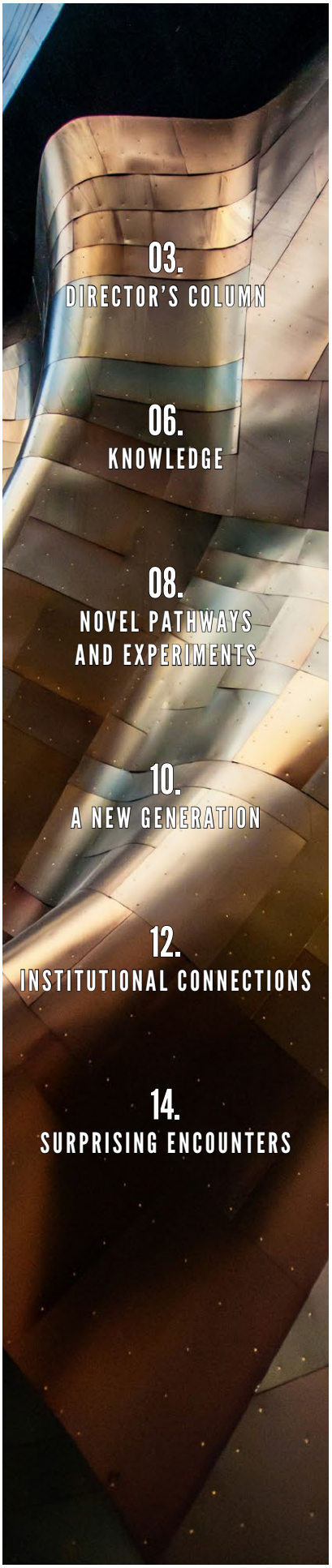
Anthropocene Laboratory

KUNGL. VETENSKAPS-AKADEMIEN
THE ROYAL SWEDISH ACADEMY OF SCIENCES

THE ANTHROPOCENE LABORATORY

FOR A REVITALISED ANTHROPOCENE BIOSPHERE

ANNUAL REPORT 2024



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The Anthropocene Laboratory at the Royal Swedish Academy of Sciences brings together perspectives and knowledge from the natural and social sciences, the humanities, and other fields of knowledge. The Laboratory aims to advance a holistic understanding of the Anthropocene biosphere, helping to meet the increasing demand for science-based knowledge to facilitate pathways towards sustainability. The Anthropocene Laboratory will nurture a generation of scholars who collaborate across disciplinary and geographic boundaries. This is the first annual report from the Laboratory, covering the period from November 2023 to December 2024.

THE ANTHROPOCENE LABORATORY ANNUAL REPORT 2024
The Anthropocene Laboratory
The Royal Swedish Academy of Sciences
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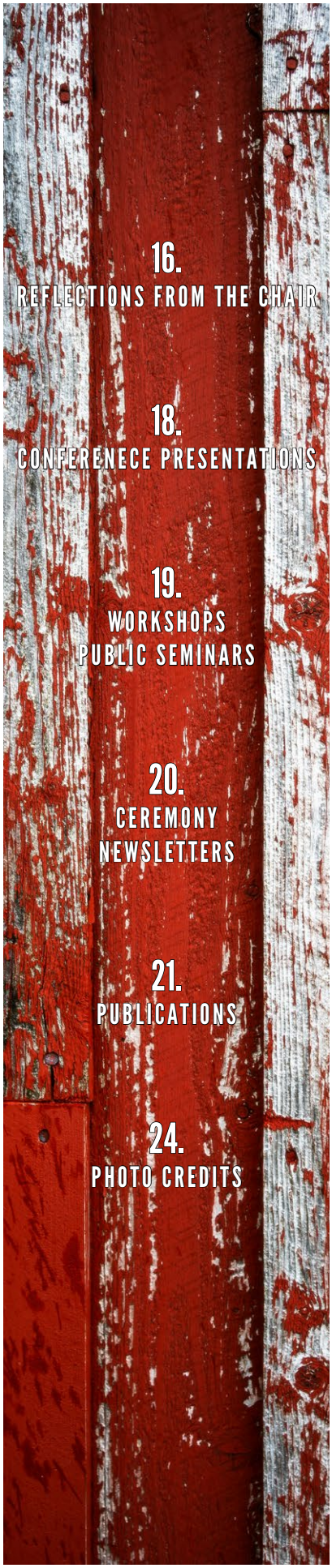


DIRECTOR'S COLUMN

When a colleague and I presented the Anthropocene Laboratory at a scientific conference recently, an American Japanese lady with tattoos standing in line to grab food struck up a conversation. She spoke to me about digging through archaeological sites, uncovering human remains, and understanding how we arrived at where we are today, this close to the hot dogs. She had moved around in the world and found knitting to be a way to make new friends, regardless of geographical location. Later this year, I was late for dinner. My excuse was that I was deep in conversation with a poet about digital detoxes, inside a decommissioned nuclear reactor, buried beneath downtown Stockholm.

Interesting meetings, nice people, good food, and a first annual report not a minute too late? In striving to advance knowledge and action towards a revitalized Anthropocene biosphere, we have met and engaged with leading scholars, artists and change makers, from a range of institutions, including the *Centre of Excellence for Anthropocene History* at the KTH Royal Institute of Technology, the *Nobel Prize Museum*, the *Max Planck Institute for Geoanthropology*, the *Stanford Doerr School for Sustainability*, *CERN* and *Nihon Hidankyo*. We now have a strong collaborative foundation for the years to come. In the following pages, you will find that the Laboratory is diving deep into humanity's grand challenges, reaching out to diverse networks, attempting to connect threads towards the future. A knitting of sorts.

At the start of 2024, we hosted our formal inauguration, in the presence of H.R.H. Crown Princess Victoria of Sweden (an honorary member of the Academy), accompanied by music composed by Jacob Mühlrad. During the year, we have talked about civil disobedience, Indigenous rights, co-hoping, epigenetics, colonial histories, and the mass of humans in relation to all living mammals and birds. We have discussed if our species can live collaboratively, within the capacity of the biosphere. We have started exploring the evidence and building a scientific foundation for guiding us in these discussions. It has been a good start, an interesting year, and an important foundation to build from. Read more about our work in the following pages, and learn about our steps towards our vision and mission.

TEXT:
HENRIK ÖSTERBLOM

Trees of the species Nothofagus obliqua (Patagonian oak) in the Chilean Andes, west of Volcán Peteroa and north of Rio Claro.

VISION

A Revitalised
Anthropocene Biosphere

MISSION

The mission of the Anthropocene Laboratory is to advance understandings of the intertwined biosphere, and to leverage this knowledge to identify and enable novel pathways towards a sustainable and just future.

Through respectful dialogue and interdisciplinary collaboration, we explore creative approaches that integrate perspectives from the natural and social sciences, humanities, arts, and other fields of knowledge.

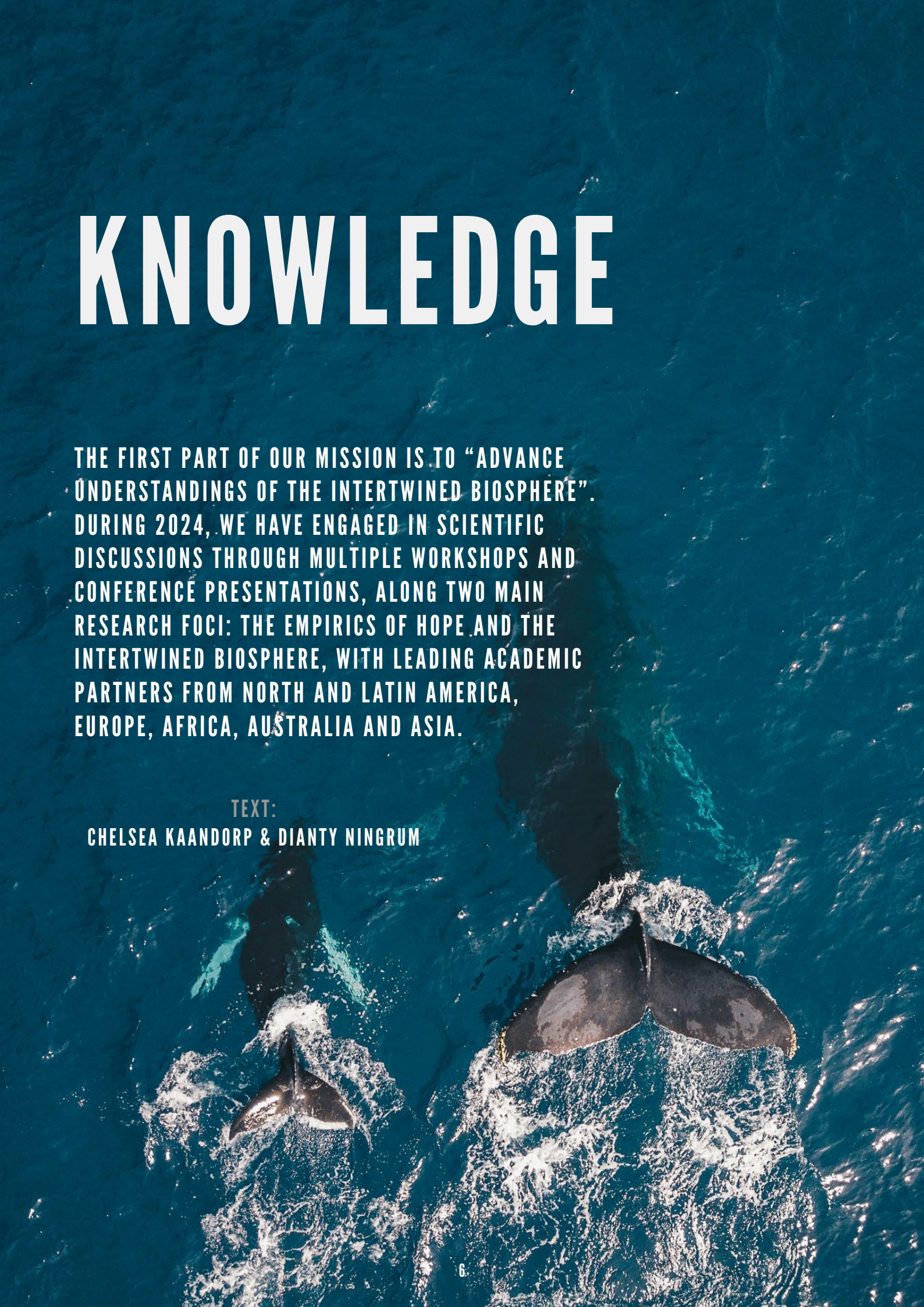
Our aim is to catalyse positive change and inspire a future where our relationships with the living planet are revitalised.

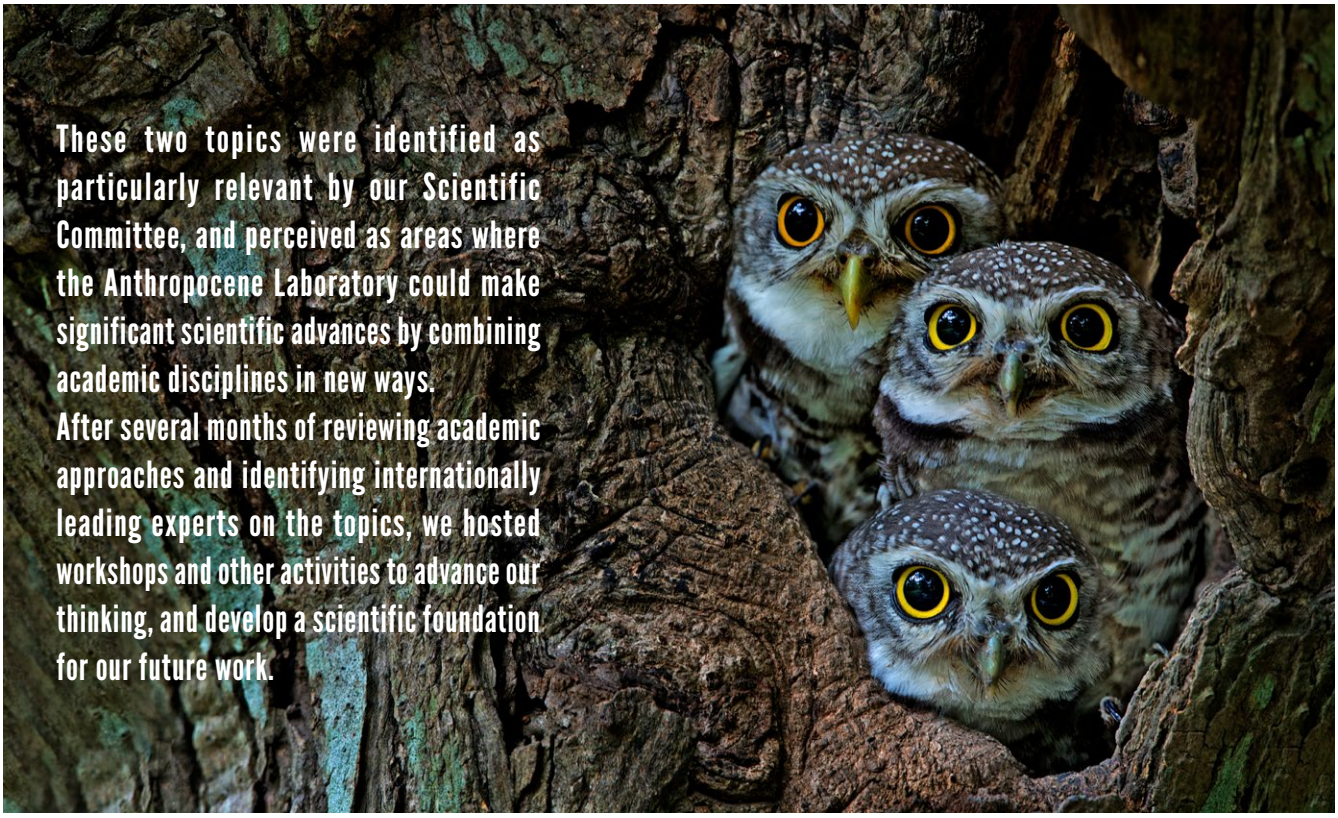
The Anthropocene Laboratory is a new program, building on historical knowledge about humans in the biosphere. The cherry blossoms represent an example of such knowledge. In Japan, this brief event represents a celebration of life and beauty, while also being a careful reminder of death. Time series on the onset of the cherry blossom in Kyoto from the 1400s tell us something about climate change. Remember to celebrate cherry blossoms in 2025, and keep an eye on the 72 microseasons to stay in tune with the dynamics of the biosphere.

KNOWLEDGE

THE FIRST PART OF OUR MISSION IS TO "ADVANCE UNDERSTANDINGS OF THE INTERTWINED BIOSPHERE". DURING 2024, WE HAVE ENGAGED IN SCIENTIFIC DISCUSSIONS THROUGH MULTIPLE WORKSHOPS AND CONFERENCE PRESENTATIONS, ALONG TWO MAIN RESEARCH FOCI: THE EMPIRICS OF HOPE AND THE INTERTWINED BIOSPHERE, WITH LEADING ACADEMIC PARTNERS FROM NORTH AND LATIN AMERICA, EUROPE, AFRICA, AUSTRALIA AND ASIA.

TEXT:
CHELSEA KAANDORP & DIANTY NINGRUM





These two topics were identified as particularly relevant by our Scientific Committee, and perceived as areas where the Anthropocene Laboratory could make significant scientific advances by combining academic disciplines in new ways.
After several months of reviewing academic approaches and identifying internationally leading experts on the topics, we hosted workshops and other activities to advance our thinking, and develop a scientific foundation for our future work.

THE EMPIRICS OF HOPE

The Empirics of Hope group focuses on how hope and an understanding of positive change can stimulate further transformations, considering:

- What is hope?
- What are positive changes that are reason to be hopeful?
- Where are positive changes happening? What are the trends?
- Who and what enables hopeful changes?
- How can further change be stimulated?
- What can the laboratory do to support positive developments?

A first workshop was hosted in November 2023, with leading academics from Europe, North and Latin America, and East Asia, including members of our scientific committee. During 2024, the focus has been on advancing a comprehensive transdisciplinary method, the development of a conceptual framework, and data analyses of social change over the last decades. The work engages a range of international databases, and has involved the hosting of three additional data-focused workshops. The research to date has engaged natural and social scientists, and humanities and Indigenous scholars. Three scientific articles are in development.

THE INTERTWINED BIOSPHERE

The Intertwined Biosphere group hosted workshops in February and May of 2024, engaging invited natural and social scientists, humanities scholars, and artists, representing a wide geographic diversity while working on the following questions:

- How to conceptualize and study life, including human life, as intertwined within the biosphere?
- What are critical interactions and feedback loops that foreground the embeddedness of human life in the biosphere?
- What are the implications of an 'intertwined biosphere' perspective on the sciences, humanities, policy, and practice?

The group has engaged in challenging but fundamentally important aspects of how humans and other entities in the biosphere are interconnected, including by looking at the origin and spread of the chemical elements of life, and the different ways that academic disciplines and other knowledge systems conceptualize human relationships with the rest of nature. Three academic papers are presently in development.

NOVEL PATHWAYS AND EXPERIMENTS

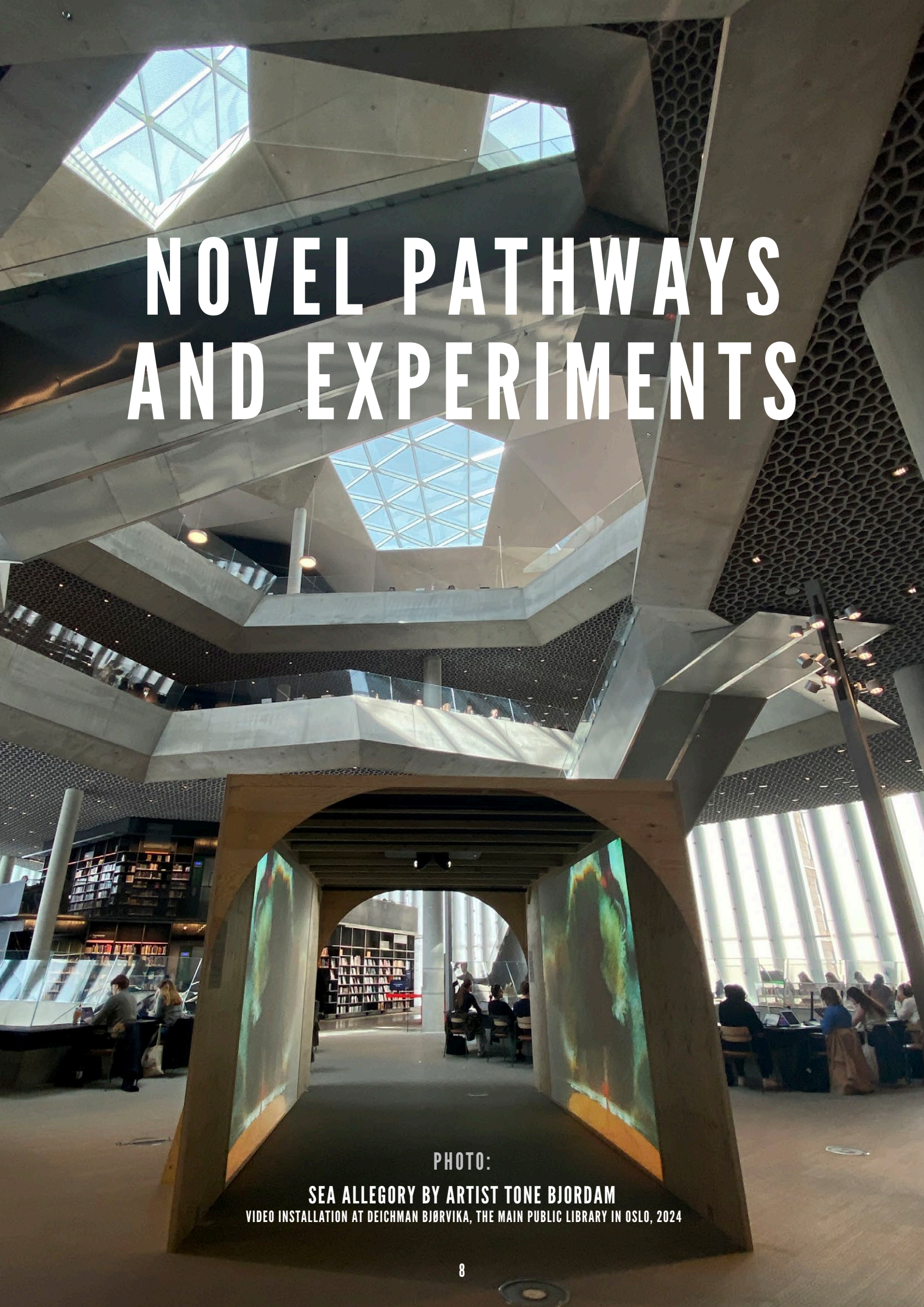


PHOTO:

SEA ALLEGORY BY ARTIST TONE BJORDAM

VIDEO INSTALLATION AT DEICHMAN BJØRVIKA, THE MAIN PUBLIC LIBRARY IN OSLO, 2024

The second part of our mission is to "identify and enable novel pathways towards a sustainable and just future". Our main method for investigating novel pathways to date has been to organize public conversations on topics related to sustainability, including with American author *Rebecca Solnit* (in 2023) and with Canadian author *Naomi Klein* (in 2024). We are planning more future public engagements, including a museum exhibition, seminars and more.

What is a laboratory without experimentation? During 2024, we have signed a contract with Stockholm-based artist duo *Goldin+Senneby*, who have developed an exciting proposal for an *art exhibition* scheduled for 2025, accompanied by conversations about the role of science in society. We have also started to work with Norwegian visual artist *Tone Bjordam*, who has worked extensively to blur the art-science interface, and whose work has been featured in many of our public-facing activities.

Furthermore, we have engaged with *the Baltic Sea Festival* and *Berwaldhallen*, stimulating interesting conversations with school children, senior citizens, and many with ages in between. We are presently finalizing preparations for an experiment with the academic publishing model. Stay tuned for the new feature of the scientific journal *Ambio*–*Testing I, II*– scheduled for launch during the beginning of 2025.

THE SECOND PART OF THE MISSION OF THE ANTHROPOCENE LABORATORY IS TO IDENTIFY AND ENABLE NOVEL PATHWAYS TOWARDS A SUSTAINABLE AND JUST FUTURE

Naomi Klein
Photo by Sebastian Nevols

A NEW GENERATION

THE ANTHROPOCENE LABORATORY WILL NURTURE A GENERATION OF SCHOLARS WHO COLLABORATE ACROSS DISCIPLINES AND GEOGRAPHIES

The laboratory is presently staffed with two postdocs: Chelsea Kaandorp and Dianty Ningrum, two research assistants: Andrew Hattle and Cynthia Flores, an activities coordinator: Kayoko Kumasaka, and a director: Henrik Österblom, supported by a scientific committee chaired by Carl Folke: Gretchen Daily (*Stanford University*), Karen O'Brien (*Oslo University*), Marten Scheffer (*Wageningen University*), Patricia Balvanera (*National Autonomous University of Mexico*), and Sander van der Leeuw (*Arizona State University*).

We have worked extensively with four mentors who are contracted part-time: Caroline Schill *(the Beijer Institute of Ecological Economics*), Peter Søgaard Jørgensen (the *Global Environmental Dynamics and the Biosphere Program*) - both at *the Royal Swedish Academy of Sciences* – and Juan Rocha and Lan Wang-Erlandsson (at the *Stockholm Resilience Centre, Stockholm University*). This model with mentors has been instrumental for scientific progress. The mentors have provided support by drawing from their extensive experience, knowledge, and networks from their home institutions.

We have hosted visiting researchers for shorter time periods, including Lauren Lambert (*Arizona State University*), Francisco Gelvez Gomez (*University of Tasmania*), Oscar Hartman Davies (*KTH Royal Institute of Technology*), and Maria Ojala (*Örebro University, Oulu University*), as well as an intern: Juan Diego del Castillo Ruiz (*the Stockholm Resilience Centre*). This diverse group has filled our office space with good conversation and exciting scientific progress.

INSTITUTIONAL CONNECTIONS

We have worked with colleagues at the Royal Swedish Academy of Sciences to strengthen collaboration on diverse Anthropocene challenges, for example, by presenting our work to the *Class for Geosciences* and the *Class for Biosciences*, as well as for *The Environment and Energy Committee* of the Academy. We work with *Accelerator*, at Stockholm University to make connections with artists. In addition, we are collaborating with the new *Centre of Excellence for Anthropocene History* at the KTH Royal Institute of Technology and with the recently established *Max Planck Institute for Geoanthropology* in Jena, Germany.

We have agreed on terms for a long-term cooperation with the *Nobel Prize Museum*.

Other established connections include the *Stanford Doerr School for Sustainability* in California – one of the largest ever investments in sustainability science, with whom we hosted a conference session between scientists, a photographer, a visual artist, a poet, and a sound artist – connecting ways of experiencing and sensing the biosphere.

We have presented our work in a workshop of the *Earth Resilience and Sustainability Initiative*, at the annual conference of the *European Geoscience Union* and at the *Ecobalance Conference*.

We had the opportunity to engage with 50+ educators across Europe in a Transnational Cooperation Activity event organized by the *Swedish Council for Higher Education (UHR)*, discussing how hope could, and should, be integrated within the education sector. Dianty Ningrum joined a panel session hosted by the *Social-Ecological System Institute (SESI)* at Leuphana University Lüneburg, talking about how hope can be used to get unstuck from the perception of a polycrisis, towards a better future.

A study visit to *The European Organization for Nuclear Research (CERN)* and their Large Hadron Collider (LHC) in Geneva provided opportunities to learn about their decades-long work to connect science and art. It also provided insights about the social processes involved in running an experiment with >3000 scientists, simulating the origins of the universe, and a search for new particles. The Higgs Boson was discovered in 2012 by the ATLAS and CMS experiments at CERN, resulting in the Nobel Prize in Physics in 2013. Scientists at CERN have advanced knowledge about the mass, energy and origin of the universe in one of the largest, most complex, international efforts aimed at joint problem solving. There is something to learn about the human abilities to organise at such scales, with insights for Anthropocene science on collective action.

SURPRISING ENCOUNTERS

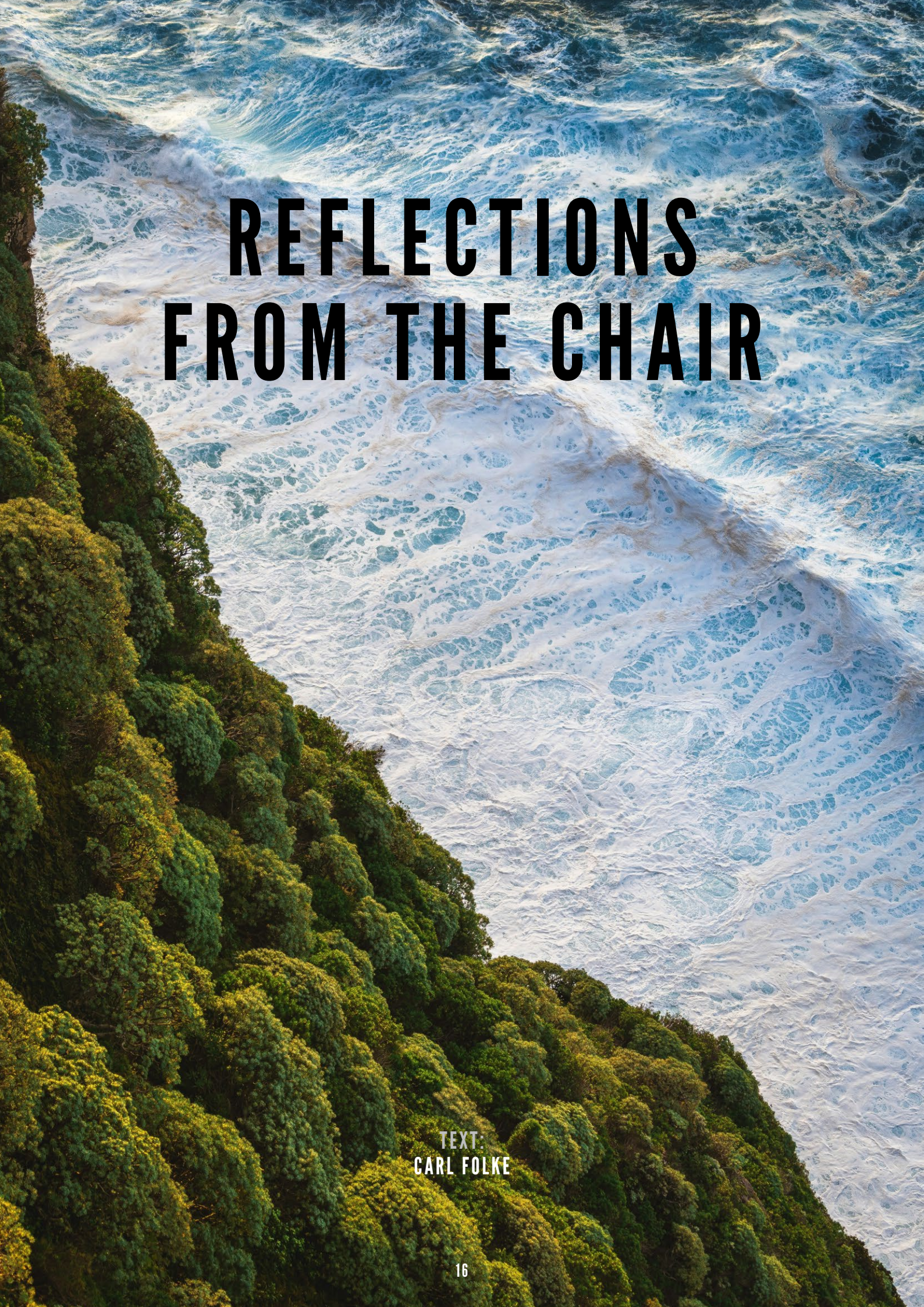
An invited keynote presentation at a conference in Sendai and a lecture to students in Hiroshima were intended to mainly generate new connections with academic institutions in Japan. It turned out that these visits also had other important issues in store, of direct relevance for understanding the onset and consequences of the Anthropocene.

The beginning of the Anthropocene is often discussed in terms of the formation of a thin layer of plutonium encircling the globe, resulting from nuclear weapons tests in the 1950s. This is an empirical, objective, rational approach towards seeking to explore the interconnected world and how humans influence the biosphere. But something important is missing from this picture. A conversation in Tokyo with Terumi Tanaka–representative of the 2024 Nobel Peace Prize laureate organisation *Nihon Hidankyo*–combined with a meeting involving the *Network for Education and Research on Peace and Sustainability* at Hiroshima University, a visit to the *Hiroshima Peace Memorial Museum* and the Hiroshima Atomic Bomb Hypocenter Monument illustrate another aspect of the world we are living in: Human suffering of the Anthropocene.

The people in Hiroshima and Nagasaki, and the survivors of the nuclear attacks in 1945, known as *Hibakusha*, are far too well aware of the agonies of the Anthropocene. They understand mass killing in this age where our species have the ability to exterminate each other in the hundreds of thousands. They know the most devastating consequences of war, and the worst of humanity. Their experiences are unthinkable to most people. But they also understand the resilience of individuals and societies, and the challenges of dealing with shock and trauma – as members of a family, a community or as a country.

Meeting a member of the *Hibakusha* first hand was an important reminder of the need to keep memories alive. The Anthropocene is a time of turbulence, of conflict and inequality, and a revitalised biosphere will require empathy, care, patience and cooperation. It will require time to listen, learn and reflect – to both deal with an important past and to identify pathways towards a sustainable future. The memories of the Hibakusha, and the consequences of the atomic bombs are difficult to take in, but they are also necessary in order to truly appreciate the fragility of peace and sustainability, and the consequences of war.

The surprising encounter with *Nihon Hydankyo* underlined the importance of engaging with multiple human dimensions of the Anthropocene. Important insights can be drawn from past experiences of how societies have dealt with, or failed to deal with, collective loss and trauma. Geopolitical tensions are escalating, and memories of their worst consequences are fading - in 2025 it will have been 80 years since those disastrous days of August 1945. The message from the survivors is clear: Never again.



REFLECTIONS FROM THE CHAIR

TEXT:
CARL FOLKE

The Anthropocene Laboratory started gently in late 2022, funded by a generous grant from the *Marianne and Marcus Wallenberg Foundation*, and the *Marcus and Amalia Wallenberg Foundation*. The year of 2023 focused on appointing a scientific committee, identifying topics to work on, a suitable method to operate, contracting staff and means to build on existing networks and advances in the Stockholm region and beyond.

We are happy to have a Scientific Committee of globally leading scholars in sustainability, who are excited about our approach and the topics we focus on. The transdisciplinary team of the Laboratory, the diverse group of leading scholars in our scientific committee, and the exciting networks of international expertise mobilized through our workshops, represent important steps forward.

I am convinced that the Anthropocene Laboratory, through its collaborative approach, will substantially advance our understanding of challenges and opportunities towards sustainable futures, and that our work will help support the Academy in taking on an even more leading role in the critical survival challenges of the new Anthropocene reality.

I am excited about the path we are on and the scientific progress we have achieved to date and am inspired by the ways we have been able to integrate the arts and artists throughout our activities. All these great minds and hearts strongly advocate for the development of new understanding, combining skills and competencies, knowledge, and perspectives ranging from basic curiosity-driven interdisciplinary science to transdisciplinary dialogue and collaboration. It is truly rewarding to witness the engagement of all involved, with open minds, with excitement, with wonder, and the empathy and care our species is capable of.

CONFERENCE PRESENTATIONS

Kaandorp, C. Energy Justice & Intertwined Biosphere, Colloquium at the Water Management department of the Faculty of Civil Engineering and Geosciences, Delft, The Netherlands (February 29)

Folke, C. Earth Resilience in the Anthropocene, Earth Resilience, Planetary stewardship & global sustainability governance, Stockholm, Sweden (March 11)

Österblom, H. Keystone actors and biosphere stewardship. Earth Resilience, Planetary stewardship & global sustainability governance, Stockholm, Sweden (March 12)

Kaandorp, C., Rocha, J., Wang-Erlandsson, L., Flores, C., Hattle, A., Österblom, H., and Folke, C. Rethinking the Intertwined Biosphere, EGU General Assembly 2024, Vienna, Austria, EGU24-18923, (14–19 April) https://doi.org/10.5194/egusphere-egu24-18923.

Ningrum, D. Empirics of Hope, The Swedish Council for Higher Education (UHR), Stockholm, Sweden (June 4)

Österblom, H. Engaging Arts: Empathy and Connection to Nature, 2024 Natural Capital Symposium, Stanford, USA (June 5)

Ningrum, D. Getting unstuck: from polycrisis to a better future, Social-Ecological Systems Institute, Leuphana University Lueneburg, Germany (June 7)

Hartman-Davies, O., Hattle, A. What Brings Me Hope?, Puistokatu 4, Helsinki, Finland (June 11)

Søgaard Jørgensen, P., Österblom, H. The evolution of sustainability in the Anthropocene Anthropocene symposium, Max Planck Institute of Geoanthropology, Jena, Germany (June 24)

Folke, C. The intertwined biosphere, Earth Resilience and Sustainability Initiative (ERSI), Stockholm Resilience Center and Princeton University, Stockholm, Sweden (August 27)

Österblom, H. Sustainability in the Anthropocene, Future Design 2024, Japan (virtual symposium) (September 14)

Folke, C. The Anthropocene, challenges and opportunities, Solvable Summit, Grytsberg, Sweden (September 25)

Folke, C. Tipping points and biosphere stewardship, How does ecological risk relate to commercial risk? The Royal Society, London, UK (October 3)

Österblom, H. Hope in the Anthropocene, Ecobalance, Sendai, Japan (November 4)

WORKSHOPS

Hope in the Anthropocene
November 6-8, 2023
26 participants from 18 countries

Intertwined Biosphere
February 12-14, 2024
16 participants from 12 countries

Intertwined Biosphere
May 21-23, 2024
27 participants from 19 countries

Empirics of Hope Data Hackathon
October 14-16, 2024
8 participants, 7 countries

Empirics of Hope Data Workshop
November 14, 2024
5 participants, 5 countries

Empirics of Hope Data Workshop
November 19, 2024
5 participants, 5 countries

PUBLIC SEMINARS

Hope in the Anthropocene
(featuring e.g., Rebecca Solnit)
November 9, 2023
The Royal Swedish Academy of Sciences, Stockholm

Dialogue with Naomi Klein
(co-organised with ABF, Katalys and Aftonbladet)
May 16, 2024
Rival, Stockholm

Making sense in the Intertwined Biosphere
May 23, 2024
The Royal Swedish Academy of Sciences, Stockholm

The Anthropocene Laboratory and research on hope
August 28, 2024
Berwaldhallen, Stockholm

How can Law inspire hope for an inclusive Anthropocene?
October 17, 2024
The Royal Swedish Academy of Sciences, Stockholm

CEREMONY

Inauguration
February 13, 2024
The Royal Swedish Academy of Sciences. In the presence of H.R.H. Crown Princess Victoria of Sweden

NEWSLETTERS

The Anthropocene Laboratory Newsletter No. 1
March 26

The Anthropocene Laboratory Newsletter No. 2
June 20

The Anthropocene Laboratory Newsletter No. 3
September 30

PUBLICATIONS

PUBLICATIONS DERIVED DIRECTLY FROM THE RESEARCH CONDUCTED DURING 2024 ARE YET IN DEVELOPMENT, BUT MEMBERS OF THE LAB HAVE PUBLISHED NUMEROUS ARTICLES, SOME OF WHICH ARE LISTED BELOW.

Amon, D.J., McCauley, D.J., Blasiak, R. and **Österblom, H**. (2024) Replace Norway as co-chair of High-Level Panel for a Sustainable Ocean Economy. Nature. 626: 480.

Anderies, J.M. and **Folke, C**. (2024) Connecting human behaviour, meaning and nature. Philosophical Transactions of the Royal Society B: Biological Sciences 379(1903):20220314.

Bebbington, J., Blasiak, R., Larrinaga, C., Russell, S., Sobkowiak, M., Jouffray, J-B. and **Österblom, H**. (2024) Shaping Nature Outcomes in Company Settings. Philosophical Transactions of the Royal Society B. 379(1903): 20220325.

Cárdenas, J.C., Constantino, S. M. and **Schill, C.** (2024) Harnessing Behavioral Tailwinds for Climate Action. Beijer Discussion Paper Series No. 281.

Chaplin-Kramer, R., Polasky, S., Alkemade, R., Burgess, N. D., Cheung, W.W.L., Fetzer, I., Harfoot, M., Hertel, T.W., Hill, S.L.L., Johnson, J.A., Janse, J.H., José v. Jeetze, P., Kim, H., Kuiper, J.J., Lonsdorf, E., Leclère, D., Mulligan, M., Peterson, G.D., Popp, A., Roe, S., Schipper, A.M., Snäll, T., van Soesbergen, A., Soterroni, A.C., Stehfest, E., van Vuuren, D.P., Visconti, P., **Wang-Erlandsson, L.**, Wells, G., Pereira, H.M. (2024) Integrated modeling of nature's role in human well-being: A research agenda, Global Environmental Change, 88: 102891

Currie, T.E., Borgerhoff Mulder, M., Fogarty, L., Schlüter, M., **Søgaard Jørgensen, P.**, Haider, L.J., Caniglia, G., Tavoni, A., Jansen, R.E.V., **Folke, C.**, and Waring, T. M. (2023) Integrating evolutionary theory and social-ecological systems research to address the sustainability challenges of the Anthropocene. Philosophical Transactions of the Royal Society B: Biological Sciences 379: 20220262.

Gelves-Gomez, F., Davison, A. and Cooke, B. (2024) Relations of divergence and convergence. Political ontology at the intersection of protected areas and neoliberal conservation, Ecosystems and People 20:1, 2390472

Hickmann, T., Biermann, F., Sénit, C. A., Sun, Y., Bexell, M., Bolton, M., Bornemann, B., Censoro, J., Charles, A., Coy, D., Dahlmann, F., Elder, M., Fritzsche, F., Gehre Galvaõ, T., Grainger-Brown, J., Inoue, C., Jönsson, K., Koloffon Rosas, M., Krellenberg, K., Moallemi, E., Lobos Alva, I., Malekpour, S., **Ningrum, D.**, Paneva, A., Partzsch, L., Ramiro, R., Raven, R., Szadlacsek, E., Thompson, J., van Driel, M., Viani Damasceno, J., Webb, R., Weiland, S. (2024) (2024) Scoping article: research frontiers on the governance, of the Sustainable Development Goals. Global Sustainability 7:e7.

Kaandorp, C., Moreno Pessoa, I.T., Pesch, U., Van de Giesen, N. and Abraham, E. (2024) Commoning practices' for energy justice? Perspectives on the heat transition in the city of Amsterdam. Energy Research & Social Science 108 (2024): 103369.

Keys, P., Collins, P.M., Chaplin-Kramer, R., and **Wang-Erlandsson, L**. (2024) Atmospheric water recycling an essential feature of critical natural asset stewardship, Global Sustainability 7, e2, 1–12.

Keys, P., **Wang-Erlandsson, L.**, Moore, M.-L., Pranindita, A., Stenzel, F., Varis, O., Warrier, R., Wong, B., d'Odorico, P., and **Folke, C.** (2024) The dry sky: Future scenarios for humanity's modification of the atmospheric water cycle. Global Sustainability 7: e11, 1–13.

Lindahl, T., Anderies, J. M., Crépin, A.-S., Jónás, K., **Schill, C.**, Cárdenas, J.C., **Folke, C.,** Hofstede, G.J., Janssen, M.A., Mathias, J.-D. and Polasky, S. (2024) Titanic lessons for Spaceship Earth to account for human behavior in institutional design. npj Climate Action 3(1):56.

Malekpour, S., Raven, R., Allen, C., Moallemi, E. A., **Ningrum, D.**, Cuesta-Claros, A., Grainger-Brown, J., Trundle, A., Kestin, T., Coy, D., Dechrai, I., Walkters, J. and Bryan, B. (2024) Transformative localization to accelerate the 2030 Agenda. Nature Sustainability 7, 516–518.

Malhi, Y., Daily, G.C., Bateman, I., Bierbaum, R., Díaz, S., **Folke, C.**, Polasky, S. and Willis, K. (eds.). (2024) Bringing Nature into Decision-Making. Philosophical Transactions of the Royal Society B (1903).

Moore, M.-L., **Wang-Erlandsson, L.**, Bodin, Ö., Enqvist, J., Jaramillo, F., Jónás, K., **Folke, C.**, Mancilla Garcia, M., Gordon, L., Keys, P., Lade, S., Martin, R., Matthews, N., **Rocha, J.C.** and Vora, S. (2024) Moving from Fit to Fitness for Governing Water in the Anthropocene. Nature Water 2: 511–520.

Ningrum, D., Malekpour, S., Raven, R., Moallemi, E. A. and Bonar, G. (2024) Three perspectives on enabling local actions for the sustainable development goals (SDGs). Global Sustainability 7, e22.

Posada-Marin, J.A., Salazar, J.F., Rulli, M.C., **Wang-Erlandsson, L.**, Jaramillo, F. (2024) Upwind moisture supply increases risk to water security. Nature Water 2, 875–888.

Rockström, J., Donges, J.F., Fetzer, I., Martin, M, **Wang-Erlandsson, L.** and Richardson, K. (2024) Planetary Boundaries guide humanity's future on Earth. Nature Reviews Earth & Environment 5, 773–788.

Rockström, R., Kotzé, L.J., Milutinović, S., Biermann, F., Brovkin, V., Donges, J., Ebbesson, J., French, D., Gupta, J., Kim, R.E., Lenton, T.M., Lenzi, D., Nakićenović, N., Neumann, B., Schuppert, F., Winkelmann, R., Bosselmann, K., **Folke, C.**, Lucht, W., Schlosberg, D., Richardson, K. and Steffen, W. (2024) The Planetary Commons: A new paradigm for safeguarding Earth's regulating systems in the Anthropocene. Proceedings of the National Academy of Sciences, USA 121(5): e230153112.

Scheffer, M., Adger, W.N., Carpenter, S.R., **Folke, C.**, Lenton, T., Vince, G., Westley, F. and Xu, C. (2024) Anticipating the Global Redistribution of People and Property. One Earth 7(7): 1151-1154.

Scheffer, M., Anderies, J.M., Bjordam, T., Bollen, J., Carpenter, S.R., Chapin F. S. III, **Folke, C.**, Gazitua, F., Holmgren, M., Marcone, J., Polasky, S., Weber, E., Westely, F. (2024) A Heart Model of Earth Stewardship. Earth Stewardship 1(1): e12019.

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