbles which are inhaled and exhaled. 'Wandering Breath' and 'Breath Exchanger' explore the shared medium of air through breath, its intimacy and preciousness. The works will invite audience members to exchange breath through a specially built glass instrument that enables air to be shared whilst filtering out all germs, bacteria and viruses; further highlighting the intimacy of sharing the invisible medium of air with others.

→ For Dynamics of Air, Cameron Robbins will exhibit his wind drawings, accompanied by a video of the wind machines in action, capturing a symphony of scratching and winding rhythms.



GLOSSARY OF TERMS

Acoustic reverberation: The collection of reflected sounds from the surfaces in an enclosure like an auditorium. In outdoor spaces there is an absence of acoustic reverberation which is always present indoors.

Air turbulence: When the wind flow changes from smooth to rough, there can occur air turbulence, a phenomenon you may experience when flying on an airplane. The complex dynamics of air turbulence are essentially unpredictable and are caused due to different interferences.

Augmented reality: Technology that overlays information and virtual objects on real-world scenes in real-time. It uses the existing environment and adds information to make a new artificial environment, which can allow people to feel and sense the environments.

Biological sensory systems: The sensory system detects signals from the outside environment and communicates it to the body via the nervous system. Birds such as Kestrels can sense flow disturbances in the air through biological sensory systems, and this allows them to hover in the air with pinpoint accuracy.

Biomimicry: The design and production of materials, structures and systems that are modelled on biological entities and processes. Biomimicry is an approach to innovation that seeks sustainable solutions to human challenges by applying nature's time-tested strategies.

Carbon footprint: The amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

Climate-responsive design: A method of design that is aimed at creating buildings that function in lockstep with the local climate, not in spite of it. It is simple in concept but more complex in execution. The goal is to create structures that have less impact on the natural environment and reduce buildings reliance on artificial energy.

Cloud atlas: Atlas that provides information on the areas of development, formation speeds, morphogenesis and movements of clouds.

Eco-system: Includes all of the living things (plants, animals and organisms) in a given area, interacting with each other, and also with their non-living environments (weather, earth, sun, soil, climate, atmosphere). Ecosystems determine the health of the entire earth system.

Ethereal oils: Also known as essential oils, ethereal oils are essential in the sense that they carry a distinctive scent, or essence, of the plant from which they originate.

Gradierwerk tower typologies: These have been used in the 17th – 19th century for salt production by removing water from the saltwater through evaporation. Later the evaporating effects of this process have gained importance for its beneficial health effects and treating people with lung disorders, similar like breathing the salty air at the seaside and a number of these Gradierwerk Towers are still being used today for this purpose.

Micro air vehicles (MAV): The term micro air vehicle (MAV) refers to a new type of remotely controlled aircraft (UAV) that is significantly smaller than similar aircraft's, obtainable by using state

of the art technology. Potential military use is one of the driving factors, although MAVs are also being used commercially and in scientific, police, and mapping applications.

Microclimate: The climate of a very small or restricted area, especially when this differs from the climate of the surrounding area. For example imagine experiencing a pocket of cool moist air under the shade of a tree before entering a patch of radiant warmth when you walk in to the sunlight.

Microturbulence: A form of turbulence that varies over small distance scales.

Morphogenesis: The biological process that causes an organism to develop its shape.

Pulsometer: A machine that translates thermal comfort into quantifiable metrics for implementation in architectural design.

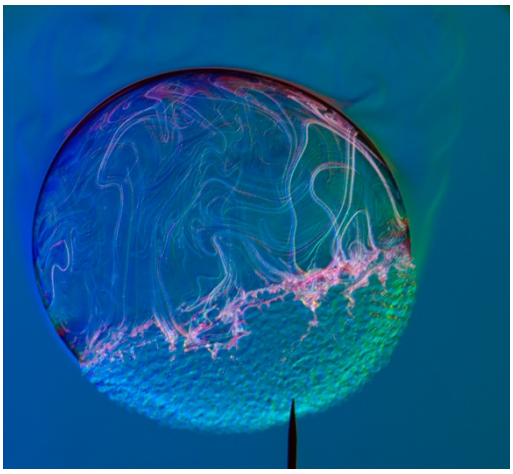
Schlieren photography: A highly technical visual process invented in 1864 by German physicist, August Toepler, to study supersonic motion. It involves two optically matched parabolic mirrors to create photographs and videos which reveal invisible changes in air. Schlieren photography allows us to see things that are transparent and normally pass us by completely because our eye doesn't pick it up.

Thermal comfort: The degree to which people may feel comfortable in ventilated environments, and not comfortable in stagnant environments.

Thermal shock: A sudden temperature fluctuation causing stress in an object or substance.

UN-Mahac: Dr Friedrich Von Borrie's 'Dynamics of Air' project, which he describes as a secret institution of the United Nations. UN-Mahac stands for 'United Nations Management and Harvesting of Clouds' and was founded in the 1950s. The institution was supposed to investigate how the weather can be regulated and controlled, on a global scale, but while the original idea was to avoid catastrophic droughts, many heads of states may have had less noble objectives, as the manipulation of the weather can also be used as a weapon in times of conflict.

Wind drawing: A wind-powered mechanical instrument transcribes weather patterns onto paper creating wind drawings. The drawings are accompanied by a video of the wind machines in action, capturing a symphony of scratching and winding rhythms.



ARTIST SUMMARIES

Thomas Auer is partner and managing director of Transsolar and professor for Building Technology and Climate Responsive Design at the TU Munich. He has developed concepts for buildings and districts noted for their innovative strategies, collaborating with world renowned architecture firms on numerous international design projects around the world.

Dr Friedrich Von Borries and Mikael Mikael both explore the phenomenon of clouds. Von Borries is an architect and professor of Design Theory at the Hochschule für bildende Künste (HFBK) in Hamburg, Germany, and he operates between the blurring boundaries of urban planning, architecture, design and art. The focus of his work is the relation of design practice and socio-political development.

Mikael Mikael on the other hand is his alter ego and works as an artist. He lives everywhere and nowhere, but at the moment probably in Berlin. Mikael Mikael works independently of media and material. To document his interferences he makes use of objects, film, and photography.

Edith Kollath works as a multimedia artist on questions of the visualisation of uncertain states and their social and theoretical contexts. In 2009, she graduated from University of Fine Arts in Hamburg, where she received a MFA in Time Related Media and Sculpture. During a three year stay in New York, USA from 2006– 2009, she was an active member of the hacker collective NYC Resistor and realised a number of exhibitions and projects. Since then, her installations, objects and works on paper have been exhibited in Germany and internationally. Since 2015, Edith has been a PhD candidate at the Bauhaus University Weimar.

Breathe Earth Collective is a group founded in 2015 by Karlheinz Boiger, Lisa Maria Enzenhofer, Andreas Goritschnig, Markus Jeschaunig and Bernhard König after their successful contribution to the Expo in Milan. The collective develops new ways of dealing with interrelations of architecture, natural ecosystems, air and climate, and they are currently working on the landscape architectural design for the new headquarters of the Czech forestry administration, a building that unites forest and architecture. Furthermore, the group has developed a series of small-scale typologies of climate pavilions, called 'Airships', to research the potentials of tackling air pollution and providing natural cooling in urban spaces within 1:1 prototypes.

Daniel Prohasky is a design engineer with a diverse background in architecture, civil and aerospace engineering. His current doctoral research focusses on the human perception of the dynamics of air. He has published widely and taught at multiple international workshops in Barcelona, Sweden and Hong Kong with SIAL (Spatial Information Architecture Laboratory).

Mehrnoush Latifi is an architect who completed her PhD at RMIT University in 2017. Her doctoral research has a multi-disciplinary focus exploring innovative design and her work is focused on the environmental impacts of design and patterns of microclimates. Latifi's goal is to produce more naturally simulating and thermally comfortable environments through the design of surfaces.

Simon Watkins is a professor at RMIT and his expertise falls across aerodynamics, experimental fluid dynamics and turbulence. He is currently conducting research into MAVs (micro air vehicles) and at RMIT he is involved with many research projects in aerospace and automotive engineering.

Cameron Robbins is an Australian artist based in Castlemaine, Victoria. His work interacts with the elemental forces of the natural world. He is represented by MARS Gallery in Melbourne and in Kyneton, Victoria by Stockroom Gallery. His wind-drawing machine features as a permanent installation at Mona, where it will operate for up to a hundred years.

Phred Petersen is originally trained as a research chemist, and he specialises in applications of photography for scientific and industrial research. His research collaborations include the study of fuel sprays for green engine technology, behaviour of liquid metal alloys for microfluidic applications, flow visualisation for micro air vehicles, and human impact on environmental air quality.

Enric Ruiz-Geli is a highly awarded architect and innovator, and he runs Cloud9 Architecture studio in Barcelona. Enric believes architecture begins with thinking about particles, their energy and dynamics. Each project is treated as a new innovation. Cloud9's agenda is to look at PILOT Projects in global warming scenarios.

Philippe Rahm is an internationally renowned Swiss architect and principal in the office of Philippe Rahm architects, based in Paris, France. His work extends the field of architecture from the physiological to the meteorological.

Phil Ayres is a Professor of Architecture & Technology at the KADK, The Royal Danish Academy of Fine Arts. He gained his first degree in architecture from the University of Greenwich in 1995 and in 1998 he received his Diploma from the Bartlett School of Architecture, after which he was promptly employed as a research assistant. A self-taught computer programmer, skilled machinist and maker, he embraces the increasingly complementary worlds of the digital and the analogue. The installation Phil Ayres will be exhibiting for 'Dynamics of Air" is a collaborative project created by CITA (Centre for Information Technology and Architecture) which also includes artists Petras Vestartas, Danica Pistekova, and Maria Teudt.

Little Wonder is the design studio of Gyungju Chyon & John Sadar. Currently they are both Associate Professors at Parsons New School of Design, NYC. Little Wonder challenges the status-quo by creating new experiences and relationships between humans, artefacts, and environments through engaging natural phenomena, new materials and processes, and sensorial experiences.

Natasha Johns-Messenger is an Australian artist and filmmaker, and she holds a MFA from Columbia University NY. Currently she lives and works in both NYC and Melbourne. Known for her large scale installations, Johns-Messenger re-molds existing structures into new simulated environments, and often her work is a process of imitation, illusion and trickery, inviting a new optical deception between the eye and mind. By examining the tensions between sensory and unconscious realities, Johns- Messenger creates a virtual and physiological bodily experience.

Leslie Eastman is a senior lecturer at Monash University and a graduate of Melbourne University and RMIT. He has held over twenty solo and collaborative exhibitions nationally, at venues such as ACCA, Linden and Experimenta, and internationally. His installation works utilise a range of media including lenses and light, large scale mirrors, drawing and video to explore the deceptively simple fact of our presence in and perception of the world. The work explores the issue of the subject and its enigmatic relationship to the unbounded environment.

Chris Cottrell is a practicing senior lecturer in Design at Monash University. As well as completing his PhD at RMIT, Chris also holds degrees in architecture from the University of Auckland and in fine art from the Edinburgh College of Art. He has exhibited extensively in New Zealand, Australia and the United Kingdom and held artist residencies in Piran, Slovenia, the Orkney Islands, Scotland and Fox Glacier, New Zealand. Cottrell operates across installation and performative art, architecture and interior design. His practice proposes Architectural Judo as a way of gently destabilising environments. He explores this 'gentle way' through working with buildings and interior spaces as events comprised of an ecology of relations that are always in formation.

Helen Dilkes is an artist and artistic researcher, who explores how artistic practice can articulate with Henri Bergson's philosophical concepts duration and multiplicity. Combining jewellery studio skills with digital techniques she investigates non-Euclidean (Riemannian) geometrical depictions of body, object, and space. Helen completed a PhD within the RMIT School of Art with practice-based research in 2016 and she has presented at conferences locally and internationally, and exhibited solo in Melbourne galleries, and in selected group shows in The Netherlands, Japan, and China.

IMAGE REFERENCES

- p.1: Transsolar, *Testing Cloudscapes*, 2018. Image courtesy of artist.
- p. 2: Malte Wagenfeld, *Aesthetics of Air,* 2011. Photograph by Mark Ashkanasy, RMIT Gallery.
- p. 5: CITA, *Inflated Restraint,* 2016. Image courtesy of artist.
- p. 6: Simon Oberhofer, *Breathe Austria 02,* 2015. Image courtesy of artist.
- p. 7 (image 1): Cameron Robbins, *21 February – 4 March 2014, Crocodile, 11 days,* 2014. Pigment ink on paper, 75,5 x 50,90 cm. Photograph by Remi Chauvin, Museum of Old and New Art Tasmania.
- p. 7 (image 2): Edith Kollath, *addressable volume,* 2018. Courtesy of the artist and the Goethe-Institut
- p. 9 (image 1): Phred Petersen, *Bubble,* 2009. Image courtesy of the artist.
- p. 9 (image 2): Phred Petersen, *HD 11 Match,* 2011. Image courtesy of the artist.

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