EXHIBITION COURSE

Bending the Curve – Knowing, Acting, Caring for Biodiversity

13 October 2023 – 03 March 2024

Press preview: Thursday, 12 October 2023, at 11 am
Opening: Thursday, 12 October 2023, at 7 pm

Co-Creation Art: Prof. Franziska Nori
Co-Creation Science: Prof. Dr. Katrin Böhning-Gaese

In collaboration with Senckenberg Biodiversity and Climate Research Centre and Frankfurt Zoo

Alexandra Daisy Ginsberg / Fernando Laposse / Julia Lohmann / Maurizio Montalti / MYRIAD. Where we connect. / Fraunhofer Institute for Applied Polymer Research IAP / Karlsruhe Institute of Technology, Faculty of Architecture / Max Planck Institute of Animal Behavior / Walter R. Tschinkel / Frankfurt Zoo

Bending the Curve begins with an animation on global animal migration routes created specifically for the exhibition. It is based on the long-running international project *Movebank* by the **Max Planck Institute of Animal Behavior**, led by **Prof. Dr. Martin Wikelski**. *Movebank* is the largest online database for global animal migration. This database provides information on 4.8 billion animal locations collected by researchers and citizen scientists by means of satellite tracking of animals equipped with transmitters. The findings from these behavioural studies are invaluable for research in various ways, from advancing the field of movement ecology to aiding wildlife management. Additionally, they have proven helpful in addressing challenges such as climate and land use changes, loss of biodiversity, invasive species, wildlife trade and infectious diseases. The exhibition's display visualises the data obtained through *Movebank*, showcasing the movements of these animals as they migrate across geopolitical boundaries, oblivious to human-imposed borders.

The exhibition title alludes to a visual metaphor, **'Bending the Curve of Biodiversity Loss'**. This metaphor is visualised through a large-format graphic presented in the exhibition, bearing witness to the possibility of reversing the negative trend. The curve predicts three scenarios: a steep

decline if current practices continue, a gentler curve if human actions moderately change, and ultimately turning green if the trend of species loss is reversed.

Katrin Böhning-Gaese, co-creator of the exhibition, has developed ten effective measures for biodiversity conservation. These address various social groups and also link up to the artistic exhibits in the exhibition. Throughout the show, these measures encourage visitors actively to participate in driving change.

Fernando Laposse, representing the first artistic position in the exhibition, views art as a socio-ecological act. For the Frankfurt exhibition, he has conceived a room-sized installation spanning over 140 square meters. Presented are products from the indigenous community of the Mexican village of Tonahuixtla in a staged landscape. The London-trained artist now works in Mexico, where he has established a cooperative in the rural area of Tonahuixtla, combining local knowledge, ecological restoration, community living and sustainable business practices. Laposse revitalises abandoned areas, prevents soil erosion, advocates for food sovereignty and protects cultural plant diversity and indigenous knowledge. By planting native species like drought-resistant agaves, indigenous corn varieties or luffa plants, he regenerates soils depleted from intensive industrial land use. The natural products are collectively produced, traditionally processed, and through a shift in context, transformed into contemporary artworks. Not only does Laposse create artistic metaphors, he also acts in the spirit of a financially independent community, one in harmony with the local ecosystem. Landscape and people are united in an ecologically oriented economy.

Alexandra Daisy Ginsberg, awarded the S+T+ARTS Prize by Ars Electronica in 2023, has created a new work for the Frankfurter Kunstverein. In five large-scale prints, Ginsberg depicts the seasons of an unrealised *Pollinator Pathmaker* garden design. *Pollinator Pathmaker* refers to an ongoing artwork in which Ginsberg transforms landscapes into biodiverse areas. Her online tool uses an algorithm premised by empathy for creating location-specific gardens, focusing on the needs and perceptual range of pollinating insects rather than human aesthetic criteria. Ginsberg shares her knowledge and the resulting tool with the public, inviting anyone to create a *Pollinator Pathmaker* artwork in their own garden. This vision creates a global artwork with collective authorship that is useful for non-human life.

Julia Lohmann has been working with marine plants for years. This includes the fast-growing seaweed, which absorbs large amounts of carbon dioxide, produces oxygen, cleans the seas, and provides habitat and food for other marine organisms. Lohmann has conducted extensive research on the characteristics and living conditions of seaweed. She also uses it as material for her large-scale sculptures and artistic work. Viewing the plant as a living being, Lohmann ascribes 'agency' to it, signifying its active role. It is neither lifeless nor passive, meaning it is more than merely a source of material. In this way, the artist's interest is far removed from the unbridled exploitation of plant resources driven solely by profit maximization. In the exhibition, Lohmann presents a walkable sculpture titled *Hidaka Ohmu*, which serves both as a studio and as a cabinet of curiosities for biophilic knowledge and action.

Maurizio Montalti dedicates his artistic work to reciprocity, involving co-creation with non-human organisms. A multifaceted artist, researcher and entrepreneur, he explores various forms of

mycelium, the thread-like structure of fungal cells. For the exhibition, Montalti has conceived a room installation centred around the sculpture *Reciprocity: Gods' Antlers*, which rests on a living pedestal. The transparent form exposes the process of mycelium root penetration as it gradually takes hold of agricultural residue during the exhibition, compressing it into a new material from which edible mushrooms grow. The growth process follows rules that humans cannot entirely control. Montalti's knowledge is based on theoretical and speculative ideas about new forms of co-existence that have now been translated into practical action. The artist is co-founder of the Mogu company, the first to manufacture interior design products using mushroom mycelium and textile industry remnants. In the exhibition, the artist presents a wall installation consisting of sound-absorbing mycelium modules. Montalti's approach represents a generation of artists who have dedicated their work to real socio-ecological transformation.

The **Faculty of Architecture at the Karlsruhe Institute of Technology**, specifically the **Sustainable Construction Department**, focuses on mycelium's ability to compress natural waste materials from the agricultural and forestry industries. **Prof. Dr. Dirk Hebel**'s research group develops methods and materials that serve as eco-friendly alternatives to traditional building materials like concrete or wood. They utilise living fungal systems for bio-based building materials of the future. *Bending the Curve* showcases the sculpture *MycoTree*, featuring the world's first load-bearing structure made from mycelium. This highlights the contemporary approach of biomimicry — learning from natural forms, processes and ecosystems and then applying them to human actions.

Observing and understanding nature to learn from it is the approach of the living exhibit. In collaboration with **Frankfurt Zoo**, the Frankfurter Kunstverein presents a living exhibit showcasing the symbiotic coexistence (mutualism) of two different species. Visitors can witness leafcutter ants, whose colonies operate through collective intelligence. These insects live in symbiosis with a mycelium that they feed and cultivate to harvest its spores. This process, not fully explored by science and usually hidden underground, can now be observed by visitors. The presentation was developed for the Frankfurter Kunstverein by curator **Dr. Johannes Köhler** of Frankfurt Zoo.

Walter R. Tschinkel has dedicated his life to ant research. In the Frankfurter Kunstverein, which has succeeding in collaborating with the US-based scientist, he showcases parts of his extensive collection. Tschinkel has developed a novel method to make underground ant tunnels visible through casts. These casts are explicitly presented in correspondence with Montalti's works and the leafcutter ants. Ants have existed for 150 million years, with approximately 14,000 species named by humans, and an equal number remaining unidentified. They are indispensable to ecosystems, aerating soils, contributing to humus formation, disposing of dead organisms and parasites, spreading seeds and cultivating fungal species in symbiotic care. Scientists are also increasingly interested in ants due to the biochemical bacterial film that protects them from diseases and fungal infections. They are veritable masters of recycling and logistics.

The exhibition journey concludes with ***MYRIAD. Where we connect.*** This large-scale installation by the Interactive Media Foundation and Filmtank has been created in co-creation with Miiqo Studios, Context Film and Artificial Rome, in collaboration with scientific institutions such as the Max Planck Institute of Animal Behavior. *MYRIAD. Where we connect.* is a multimedia installation at the intersection of art, science and storytelling. This immersive, interactive spatial experience,

together with the previously successful VR experience and the 360° 3D documentary, makes its premiere at the Frankfurter Kunstverein. The artwork is a poetic journey following the stories of three animals: the Northern Bald Ibis, the Green Sea Turtle and the Arctic Fox. Through the perspective of their worldwide migrations, visitors experience the immediate challenges and consequences of human actions on our ecosystems. The aim is to foster a shift in perspective, enabling individuals to see themselves as part of the interconnected Earth system, both as living beings and influencers. *MYRIAD.* addresses the planetary crisis but deliberately relies on a poetic narrative aimed at encouraging active participation in shaping our future. Handmade charcoal drawings are integrated into all digital formats of the artwork. The form of carbon crystals is echoed by the sculptural elements in the space, which are interactive and respond to touch. A 16-channel soundscape also reacts to visitors, with biological, geological and human sounds enhancing the visual immersion through auditory experiences.

The exhibition follows the call to action with an additional practice-oriented presentation in the basement. Worldwide, more and more companies have committed to keeping materials and products in a circular economy. They aim to produce with minimal energy consumption and waste generation, prioritising the reuse and transformation of existing materials. Only through collaboration can research institutes and companies work towards an economy beyond the present oil- and fossil-based model.

The exhibition journey concludes with a curated selection of so-called New Materials. Central to this is the first-ever public presentation of research by the **Fraunhofer Institute for Applied Polymer Research (IAP)**. The IAP specialises in developing biopolymers that progressively replace fossil raw materials used to produce plastic with natural materials. The institute produces bioplastics, biodegradable and recyclable materials for companies, guiding them in transitioning to bio-based materials. Bacteria biochemically break down plant-based recyclable and waste materials from forestry or agricultural industries, converting them into chemical substances from which biopolymers are created. These materials possess all the properties of traditional plastics but, unlike the latter, are bio-based and biodegradable.

The selection of sustainable products from start-up companies represents the transformation from knowledge to action: **Magna Glass Ceramic, Blue Blocks Seawood, Compost Board, Plasticiet, Shards from debris to tiles, Smile Plastics, Spared, Stone Cycling, UpBoards and Mogu** symbolise innovative practices in the field of New Materials. Recycling, urban mining, and the use of naturally renewable and biodegradable resources lie at the core of their new economic approach.

The short film *GUTS* by Noah Hutton and Taylor Hess addresses the responsibility of science and the need for its independence in the service of socio-ecological transformation. The main player is the research collective **CLEAR Lab** in Newfoundland, Canada, led by Dr. Max Liboiron. It represents a new generation of scientists who combine Western scientific methods with local traditional knowledge and ethical treatment of non-human creatures. The film highlights the extent of ocean pollution by plastic and its consequences for humans and nature. Thus, the need for new materials becomes even more obvious. Interdisciplinary in its approach, CLEAR Lab defines itself as an activist, anti-colonial and feminist laboratory.

Funded by the German Federal Cultural Foundation

Funded by the Federal Government Commissioner for Culture and the Media

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