



# MATTER SCAPES. A STUDIO VISIT

Progress  
Presentations  
Doctoral Program  
»Matters  
of Activity«

June  
2023

# Program

11:00 matterscapes – Introduction

**repair, restore, regenerate**

Moderation: Léa Peraudin

11:15 Emma Sicher

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11:30 Rasa Weber

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11:45 Discussion

12:00 Rahel Kesselring

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12:15 Pelin Asa

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12:30 Discussion

12:45 Break

**adapt, transform, reevaluate**

Moderation: Bastian Beyer

13:30 Maxie Schneider

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13:45 Johanna Hehemeyer-Cürten

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14:00 Discussion

14:15 Anna Schaeffner

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14:30 Babette Marie Werner

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14:45 Discussion

15:00 Wrap up





RAHEL KESSELRING &  
BABETTE MARIE WERNER

# matterscapes

Why invent the neologism *matterscape* to assemble our diverse doctoral projects? The suffix *-scape*, which we borrowed from the word *landscape*, has already been used in other contexts, for instance in the notion of the *soundscape*<sup>[1]</sup>, coined by composer R. M. Schafer in the 1970s to describe the presence and interplay of sounds in a given environment. According to Karen Barad, *landscape* in Japanese means *hu-kai* – *wind-scape*. Thus, »landscape is always moving, trembling by wind.«<sup>[2]</sup>

In this sense, we understand *-scape* as an expression of spatial and temporal relationality. On the one hand, we refer to the processuality of the different materials that our doctoral projects are working with. On the other hand, we wish to emphasize the connectedness of our individual projects *within* certain spaces. Our doctoral theses all relate to matter embedded in a specific environment: In Panel 1 Emma Sicher investigates regenerative practices in mixed microbial niches containing bacterial cellulose, Rasa Weber uses design instruments to attune to an oceanic environment, Rahel Kesselring explores site-specific artistic practices within forest ecosystems, and Pelin Asa examines the reuse of insect-infested wood in human-modified forests. In Panel 2 Maxie Schneider researches architectural shape behavior in response to external climatic stimuli, Johanna Hehemeyer-Cürten probes harvesting techniques of bark in local environments, Anna Schaeffner studies the interaction of soft robots and their milieu through the process of deformation, and Babette Marie Werner analyzes the transformation of process-based works of art to digital matter within the given spaces of archives and museum exhibitions.

In another sense, the suffix *-scape* is synonymous to the more common word fragment *-ship*. Etymologically, it is connected to the German verb *schaffen*, which means to make, build and shape.<sup>[3]</sup> Understood in this way, *-scape* refers to the intertwinement of natural and artificial makings. Situated in these distinct »naturalcultural«<sup>[4]</sup> contexts, our doctoral projects explore material practices of reparation, restoration and regeneration (Panel 1) as well as practices of adaptation, transformation and revaluation (Panel 2) in design-research and the humanities in order to refine and expand existing practices and theories within our disciplines. By researching modes of activating and passivating matter in named contexts, this year's progress presentation is a studio visit to demonstrate and discuss our current research progress in one of the doctoral cohort's natural habitats – the studio on the 4th floor.



EMMA  
SICHER

MULTISPECIES MATTER  
A Transdisciplinary  
Investigation of  
Human-Plant-Microbe  
Cooperations with  
Bacterial Cellulose

Experimental Design

Weaving







Representative image showing bacterial pellicles with different textures and characteristics potentially provided by medicinal plant extracts, generation software: MidJourney, image creation support: @s.nich.ers

The emergent field of biodesign focuses on harnessing the capacity of microorganisms to promote regenerative material cultures that are essential for a ›post-Anthropocene‹ era. With the aim of expanding the scope of this field to currently underexplored edible and health-promoting materialities and applications, this research proposes the concept of »Multispecies Matter«.

Through transdisciplinary investigation, Emma's research focuses on SCOBY (Symbiotic Culture of Bacteria and Yeasts), a non-extractive source of fibers that is commonly used in the production of kombucha and nata de coco. Despite the extensive investigation of SCOBY in recent years, there are still several understudied aspects, including the use of plant-based matter combinations to produce ›enhanced-SCOBY‹ with unique properties and potentials. By exploring mixtures of discarded fruit and vegetable biomasses with extract of medicinal plants, SCOBY is proposed as a relational means carrying eco-social values aiming to promote circular production, regenerative health-promoting applications, and (re)connec-

tion with traditional knowledge. Enhanced-SCOBY prototypes are foreseen to be designed to provide nutritional, functional, and healing benefits for human bodies and their microbiomes.

The proposed research will involve ongoing collaboration with microbiologists, material scientists, and anthropologists, utilizing transdisciplinary methods. With the case of SCOBY, this doctoral project aims to demonstrate how »Multispecies Matter« could be an open-ended design formula that could adapt to many human-plant-microbe relationships fostering regenerative practices and resilience in different local milieus.

Emma Sicher investigates and designs with microorganisms. She has a background at the Faculty of Design and Art in Bolzano where she extensively researched bacterial cellulose. Projects she worked on have been exhibited at the Vitra Design Museum, V&A Dundee, maat, and ADI Design Museum. With a focus on materiality, edibility, eco-social and systemic dynamics, she investigates how microorganisms can contribute to local resilience. At Matters of Activity, she investigates human-plant-microbe relations interweaving design, microbiology, and cultural anthropology, supervised by Prof. Dr. Regine Hengge.



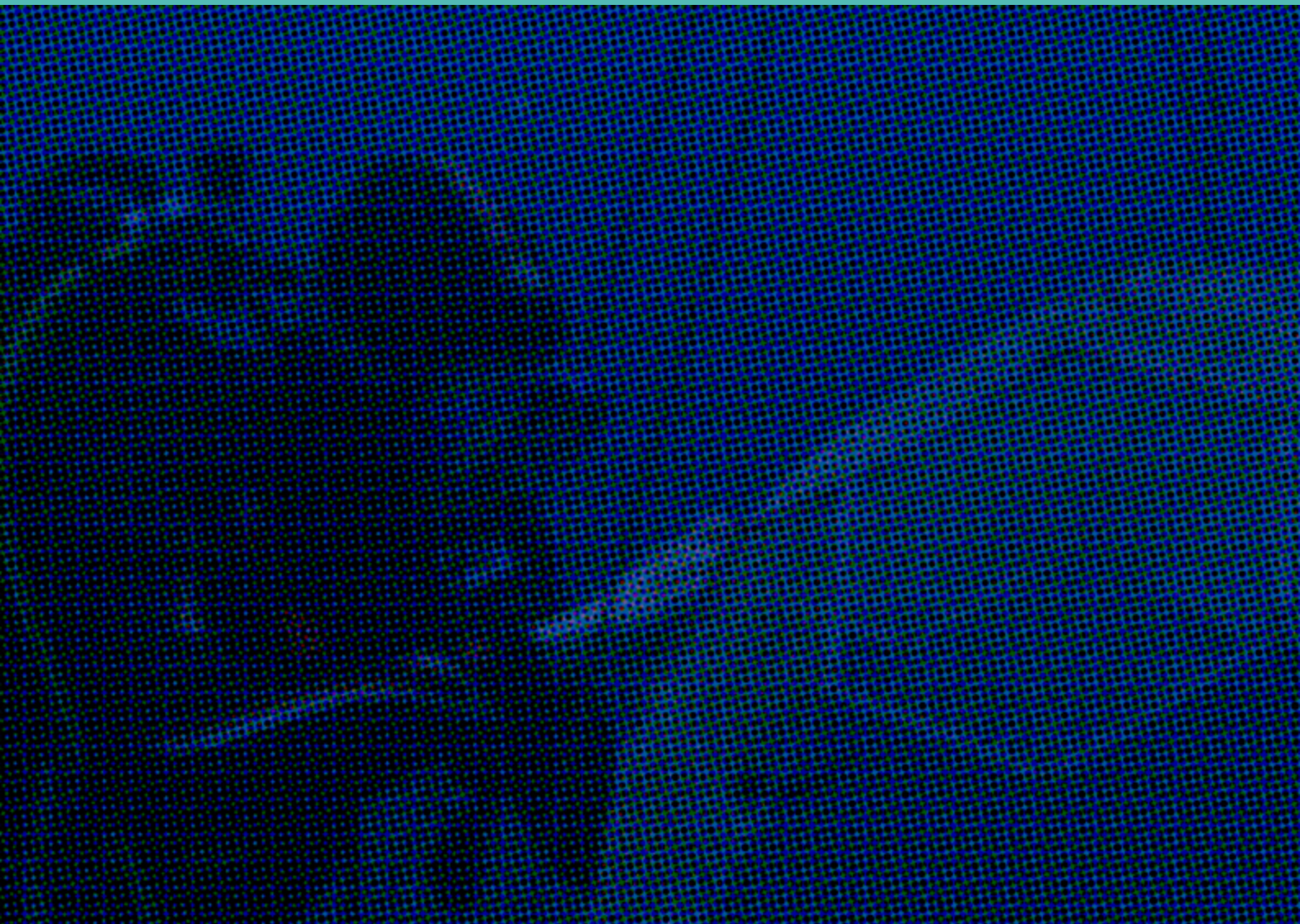
RASA  
WEBER

*Of Other Reefs*  
- Designing  
Marine  
Habitats in  
Aquatic Ruins

SYMBIOCEAN.  
Sympoïetic Design  
with/in troubled waters

Experimental Design

Material Form Function







Doctoral thesis SYMBIOCEAN, placing the prototype underwater, minus 3 meters. Divers: Noemi Chabrier, Mathieu Kelhetter, Rasa Weber, Anja Wegner. Place: STARESO - Station de Recherche Sous-Marines et Océanographiques, Corsica. Photo: Mathieu Kelhetter. Design: Rasa Weber, 2023

*»I argue against purism not because I want a devastated world, (...). I argue against purism because it is one bad but common approach to devastation in all its forms. It is a common approach for anyone who attempts to meet and control a complex situation that is fundamentally outside our control.«*  
- Alexis Shotwell, 2016

Migrating reefs, unprecedented species assemblages, neophytes, toxicities, pollutants, aquatic ruins - The future of coral reefs in the Anthropocene is likely to be different than anything we have ever seen so far. »Coral (...) fates«, as some marine scientists admit, »are not easy to define (...)«<sup>[5]</sup>.

While traditional voices in the discourse surrounding conservation and restoration techniques of coral reef habitats still advocate treating these »pristine« ecologies as if they were a »sick patient«<sup>[6]</sup>, a radically different perspective starts questioning the role of human control over these endangered ecologies. If we set aside the notion of natural purity<sup>[7]</sup> and adopt a much more humble and highly interconnected view on marine habitats, we might be able to look at reefs as transformative and sympoietic ecosystems<sup>[8]</sup> that lend themselves to thinking about »feral ecologies« in seascapes under anthropogenic impact.<sup>[9]</sup>

Evolutionary biologist Lynn Margulis notes that » (...) our self-inflated moral imperative to guide a wayward Earth or heal a sick planet is evidence of our immense capacity for self-delusion«.<sup>[10]</sup> This radical thought could have drastic consequences for our approach to managing and governing these endangered marine ecosystems. Some voices in biology currently start to embrace such a transformative approach to coral habitats when they suggest that we ask ourselves, »What needs to be managed, why, and how?«<sup>[11]</sup> When we design artificial reefs in an *AnthropOcean*<sup>[12]</sup> we are in the midst of the debate about how we envision living with/in the marine ruins of our own making.

Rasa Weber is a designer with a focus on bio-based materials and interdisciplinary research. She is a researcher at Zurich University of the Arts in the Interaction Design department and part of the doctoral cohort of Matters of Activity. In her thesis *SYMBIOCEAN* (supervised by Prof. Dr. Karmen Franinović, ZHdK and Prof. Dr. Karin Harrasser, University of the Arts Linz) she researches on the process of underwater mineral accretion and its sympoietic potential for the ecological formation of marine habitats. At the intersection of marine biology, anthropology, and design, she explores the notion of *Interspecies Architecture* with her practice-based and theoretical research on sympoietic design processes with human, animal, and microbial actors in the ocean.





Doctoral thesis SYMBIOCEAN, first scaled prototype of marine *Interspecies Arc hitecture*, on-land assembly. Place: STARESO - Station de Recherche Sous-Marines et Océanographiques, Corsica. Photo & Design: Rasa Weber, 2023



RAHEL  
KESSELRING

»One Big Green  
Thought«:  
Artistic Practices  
with Trees and  
Forests in an  
Anthropocene  
Environment

Cultural History and Theory  
& Scenography

Material Form Function







The film *Stalker* is set in a wasteland, in which deserted ruins are overgrown by proliferating forests. It stays ambivalent, whether this environment is a dystopian or utopian place. A. Tarkovsky, *Stalker*, UdSSR: Mosfilm, 1979.

»What was once labeled ›inanimate‹ became mortal.«<sup>[13]</sup> Set amidst anthropocene environments in which natural and cultural processes increasingly intertwine and living spaces, landscapes and ecosystems are hazarded, contemporary artistic practices engage with concepts of care, repair and regeneration to imagine livable futures »in damaged but still ongoing living worlds.«<sup>[14]</sup>

In her dissertation, Rahel investigates the medialization of plants, trees and forests in artistic settings and asks how contemporary aesthetics and material politics express and shape our concepts of our more-than-human environment. By examining various case studies from the field of contemporary art, the project aims to discuss arboreal politics, their medial modes of representation, and their underlying epistemologies. Against the background of discourses in plant studies, posthumanism and queer theory on the one hand and traditions of environmental artistic practices on the other hand, Rahel aims to analyze concepts of care and regeneration, time and relationality between humans and the environment, which are inherent in the case studies.

While artistic projects like *Atmospheric Forest* (Rasa Smite and Raitis Smits, 2020), or *Silva* (Marcus Maeder, 2021) conceptualize the »forest as cyborg«, which is acted upon like a »patient in intensive care«<sup>[15]</sup>, artistic works like *Variants* (Pierre Huyghe, 2022) and *After Yellow* (Uriel Orlow, 2022) aim to transform plant ecosystems into utopian spaces of *bewilderment*<sup>[16]</sup> and plant-human co-becoming. Thus, drawing on notions such as the *wild*<sup>[17]</sup>, *care*<sup>[18]</sup> and *spacetime mattering*<sup>[19]</sup> the doctoral project is aiming to explore and map different forms of contemporary environmental aesthetics.

Rahel Kesselring is a cultural researcher and scenographer with a focus on site-specific and experimental installational settings. She is a pre-doctoral researcher at the Department of Cultural History and Theory at Humboldt-Universität zu Berlin (supervised by Prof. Dr. Robert Stock) and part of the research project »Material Form Function«. Rahel studied Applied Theater Studies in Giessen and scenography in Basel and Vienna. She most recently worked as a research associate and lecturer at Zurich University of the Arts. As a scenographer she works in the field of performance and theater in various collaborations within a European context, i.a. for steirischen herbst, Frankfurter Positionen, Maerzmusik Berlin, Wien Modern, far° Festival Nyon and IMPLANTIEREN Festival Frankfurt, Ashkal Alwan Beirut, Mousonturm Frankfurt, Kaserne Basel and Gessnerallee Zurich.

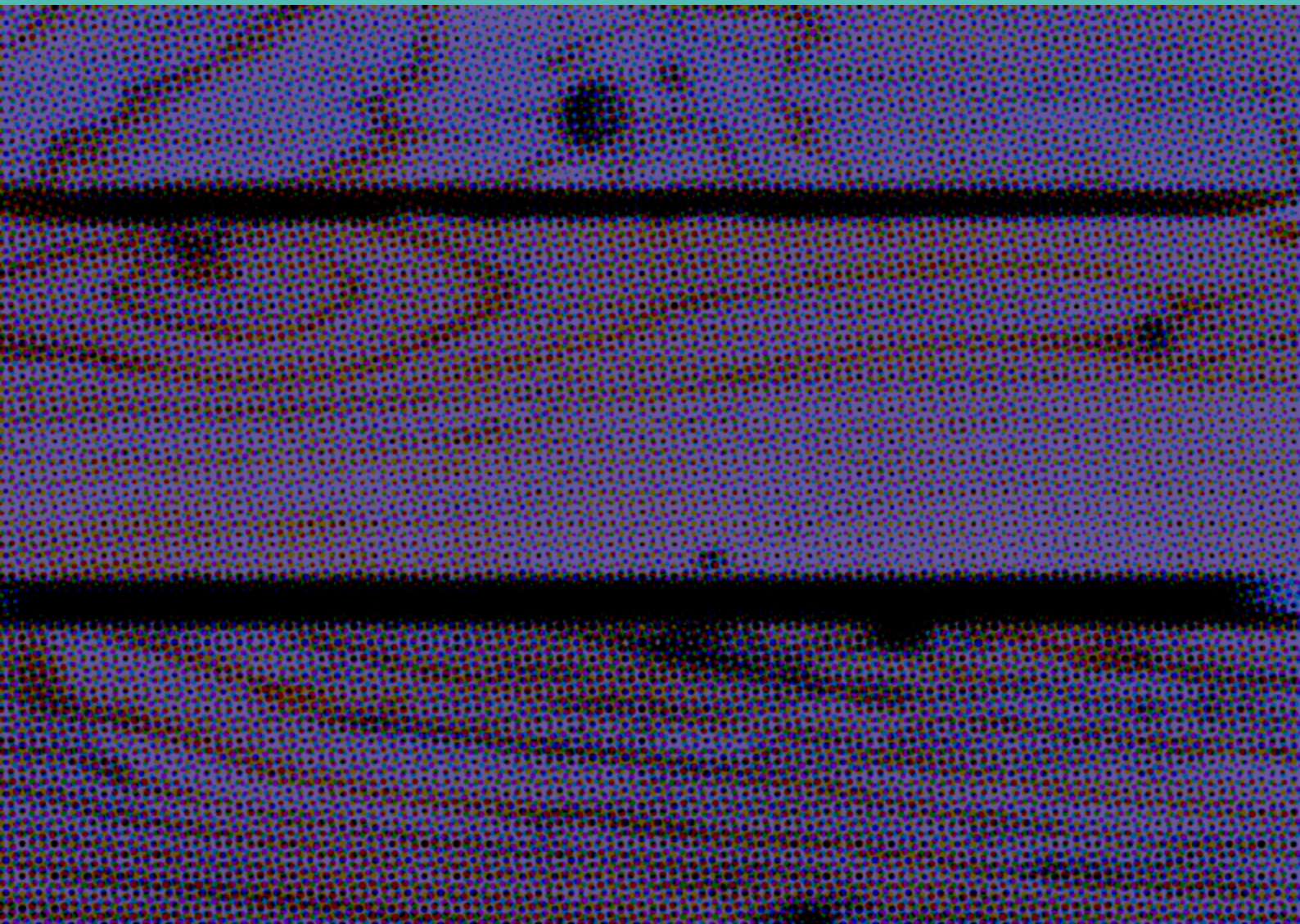


PELIN  
ASA

# Augmented Saw- mill: AR-assisted Fabrication for Building with Insect-damaged Timber

Architecture

Material Form Function





In 2022, out of the total timber logged in Germany, more than half was due to damage caused by insects such as bark beetles, which grow rapidly in increasingly hot and dry summers and affect spruce trees weakened by drought (Statistisches Bundesamt, 2023).

Despite its increasing quantity and strain on timber resources, infested wood is mostly burned or used for low-value applications due to a lack of studies on its properties and structural heterogeneities. With this transforming landscape, forestry practices are changing too to diversify the forests such as by planting more hardwood trees to which the sawmills will need to adapt to process. This research will analyze bark beetle-infested wood to compare its properties to clean wood and study its potential for new uses. This includes investigating design methods to reinforce low-grade wood and utilize it for structural applications. Focus will be on fabrication methods that can be applied locally and digital methods such as Augmented Reality will be explored to assist the sawmill operations to facilitate analysis and higher-value, less-waste use of insect-damaged timber and designing with an increasingly multi-species material stock with varied properties.



Insect-damaged wood, Pelin Asa, 2023

Pelin Asa studied civil engineering at Princeton University and completed her master's at the Integrative Technologies and Architectural Design Research program at the University of Stuttgart in 2022. As a pre-doctoral researcher in the project »Material Form Function« and at the Department of Biomaterials at the Max Planck Institute for Colloids and Interfaces, she works on reclaiming waste wood for structural applications and the integration of computational design and digital fabrication tools in reuse processes.



MAXIE  
SCHNEIDER

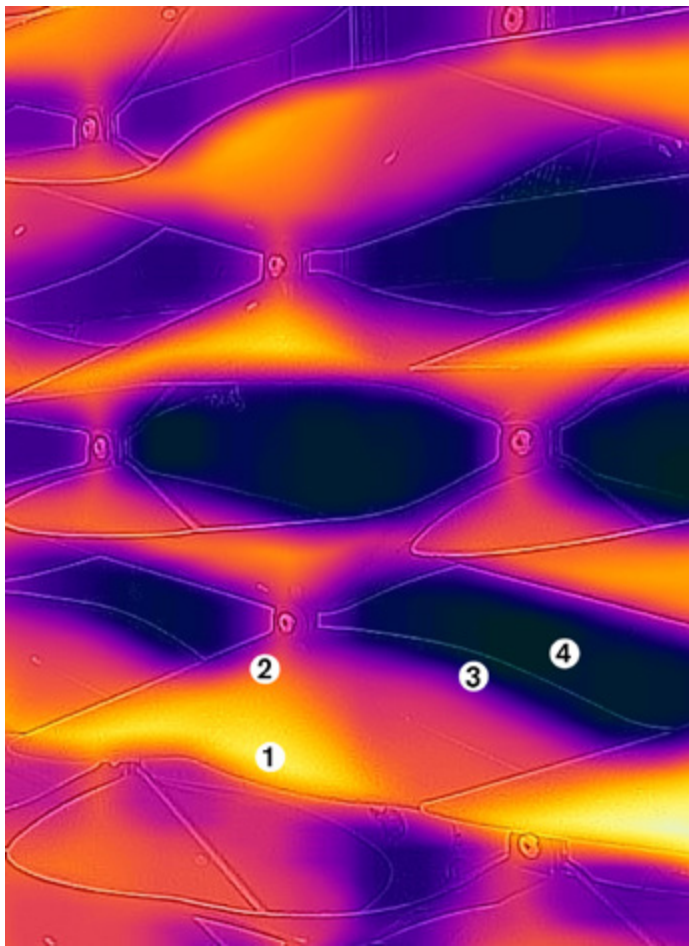
Polymorph  
Textility

Architecture & Design

Weaving & Material Form Function







Thermography shows the effect of shading and the influence of solar radiation on surface temperatures. Image: Maxie Schneider



Installation of *Adaptex Wave Shading System* at *GUTech Eco House* in Muscat. Photo: Maxie Schneider

The doctoral project *Polymorph Textility* explores material programming and shape behavior in response to external climatic stimuli in a practice-based research project. The aim is to elaborate a multi-scalar design method for self-forming textiles with shape memory alloy as a thermal actuator. Physical and computational experimentation with inherent material capabilities are relevant, and may therefore help to address the predominant limitations of building culture towards more integrated, adaptive, and sustainable climateisation strategies. With the development of a computer-aided design-to-fabrication framework, it is possible to introduce actuated hybrid membranes with dynamic elasticity through compliant bending and buckling and shape memory alloy. With a focus on design strategies for adaptive textile structures and the functionalization of softness in architecture, Maxie's research investigates reciprocal relationships between material and morphology. The project takes a cross-institutional approach and aims toward an interdisciplinary research methodology that incorporates knowledge from textile research and materials science.

Maxie Schneider is an architectural design researcher and currently a research associate at the Max Planck Institute for Colloids and Interfaces. Her work combines physical and digital prototyping to develop textile building techniques and fibre-based material systems. Between 2017 and 2023 she has been investigating adaptive facades through the integration of smart materials within the RnD project *ADAPTEX* at the weißensee school of art and design berlin, department of textile and material design. With the project *Polymorph Textility* she continues her practice based research on adaptive textile structures and morphologies of softness and elasticity as part of the PhD program at TU Berlin (supervised by Prof. Dr. Ignacio Borrego) and the Cluster Matters of Activity (supervised by Prof. Christiane Sauer).

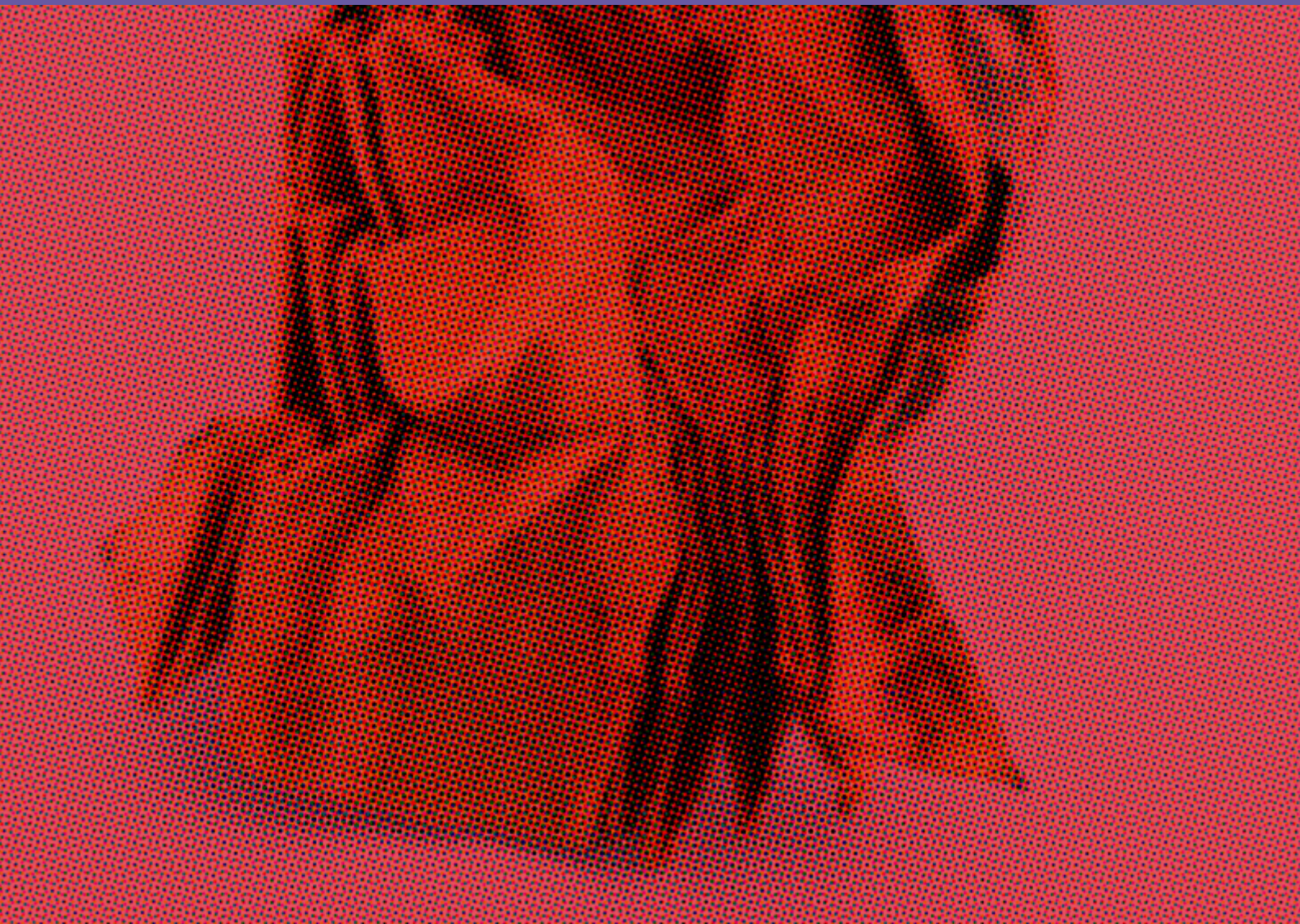


JOHANNA  
HEHEMEYER-  
CÜRTE

# Revaluation of Tree Bark

Fashion & Textile Design

Material Form Function





*Revaluating Tree Bark* is a practice-based research project that aims to increase the value of bark. By studying its material properties and translating material scientific findings into artistic experimentation, Johanna is developing sustainable design and application scenarios.

Bark has been known as a material for thousands of years. Stone tools for treating bark have been found in China dating back to around 7898 BC.<sup>[20]</sup>

In addition to its use, the importance and value of tree bark has changed throughout history. For example, the Celts (800 BC–1 AD) used hats made of birch bark probably similar to a crown as a status symbol.<sup>[21]</sup> Today, as a by-product of the wood industry, large quantities of bark are burned, causing high CO2 emissions. Considering the current ecological crisis and the growing demand for renewable materials, a multi-stage, sustainable use and the development of high-quality bark products seems desirable.

The research project focuses on techniques and concepts of folding and weaving that are studied in a combination of basic research and design. This includes analysis of the chemical and structural composition of pine bark as well as investigations on material processing and form finding.



Pleated Pine Bark.  
Photos: Johanna Hehemeyer-Cürten

Johanna Hehemeyer-Cürten is a fashion- and material designer with a strong interest in biomaterials and material innovation. She studied at the Maastricht Institute of Arts and the weissensee school of art and design Berlin. As a pre-doctoral researcher in the project »Material Form Function« and in the research group »Adaptive Fibrous Materials« at the Max Planck Institute for Colloids and Interfaces, she develops sustainable design strategies for tree bark using weaving- and folding techniques.





Pleated Pine Bark.  
Photo: Johanna Hehemeyer-Cürten



ANNA  
SCHAEFFNER

For a Design  
of Deformation

Product Design

Filtering & Cutting







Pneumatic membrane as sensitive skin for a UR5. Photo: Anna Schaeffner

Based on the development of soft robotics, how to elaborate new interaction modalities of robotic objects that no longer relying on a programmatic logic of giving form, but on the principle of deformation, aiming at a improved adaptation of material, movement and expression of these objects towards their environments? Anna's thesis seeks to lay the foundations for a design of deformation.

If many objects are the result of a process of material deformation; - folding, thermoforming, stamping, etc. -, how can we think of deformation not as a result, but as a variable and dynamic process constitutive of these objects and their capacity of adaptation? How can we give to appreciate the deformation, as a process of dynamic transformation that we give to experience? By paying particular attention to the way in which the act of setting objects in motion, we see how their animation can cause emotion in the humans facing them.

This research project, through and for design, aims to define the conditions under which such objects can call upon deformation as means of adaptation and action, as much as expression. In contrast to programmatic (planning) logics that are too dominating and not well adapted to material experimentation, the design approach imple-

mented here aims to integrate other logics, other modes of thinking and acting that are closely embodied in the German word *Gestaltung*. This iterative process of giving form seems to offer new qualities of interaction between humans, objects and material. Its implementation in the specific field of soft robotic objects requires modes of creation through practical experimentation with active and reactive flexible materials in order to make the aesthetics of deformation perceptible and tangible in their plastic, symbolic and technical power, becoming a question of cooperating with the powers of matter and revealing their agency. Deformation allows the elaboration of objects (technical apparatus) that develop their own sensitivity towards the environment and the living - a way of questioning, in act, anthropocentrism by offering a power of action to objects, through deformation.

Anna Schaeffner is a pre-doctoral researcher within the project »Filtering«, and a practice-based doctoral candidate in the SACRe doctoral program at École Nationale Supérieure des Arts Décoratifs in Paris. Her research focuses on soft robotics, and the design of deformation as a vector of movement, as a capacity for dynamic material adaptation and expressiveness. Through the practice of design, she explores hybrid forms of interacting, advancing the relation between robotic objects and their environments.



**BABETTE  
MARIE WERNER**

**Strategies of  
(Re-)Staging  
Process-Based  
Art by Otto Piene  
within the  
Context of the  
1960s**

Art & Visual History

Object Space Agency

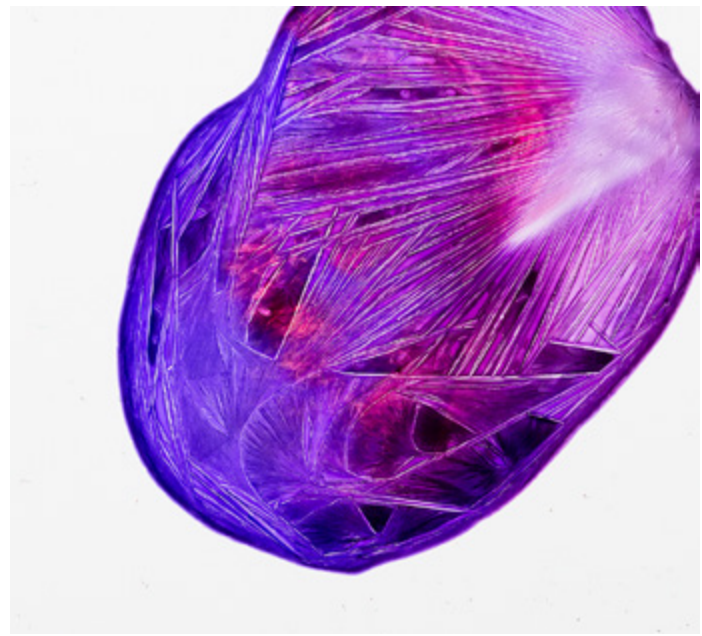






Otto Piene, *The Proliferation of the Sun*, 1964/2014, first digital (re-) staging at Neue Nationalgalerie, Berlin, 2014, 7-channel video installation based on 1,200 digitized glass slides, div. textiles, sound, 25'. Photo: David von Becker

In her thesis Babette explores the notion of an ecological aesthetic at the intersection of art and visual history, conservation and media studies. It focuses on artist Otto Piene, who experimented with natural phenomena, light and slide installations. Two of Piene's early performative and kinetic slide installations from the 1960s are selected as main examples. In the hybrid performance and installation, *The Proliferation of the Sun* (1964/2014), hand-painted glass slides are the main component of the immersive work. For the installation *Light ballet "Hommage à New York"* (1966/2016), colored glass slides are used selectively alongside diapositives. Both works, which belong to Piene's typology of the light ballet, are not only entangled through the use of similar materials such as hand-painted glass slides, carousel projectors, sound, diverse textiles and kinetic light elements. Furthermore, due to conservation regulations, the original slides can no longer be activated. In view of their (re-)stagings in 2014 and 2016, the fragile slides were therefore elaborately reproduced in analog and digital form. Combined with other factors, these media transfers led to two different outcomes of display and (re-)experience.



Otto Piene, *The Proliferation of the Sun*, 1964/2014, digitized glass slide. Photo: Michael Wesely

By researching process-based and inter-media works of art at the intersection of technology and ecology from the late 1950s until today as well as their (re-)stagings at the beginning of the 21st Century in analog and virtual spaces, Babette not only seeks to close research gaps in Piene's work. The project offers an urgently needed contribution to the media-reflexive digitization of process-based art and its potential for sustainable archival and curatorial practices.<sup>[22]</sup> The framework for this is the notion that »(re-)staging«, understood as an extended sculptural genre, can be made usable at the interplay between memory and imagination – as an archival strategy, and as a method of exhibition practice.<sup>[23]</sup>

Babette's thesis is supervised by Prof. Dr. Claudia Blümle, Institute of Art and Visual History at Humboldt-Universität zu Berlin and Prof. Dr. Stefan Neuner, University of the Arts Berlin.

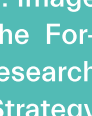
The art and visual historian Babette Marie Werner explores interdisciplinary approaches dealing with time, space and transformation at the intersection of art, ecology and technology. Babette researches on aesthetic links between visual interpretations of natural phenomena and social discourses and seeks to contribute to a genealogy of an ecological aesthetic. She works as a curator and researcher and develops exhibitions in the field of visual and performing arts for international art institutions, including *Otto Piene. More Sky* for Neue Nationalgalerie – Staatliche Museen zu Berlin in 2014.



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The authors acknowledge the support of the Cluster of Excellence »Matters of Activity. Image Space Material« funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) under Germany's Excellence Strategy – EXC 2025 – 390648296.

A special thanks goes to the supervisors of all doctoral projects for their strong support.

Cover image: Generation software: MidJourney  
Credits: @s.nich.ers

Project Coordination: Franziska Wegener

Layout: Ada Favaron

Print: Pinguin Druck

Editor:  
Cluster of Excellence  
Matters of Activity. Image Space Material«  
Humboldt-Universität zu Berlin