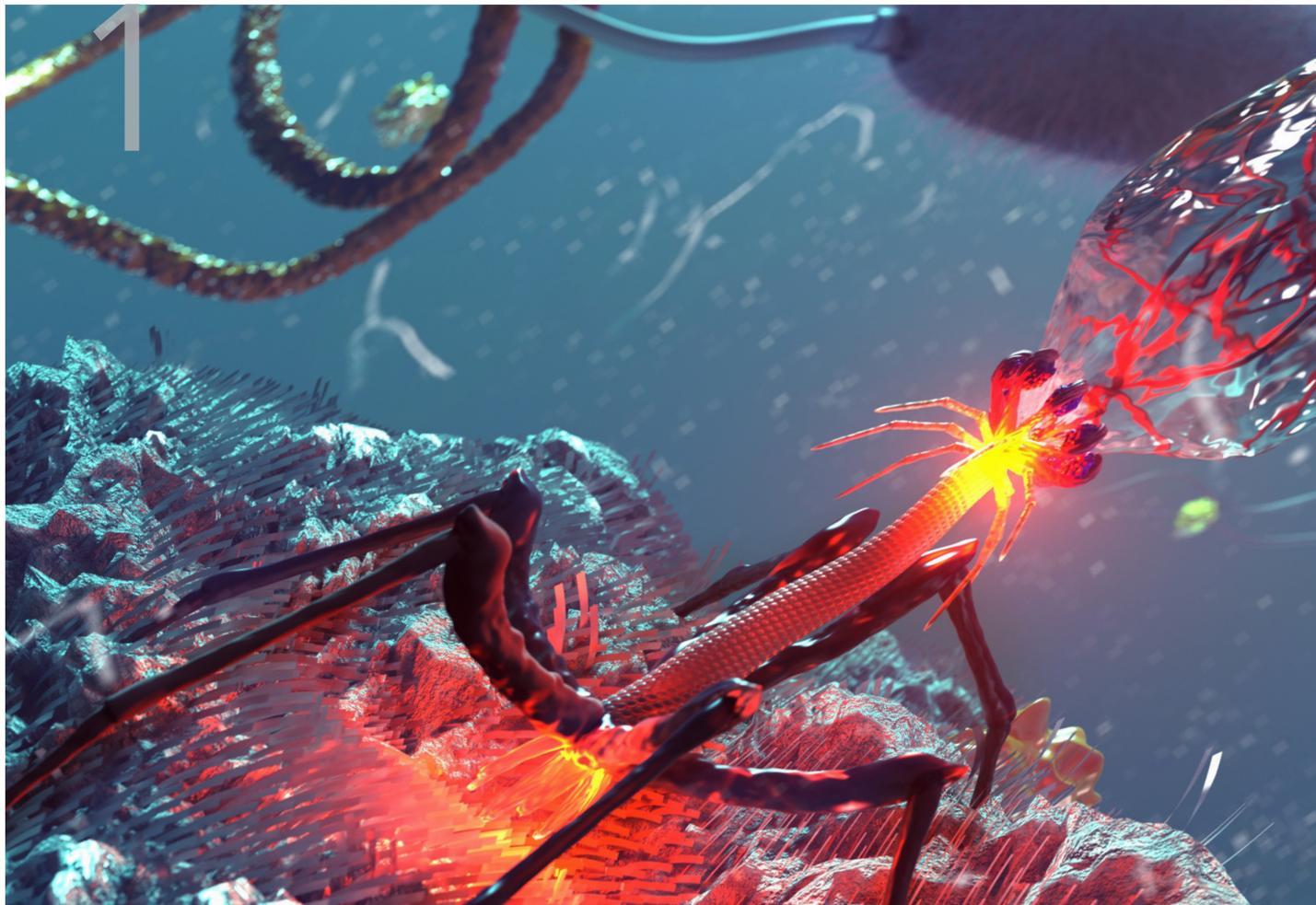


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Review 2021 and Structure of the KLI



Het KLI biedt een prachtige combinatie van een mooie omgeving, rust, en een academische sfeer die uitnodigt tot filosofische reflectie.

The KLI offers a wonderful combination of beautiful surroundings, tranquility, and an academic atmosphere that invites philosophical reflection.

*Peter Kroes,
Delft University of Technology*

1.1 The Year in Review

Throughout 2021, the KLI – like everyone else – had to continue operating under Covid conditions. This meant that besides the inevitable restrictions for staff and fellows most of the KLI's core activities, such as the in-person colloquia, lectures, workshops, working groups, etc., had to be held as online events. This is a major shortcoming for an institution whose primary goal is to provide a creative environment for personal interaction. But thanks to the motivation and organizational skills of the staff, fellows, and (occasional) visitors, these shortcomings were well compensated, and some of the virtual events attracted even larger crowds than would usually attend. Many thanks to everyone who assisted in mastering these difficult periods!

Although institute life was curtailed, scientific activity nevertheless kept flourishing during 2021, as highlighted by the present report. Events included a cooperative workshop with the BOKU University on Evolutionary Approaches to Social-Ecological Change, an Arts & Science performance with Anna Lindemann who had performed at the KLI already seven years ago, and several events organized by the KLI fellows. The publication output was outstanding with 58 scientific papers by fellows and staff, four issues of *Biological Theory*, three volumes in the Vienna Series of Theoretical Biology, plus 52 academic presentations.

The new practice of emitting dedicated calls for Writing-up Fellowships was continued in 2021. The call for projects "Dealing with Diversity in the Life and Sustainability Sciences" generated 95 applications, five of which could be selected. Altogether, in 2021, the KLI hosted 28 fellows, most of them in-residence, as travel restrictions allowed only for five Visiting Fellows to join us at the Institute. Three fellows have benefited from the Solidarity Grant system established in the previous year and extended to 2021, permitting an extension of their fellowships due to the exceptional difficulties for finding a job in times of the pandemic.

Covid conditions also prompted some physical restructuring of the Institute. Working desks were spread out into parts of the building that are usually dedicated to other activities, and technical adaptations were made to the lecture hall and the seminar room in order to accommodate hybrid formats of the KLI Colloquia that combined in-person presentations with video conferencing. In addition, a new media room was created for holding interactive meetings, lecture courses, or webinars, and the KLI library received an extension in the attic.

I am very grateful to the KLI team, Guido Caniglia, Isabella Sarto-Jackson, and Eva Lackner, for steering the KLI smoothly through the pandemic challenges. I am also much obliged to the members of the KLI Foundation, the Board of Directors, and the Scientific Advisory Board for their contributions to the continued success of the Institute. Last but not least, it is a great pleasure to thank Traudl Engelhorn for her unremitting support and to offer this report as a small gift for the major birthday she celebrated in January 2022.

Gerd B. Müller
President

1.2 The KLI



- 4 The KLI is an international center for theoretical studies in the life sciences. The institute commits itself to the formulation, analysis, and integration of biological theories as well as the investigation of their scientific and cultural consequences. The thematic focus is on evolutionary biology, developmental biology, sustainability science, and cognition. The KLI supports interdisciplinary research projects in these areas that aim at generating models of living systems or meta-theoretical constructions of historical, philosophical, or cultural aspects of biological theories. Research at the KLI is supported by fellowships in five different categories; granting decisions are based on international peer review.

The KLI also pursues its objectives by organizing international workshops, summer schools, and colloquia, and by publishing a scientific journal and a book series.

1.3 Organization of the KLI

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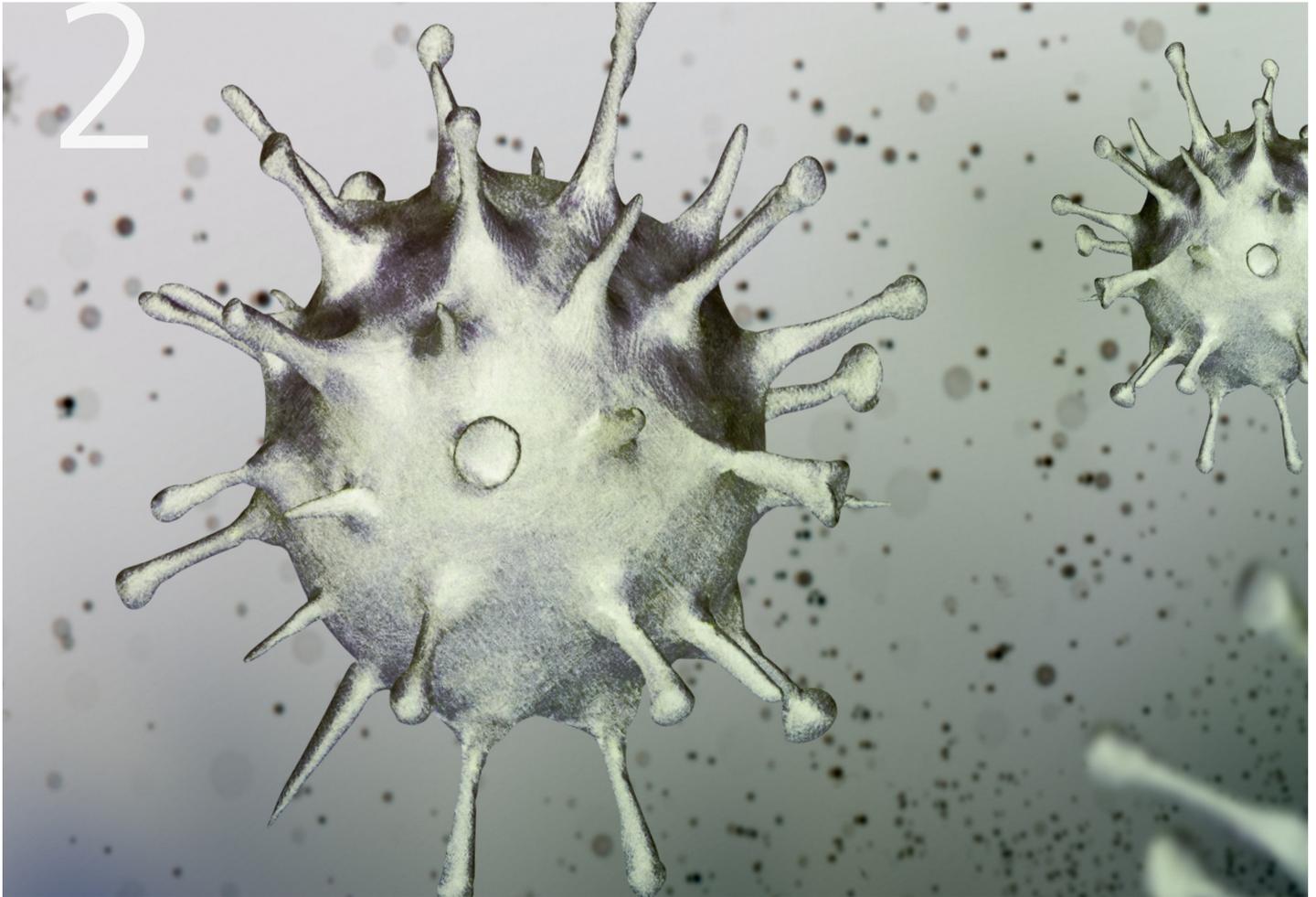
PROF. DR. KATRIN SCHAEFER

Department of Evolutionary Anthropology, University of Vienna

DR. STEFANIE WIDDER

Center of Molecular Medicine of the Austrian Academy of Sciences,
Medical University of Vienna

Scientific Projects



The KLI offers different types of fellowships for students, post-docs, and visiting scholars in the area of theoretical biology for a period of a few weeks up to two years. All project applications are subjected to an international review process.

2.1 Applications

In 2021, the KLI received a total of 122 applications for fellowships in residence, 10 of these were granted for 2021 or 2022. Visiting fellows who were at the KLI in 2021 are listed in the report, but many other visiting fellowships were cancelled due to travel restrictions as a consequence of the COVID-19 pandemic.

	applied	granted
Writing-Up Fellowships	95	5
Postdoctoral Fellowships & Senior Fellowships	27	5

2.2 Writing-Up Fellowships

Marina KNICKEL

(October 2021 – April 2022)



Marina Knickel is a PhD student and junior researcher at the Department of Agriculture, Food and Environment of the University of Pisa. During her PhD she has been a guest researcher at Wageningen University (the Netherlands) and Baltic Studies Centre (Latvia) working in two projects: Horizon 2020 project ROBUST on rural-urban relations and Interreg project Food Pro-tec-ts in the Dutch-German cross-border region Euregio Rhein-Waal. In ROBUST, she has led a task on monitoring and evaluation of joint learning processes in 11 Living Labs (research-practice partner teams). Her research interests include co-learning processes in transdisciplinary research around agri-food and rural-urban issues, science-policy-practice collaboration, and functioning of the Living Lab approach in multi-actor research projects.



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Capacity to Co-Learn and Adapt in Transformation-Oriented Multi-Actor Research

The unique potential of my research lies in elucidating learning trajectories and adaptation strategies in eleven Living Labs, and in combining longitudinal qualitative and quantitative data with in-depth case study data. Based on this I will be able to contribute to the debates on the role of science in social-ecological transformations, and the design and management of TD research.

During my stay with the KLI, I am planning to finalise my 4th PhD article and compile the PhD framework document. More specifically, I want to enhance the theoretical grounding of the empirical evidence that I gathered in eleven Living Labs and feed my findings back into TD theory building (epistemics and methodology) in sustainability science.

In further analysis of my empirical dataset at the KLI, I plan to still experiment with different entry points, such as sustainability science, science and technology studies, cognitive science, behavioural sciences, cultural studies and philosophy.

The theoretical contribution my KLI project will make is related to learning and its connection with reflexivity. My aim is to capture change, co-learning and adaptation over time, and arrive at a more differentiated picture of the factors affecting TD collaboration.



Lisa LEHNER

(October 2020 – March 2021)

Lisa Lehner is a PhD candidate at the Department of Science & Technology Studies, Cornell University, and was previously affiliated with the Department of Science-Technology-Society at the University of Vienna and the Ludwig Boltzmann Institute for Health Promotion Research. She works at the intersection of science studies, medical anthropology, critical public

health, and multispecies research. Her current project is exploring patients' experiences living with and getting treated for Hepatitis C viral infections. She is a member of the SoNAR-Global Network for infectious disease preparedness, and is a past recipient of a Dan David Prize Scholarship in the field of "Bioethics" for her dissertation project and the Austrian State Prize recognizing excellent Master's degree graduates. Lisa is also a lecturer at the University of Vienna.

Living with Infectivity

Given the ever-looming reality of the next pandemic threat, my project provides a fundamental re-conceptualization of the implicit social theory that undergirds current global health responses. I build on 18 months of extensive field research in Austria, studying the changes wrought on care practices and illness experiences by new Hepatitis C antiviral drugs, whose curative potential fueled an expansive global health virus eradication project. I integrate diverse social-science concepts to analyze the material and discursive mechanisms that animate particular forms of applying biomedical and epidemiological knowledge in contemporary society and global health politics. I will leverage my findings to conceive of a different kind of social theory of infectivity that accepts not just the reality of large-scale and globe-spanning viral infections, but also responsibility for a connected global society. I argue that the way we address and live with infectivity is integral to the way we choose to live as a society. In turn, changing our ways will unleash the full systemic potential of the life and social sciences to meet infectious challenges present and future.



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Ashley LEWIS

(September 2020 – March 2021)

Ashley Lewis holds a Bachelor’s degree in public relations & communications from the University of Texas, Austin and a Master’s degree in international relations from the Centre for the Study of Democracy of the University of Westminster. She is currently pursuing her PhD at the University of Nottingham and is an ethnographer of an interdisciplinary research project, “Sustaining Urban Habitats.” She studies interdisciplinary collaboration in practice and interrogates the different definitions, assumptions, and promises surrounding interdisciplinary research across the natural and social sciences. Her current research interests include science and technology studies, critical discourse analysis, interdisciplinarity, scientific expertise and evidence, self-reflexivity, ethnography, sustainability science and Mode 2 knowledge.

STS Researchers as Methods: A Reflexive Critique

My proposed KLI project will elaborate on the methodological underpinnings of my PhD research project and will be based on the reflexivity section of methods chapter. My PhD research is an ethnographic study of interdisciplinary researchers investigating urban sustainability. As an ethnographer and science and technology studies (STS) researcher on the project, my position observed the interdisciplinary element of the research collaboration. I investigated the challenges, perceptions and approaches to interdisciplinarity working among researchers who spanned the natural and social sciences. Once I started working on the project, it became clear that my position as an ‘outsider’ allowed me to make observations about ways of working; but my simultaneous position as an ‘insider’ actually influenced the interdisciplinary efforts made. My position as the ‘interdisciplinary observer’ therefore had two major effects on the other researchers. Firstly, it created an additional awareness and self-reflection on the type of work researchers were doing; and it caused them to reflect and evaluate if their

work was 'interdisciplinary' enough. Secondly, because my position as an ethnographer of interdisciplinarity was written in at the application phase, this elevated the importance of interdisciplinary collaboration of the project. By creating a position to solely observe interdisciplinary collaborations, researchers perceived interdisciplinarity to be an important research objective and were then motivated to do their work in a more interdisciplinary way. For the research project at KLI, I want to conduct a reflexive methodological analysis of my role not only as an observer, but as an actual research method.

Rongkun LIU

(September 2021 – February 2022)



Rongkun Liu is a PhD candidate in environmental social sciences at The Ohio State University. His research encompasses knowledge engagement, risk and resilience, and coupled human and natural systems in mountain environments, particularly the Himalayas. Over the past four years, he has been working with the International Centre for Integrated Mountain Development (ICIMOD) for his field research in Nepal and China. Rongkun holds a Bachelor's Degree in international relations from Peking University in China and graduated from the American University in Washington, D.C. with a Master's Degree in global environmental policy concentrating on environmental economic policies and international environmental cooperation. He has been awarded a KLI writing-up fellowship to complete his PhD dissertation.

Citizen-Powered Knowledge Hybridization: Producing Situated Resilience for Mountain Communities

My KLI project will focus on three manuscripts targeted for journal publication. In the first two, tentatively entitled "Knowledge, Knowledge Engagement, and Community Resilience in Complex Socio-ecological Systems," and "Political Economy and Ecology of Resilience in Mountain Farming



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Communities: Making Decisions for or against Changes in the Arun Valley, Nepal," I aim to challenge, critique and refine the theoretical basis of my research and seek to inform a truly engaged environmental anthropology from theories into actions at the science/society interface. The perspective of situatedness in resilience, or situated resilience, as a result of knowledge hybridization through situated learning will be probed through a case study of mountain communities in the Arun Valley, Nepal, based on my year-long environmental social scientific study of the valley as a designated socio-ecological system. The third manuscript, tentatively entitled "Citizen-powered Knowledge Hybridization: Outcomes, Potentials, and Reflections for Community Resilience Building," will examine the degree to which hybrid knowledge is made possible and the ways in which this process of knowledge hybridization works to increase community resilience. The analysis will be based on the results of a quasinatural experiment that employs citizen-powered techniques in co-producing resilience-relevant knowledge endorsed by both professional scientists and local knowledge holders.



Ely MERMANS

(October 2021 – April 2022)

Ely Mermans is a PhD candidate in philosophy at the Université de Montréal, Quebec, and at Université de Paris 1 Panthéon-Sorbonne, France. He is a student member of the Centre interuniversitaire de recherche sur la science et la technologie (CIRST, Montreal, Quebec) and of the Institut d'histoire et de philosophie des sciences et des techniques (IHPST, Paris, France). Since 2015, they also have been actively involved in the Research Group in Environmental and Animal Ethics (GRÉEA, Quebec). His PhD research project questions the relationships between the keystone species concept, as developed in the Western ecological and conservation sciences, and Aldo Leopold-based ecocentric ethics.

Their research interests are philosophy of ecology and of conservation biology, feminist philosophy of science, environmental ethics, and ecofeminism.

The Role of Non-Epistemic, Ethical Values in the Keystone Species Debate

In the Western ecological and conservation sciences, keystone species might be generally defined as biological species whose removal from the ecological community they are part of is likely to produce radical changes within and on that community (e.g., changes in species composition, diversity or interactions, changes in the community's structure and stability conditions, change in the community's external aspects, etc.). North-American examples of keystone species I am interested may include sea stars (*Pisaster ochraceus*), sea otters (*Enhydra lutris*), and gray wolves (*Canis lupus*) – i.e., keystone predatory species. Despite the fact that scientists and conservationists have approached keystone species in various ways, the disappearance of the latter has often been negatively valued. In the contrary, changes associated with keystone species addition have been positively so.

My KLI research project questions the nature and legitimacy of the aims and values which have been involved in the evolution of the keystone species concept, and of the resultant evaluative assessments of keystone species, between the 1960's and the beginning of the 2000's in the ecological and conservation sciences. I first show that while there might have been a general trend toward the positive valuation of keystone species, neither the latter nor the ways keystone species have been conceptualized through this period involved the same epistemic and non-epistemic values and aims. Yet, following feminist philosophers of science, I argue that non-epistemic values and aims, in particular ethical values and conservation aims, are no more peripheral to the practices of more knowledge-oriented research communities (e.g., community ecology) than they are to more action-oriented research communities (e.g., conservation biology). I henceforth suggest a theoretical, philosophical-based approach to assess the way

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ethical arguments can be involved in scientific discussions with regards to concept uses, variations, and evolution within and through disciplines.

Afika NJWAXU

(October 2021 – March 2022)

Afika Njwaxu is currently a PhD student at the Department of Environmental Science, Rhodes University. Afika's interests lie within sustainability sciences with a passion for use of natural resources, rural livelihoods, and forest-dependent communities. Her past projects include the importance of community engagement, the use of non-timber forests products by coastal communities in the Wild Coast of South Africa and forest regeneration on agricultural abandoned land. Afika is currently writing up her PhD project titled "Assessing cultural keystone species in the Wild Coast, South Africa" through a fellowship at the KLI.

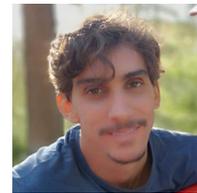
Assessing the Prevalence of Cultural Keystone Species in the Wild Coast, South Africa

Traditional Xhosa customs and religious rites form a huge part of the identity of Xhosa people. This includes ancestors which are members of a clan that have passed on and serve as a protection board for each family. Although, Xhosa people have been engaging in these practices for decades, it is not uncommon that they abandon cultural rites for churches once they convert to Christianity. The impact of western Christianity on African traditions is an old studied anthropological problem. Therefore, an examination of the role of religion in changing or suppressing views, acceptance and use of culturally important species was carried out. This was a very tense research to conduct with some people afraid to tell their truth in fear of judgement from fellow church goers and villagers. Methods included observation, participation, and unstructured inter-

views. The study was conducted in two coastal, rural villages along the Wild Coast. The sites are KwaNoqhekwana in Port St. Johns and Kie Farm in Centane, in the Eastern Cape of South Africa. This questioned yield a mix of results; with some people partaking in both cultural and Christian activities while some choose a side. Keystone species have revealed new links to the erosion of biocultural diversity which will help to devise new solutions.

Vitor MACIEL RENCK

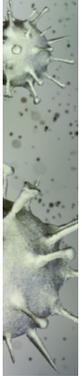
(September 2021 – February 2022)



Vitor Renck is a PhD candidate in ecology at the Federal University of Bahia, Brazil. He is also a guest researcher at Wageningen University & Research and an external member of the GEOS project. His research focuses on ethnobiology and ethnotaxonomy of an artisanal fishing community in the Northeast coast of Brazil. He uses a transdisciplinary research approach in order to comprehend the prospects and limits of integration between the traditional and academic ecological knowledge. His research interests include ethnobiology, human ecology, philosophy of knowledge integration, stakeholder inclusion, and agroecology.

Can Knowledge Integration Help in Biodiversity Conservation? A Case Study in a Brazilian Fishing Community

There are innumerable examples from the literature on how knowledge integration can contribute to biodiversity conservation worldwide (e.g., Huntington 2000; Gilchrist et al. 2005; Gagnon & Berteaux 2009). Not only have we found that to be true in Siribinha, an artisanal fishing community in the Northeast coast of Brazil, but also a potential of improvement of environmental policies. By applying the partial overlaps framework, we discuss some of the Brazilian legislations



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to protect marine fauna through the eyes of the traditional fishers, particularly regarding closed fishing seasons, which are developed in Brazil by technicians and by researchers, without taking traditional knowledge into account. Through semi-structured interviews with traditional experts, we aimed to analyze their perception on the closed fishing seasons set on their region. We found an exact overlap between traditional and scientific knowledge on the reproductive period of the mangrove crab (*Ucides cordatus*), but a contradiction on the reproductive period of two snook species (*Centropomus undecimalis* and *Centropomus parallelus*). This result shows how knowledge integration not only enables to improve conservation management practices and policy making, but can also play an empowering role to traditional communities and indigenous peoples, contributing to their self-determination.



Lois Marie RENDL

(May – October 2021)

Lois Marie Rendl is currently pursuing his PhD at the University of Vienna. From 2015 to 2019, Lois was a researcher at the Institut Wiener Kreis (working on the diaries of Rudolf Carnap 1908-1935). His research focus concern Aristotelian syllogism, Kant's transcendental logic, and Neokantian philosophy of science.

Hegel and Cohen on the Idea of Life or Teleology as a Principle of Science

According to Hegel it is one of the merits of Kant to have distinguished between external and internal purposiveness as the latter is the concept of life. Life or organic nature is the precondition of mind and self-consciousness. For Hegel the logical form of life is the concept which explicates the fundamental rational structure of reality and therefore is the main object of philosophy. The inorganic nature by contrast which is the object of physics or mechanics is only a secondary phenomenon and not a reality in the strict sense as it has no

unity and is therefore not self-sustaining. In opposition to Hegel Hermann Cohen claims that it is the mathematical science of nature which is the primary object of philosophy and criticizes the post-Kantian idealists who believed it to be the task of philosophy to create a science of nature on the ground of metaphysical principles. The consequence of founding reality on the principle of selfconsciousness is subjectivism and psychologism. But the foundation of science is experience. Accordingly in opposition to Hegel he agrees with Kant that the idea of purpose can be used as a constitutive principle in ethics but has only a regulative function in science, that means it is only a methodological principle of science which serves to explain certain phenomena in nature which would be otherwise inexplicable without allowing thereby to attribute purposiveness to nature itself. This raises the question how the methodological principles of physics and biology are related and more importantly the question, which Kant was unable to solve, how the experience of these special phenomena of purposiveness of nature can be accounted for as they cannot be supposed to be our subjective constructions. Consequently, reality or the object of experience cannot be identified with the object of physics. Cohen formulates this problem of the conception of reality as the problem of the conception of individuality or of the unity of the object of experience, because the object of physics are laws and not singular individual objects. But reality is ultimately supposed to consist in singular objects. Although physics construct ideal singular objects, points in time and space, these ideal objects cannot be supposed to be the real objects of experience. The individual must be supposed to have unity and therefore must be conceived to be self-determined. Cohen insists on the independence of the methodological principles of physics but gives no answer to the question how physics and biology can be reconciled in a coherent conception of reality. Closely connected with this question is the logic of induction as induction is defined as the inference from the individual to the universal. In this project Hegel's and Cohen's conception of reality will be analyzed with reference to the methodological principles of science (mechanics and teleology) and the problem of the logic of induction.



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Anna SUNDERMANN

(November 2020 – April 2021)

Since 2013, Anna Sundermann is a research fellow and a PhD candidate at the Institute for Environmental and Sustainability Communication at the Leuphana University Lüneburg. Currently she is working for the UNESCO Chair on Higher Education for Sustainable Development and the SuCo2-Working group on students' sustainability related learning processes in higher education. Before she started to work at Leuphana, she got a diploma in psychology with a focus on educational psychology at Westfälische-Wilhelms-University Münster and was engaged in the student initiative Weitblick e.V. Since then, her main interest is in analyzing learning processes to find out if the current integration of sustainability in higher education empowers and motivates students to engage in societal transformation.

How Studying Sustainability Affects Students' Understanding of Sustainability: A Longitudinal Analysis of Undergraduates' Learning Processes and Outcomes

Learning outcomes in higher education for sustainable development (HESD) have become a major focus in recent years. One of the key learning outcomes are students' sustainability conceptions which enable individuals to assess a problem from multiple sustainability perspectives in order to deal with complex sustainability issues in their future professional fields. Universities, however, seem to fall short in sufficiently equipping students with more elaborated sustainability conceptions. One reason is probably that none of the existing frameworks links sustainability conceptions to the influencing factors on all levels of higher education over the course of the studies. If universities want to monitor learning processes in their students' sustainability conceptions, they should consider all internal and external conditions influencing the learning process in the higher education system. Thus, further research efforts need to be pursued regarding the operationalization

of learning outcomes. Therefore, this qualitative meta-analysis proposes a process-oriented framework of internal and external factors that influence students' sustainability conceptions. Hence, this paper contributes to the literature in HESD by moving away from a focus on individual students or cross-sectional course evaluations towards an understanding of what shapes students' sustainability conceptions over time. Although exploratory, the framework is intended to be used as a general scheme of how to operationalize learning processes for the design of curricula, courses or monitoring in HESD.

Jacob Orion WEGER

(October 2020 – March 2021)



Jacob Weger is a PhD Candidate in anthropology at the University of Georgia and holds a Bachelor's degree in sociology/anthropology from Lewis & Clark College in Portland, Oregon. Specializing in environmental and cultural anthropology, he works at the intersection of political ecology and science & technology studies, with research interests in climate change, environmental governance, sustainability and development, delta transformations, and a regional specialization in Vietnam and Southeast Asia. His PhD dissertation focuses on the politics of knowledge and translation involved in the governance of climate change adaptation in the Mekong Delta and has been funded by the U.S. National Science Foundation, U.S. Department of Education Fulbright-Hays Fellowship, and the University of Georgia.

Delta Variations: Politics of Translation in the Governance of Climate Change Adaptation in the Mekong Delta, Vietnam

This project explores how knowledge is translated into practical action and socio-environmental change under the guise of climate change adaptation, shedding light on the evolution of deltaic landscapes in the context of climate



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change and socioeconomic development. Based on 19 months of multi-sited ethnographic fieldwork in the Netherlands and Vietnam, and employing data from a variety of sources, the study examines the politics of knowledge and translation involved in the transnational governance of climate change adaptation in the Mekong Delta. During my time at the KLI, I will complete at least two dissertation chapters while further honing my overarching conceptual framework and reflecting on the implications of the research for sustainability science and climate adaptation more broadly. The first chapter focuses on the historical production of Dutch expertise in water and delta management and its translation to the Vietnamese context. The second examines the translation of knowledge for climate adaptation across levels of governance within Vietnam, highlighting the role of intermediary actors such as scientists and bureaucrats in the midst of a hierarchical politics of implementation. This project brings together anthropology, environmental history, Earth Systems science, and development studies, as well as the critical theoretical perspectives of political ecology and science and technology studies, to interrogate the cross-scalar governance of climate change adaptation. In doing so, it offers insights into processes of socio-material change in order to aid efforts to advance more just and sustainable transformations.

2.3 Postdoctoral Fellowships

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Orsolya Rita BAJER-MOLNÁR

(November 2020 – October 2021)



Orsolya Rita Bajer-Molnár is an evolutionary biologist, with a passion for both research and education. She received her Master's diploma from Eötvös Loránd University in evolutionary biology, ecology, and systematics. Five years later, she completed her PhD in behavioural ecology and evolutionary biology. She then won a postdoctoral scholarship at Dartmouth College, NH, after which she continued research at UFRN in Brazil. Upon returning, she turned towards the evolutionary dynamics of emerging infectious diseases, which she is currently working on in collaboration with the University of Nebraska and Centre for Ecology Research (Hungary).

Throughout her research, she had always been interested in science communication. Overseas she organized networking events, conferences and outreach programmes, and taught graduate and undergraduate students. She took an active role in science communication, and after numerous appearances she just recently gave a TedX talk. Her aim is to increase the visibility of research, and thus facilitate a combined effort to prevent the emerging infectious diseases.

Preaction Plan – Implementing Disease Prevention in Modern Society

Emerging Infectious Diseases (EIDs) are one of the major threats on global human health and economy, with an increasing number of novel epidemics appearing each year. Although they vary in pathogen and severity, the underlying evolutionary processes of emergence are shared by all, it is therefore through these drivers that we can predict and act to prevent outbreaks. The DAMA protocol was developed as a framework for coping with EIDs, where Documentation of potential pathogens is followed by an Assessment of the risk they pose. High-risk taxa and their reservoir hosts are then



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Monitored to reveal geographic distribution and an Action plan can be developed to avoid infection of human and/or economically significant species (livestock, crops).

As a comprehensive protocol, the DAMA's final Action phase requires the efficient and fluent collaboration of multiple diverse fields, such as research, health care, economics, politics and policy-making. My proposal aims to initiate targeted discussions with experts of the mentioned areas in an effort to create crucial guidelines and scenarios for the implementation of the DAMA protocol. My work will include contacting current and potential collaborators, round-table discussions, analysis of case studies, theoretical simulations of hypothetical epidemics and the creation of final reports containing significant challenges, recommendations and action plans specific for each field.

As a member of the KLI community, I will also use this opportunity to invite collaborators to contribute to the institute in the form of talks, seminars and symposia, and further raise awareness about EIDs among the general public through various tools of science communication.



Christian DORNINGER

(January 2020 – June 2022)

Christian Dorninger is a postdoctoral research fellow at the KLI since January 2020. He has an interdisciplinary background spanning over social ecology, to sustainability science, sociology, and international development studies. His research interests include the development and application of methods of human-nature interaction, the sustainability transformation, resource use and decoupling, a biophysical perspective on trade relations, teleconnections, and ecologically unequal exchange.

Human Niche Construction in the Anthropocene: From Taming Nature to Taming Growth?

The global sustainability crisis has been described as a result of the uniquely human form of adaptability and niche construction. Humanity has evolved to become a driving force of global environmental change and influences a substantial and growing part of natural ecosystem interactions and energy flows. At the same time, human distance to nature increased remarkably during the last decades due to processes of globalization and urbanization. The increasing biophysical disconnect between humans and nature effectively works to circumvent limitations and self-constraining feedbacks of natural cycles, which is a crucial feature of niche construction. In this project, I explore how increasing forms of human-nature disconnections can be grasped as a form of human niche construction where cultural innovations are set to circumvent self-constraining feedbacks by a temporal avoidance of direct consequences from the environment. However, the progressive industrial human niche construction ultimately threatens the very existence of future generations and of other species. Applying a niche construction perspective on modern human-nature disconnections has the potential to yield in truly new research insights which might help us to guide human-nature co-evolution on a much more sustainable pathway.

Flavia FABRIS

(January 2019 – May 2021)

Flavia Fabris (PhD La Sapienza University of Rome) is a philosopher of biology who worked at Egenis, the Centre for the Study of Life Sciences, at the University of Exeter. Her background is in philosophy of science and evolutionary developmental biology. From 2011 to 2014, she worked at the La Sapienza, Department of Genetics and Molecular Biology "Charles Darwin," focusing mainly on epigenetic inheritance and the canalization of devel-





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opment. Since 2013, she has been associated with the Centre for Applied Philosophy of Science (CAPS) at the Norwegian University of Life Sciences (NMBU), Ås. Her research examines a variety of conceptual issues in evolutionary and developmental biology, with an emphasis on causation and on methodological and ontological aspects of scientific practice. At present, she is particularly interested in re-examining the philosophy of cybernetics, its primary forms of reasoning, and its implications for theoretical biology, with particular regard to EvoDevo and the Extended Evolutionary Synthesis.

Rethinking Cybernetics in Contemporary Theoretical Biology

In recent years, the contributions of cybernetics to the development of evolutionary developmental (EvoDevo) biology have increasingly been recognized. The particular theories and models developed during the flourishing of cybernetics in the early 20th century laid the foundation for the systems approach, which is nowadays widely and fruitfully employed in molecular biology, genetics, genomics, immunology, developmental biology, and ecology. Nevertheless, in some quarters, scholars argue that cybernetics should be treated with suspicion because many evolutionary phenomena cannot be explained reductively in terms of mechanisms, their parts, and their production. This debate, almost a decade long, has produced a considerable amount of literature, mostly centred on the long-protracted dispute between mechanistic philosophers of biology on one side, and those who argue for the superiority of a process view of life on the other. My project aims to re-examine the philosophy and epistemology of cybernetics, its history and its implications for contemporary theoretical biology. The philosophical analysis will focus on clarifying the epistemologies of both cybernetics and EvoDevo biology, and determining how and to what extent they overlap. I aim to provide positive arguments for the conclusion that, in contrast to the predominant view, cybernetic explanations within biology, when properly understood, are a form of

non-reductionist explanation. My work will also help to evaluate the general assumption that cybernetics has, at its ground, a metaphysical commitment to the mechanistic nature of life. I will put this assumption in question, and therefore suggest that the suspicion mentioned above is misplaced.

Nicole Dieneke Sybille GRUNSTRA

(September 2019 – December 2021)



Nicole Grunstra is a biological anthropologist and evolutionary morphologist, with a strong background in human evolution and functional, ecological, and evolutionary morphology of primates and other mammals. She furthermore has strong skills in 3D geometric morphometrics and digital imaging techniques, developed during her time at the University of Vienna. Central to her work is her passion for comparative morphology and natural history collections, as well as a fascination with macroevolutionary patterns of trait evolution and their relation to microevolutionary processes and developmental constraints. In line with this, Nicole frequently applies EvoDevo concepts in her work and is well-versed in phylogenetic comparative methods and multivariate statistics.

Nicole obtained her PhD in biological anthropology from the University of Cambridge. In her dissertation, she investigated the spatio-environmental correlates of the taxonomic, phylogenetic and phenotypic divergence of macaques (Primates: Cercopithecidae) in Asia, using phylogenetic comparative, morphometric, and multivariate methods.

Nicole's recent postdoc work (at the University of Vienna) includes the decomposition of organismal form into components of variation at different spatial scales, which differentially preserve phylogenetic history, adaptation and compensatory growth.



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At the KLI, she developed her own line of research on human pelvic evolution and the evolution of difficult human childbirth in both an evolutionary medicine and a phylogenetic comparative framework. Together with her collaborators from the University of Vienna, she found support for the “pelvic floor hypothesis” of human pelvic evolution that predicts a trade-off between childbirth and pelvic floor support in the human bony pelvis. Her comparative morphological work includes a recent publication on the similarities and differences in pelvic sex differences in humans and chimpanzees. She also studies obstetric adaptations in the pelvic morphology of bats (Chiroptera), which give birth to young that weigh 10-45% of maternal body weight depending on the species – much larger than human babies!

She recently also continued her work on primate eco-morphology and biogeography in a collaboration, going more in-depth in the relationship between taxonomic and morphological differentiation and past biogeographic and climatic changes in Southeast Asia.

Her theoretical interests include the definition, usage and detection of phylogenetic “constraints,” phylogenetic “effects,” and phylogenetic signal, as well as the utility and shortcomings of explanatory frameworks in biology of “ultimate” vs. “proximate” explanations, Tinbergen’s Four Questions, and the notion of “reciprocal causation” of the Extended Evolutionary Synthesis.

Towards Resolving the Human Obstetric Conundrum: Theoretical, Computational, and Comparative Mammalian Approaches

Childbirth in humans is difficult compared to most other mammals. There is a high risk of mortality and morbidity to both, mother and baby, associated with childbirth arising from the tight fit or mismatch between the size of the baby and the maternal birth canal. So why has the human birth canal not evolved to be wider? This ‘obstetric conundrum’ has long been debated and several explanations have been advanced. However, explanatory factors are manifold, inter-

act, vary among human populations, and often pertain to different levels of explanation, impeding our understanding of this conundrum and attempts to resolve it. To help overcome this challenge, a theoretical framework is required, grounded in evolutionary theory and integrating principles from developmental and evolutionary biology, which helps to reconcile different levels of explanation and identify methodological challenges and outstanding questions pertaining to the obstetric conundrum.

Furthermore, few evolutionary hypotheses exist of why the human pelvis evolved to be relatively narrow, and the ones that do have received little empirical attention. One in particular, the pelvic floor hypothesis, will be the focus of applied research. Using numerical finite element simulations, the pelvic floor will be modeled as an idealized membrane and subjected to sensitivity analysis to establish the relationship between membrane geometry and its level of deformation. Lastly, not only pelvic size and shape are relevant for childbirth; the degree of mobility at the pelvic joints can also facilitate or hinder easy passage of the fetus through the birth canal. Mammals document a range of pubic symphysis morphologies, reflecting a combination of adaptations and constraints related to positional behavior, birth, and phylogeny, the study of which can yield valuable insight into the human condition.

Cameron HU

(June 2021 – September 2022)

Cameron Hu is a cultural anthropologist working across traditions of science studies, environmental studies, political economy, postcolonial criticism, and social theory. His ethnographic research examines the valences of technoscience amidst worldwide ecological turbulence; historical and emerging formations of capitalism and imperialism; the aesthetics and geopolitics of the multinational business corporation; ideologies of limitation and infinitude; and modern grammars of





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historicity, futurity, and action. His theoretical research explores the provocations of ordinary language philosophy for social theory. Cameron's book manuscript, "Knowing Destroying: The Geopolitics of Fracking and the Metaphysics of Imperialism," connects these concerns through an ethnography of "unconventional" petrochemical extraction in the Texas-Mexico borderlands. Parallel to his scholarly work, Cameron has published numerous essays and reviews on contemporary art and aesthetics, and makes fictions, films, installations, and performances with the collective LiCo (most recently, for the exhibition "Lithium" at Het Nieuwe Instituut, Rotterdam). Cameron received a BA in near eastern languages and civilizations from the University of Pennsylvania and a PhD from the Department of Anthropology at the University of Chicago, where he taught courses on the anthropology of capitalism, liberalism and its critics, and the notion of a planetary geopolitics. At the KLI, he is beginning new research into the imaginative techniques through which North Atlantic states and corporations strive to grasp Earthly life as a totality.

Scenario Planning and the Anticipatory Epistemologies of Planetary Governance

My project examines a major epistemic and imaginative technique through which North Atlantic institutions now perceive and govern the turbulent globe as a totality: "scenario planning." Scenario planning is a central method of post-statistical futurology, premised on imaginative narrative rather than the extrapolation of probable trends. Developed by multinational oil companies during the energy crises of the 1970s, and later adopted as a tool for the governance of the planetary environment amidst global warming, scenario planning is today a central method of foreknowledge through which North Atlantic states, corporations, and institutions of international governance systematically envision the plausible futures of the planet, and the possibilities and consequences

of their own actions within those futures. Beginning from the anthropological premise that such techniques of anticipatory knowledge are not value-neutral tools but historically and culturally specific genres for envisioning and ordering collective existence, my project asks how scenario planning enframes the politics of planetary sustainability today. My research will explore the logic of global-scale scenario planning through examination of two critical cases: (1) its cultivation at Royal Dutch Shell in the 1970s, under the influence of cybernetic theory and global decolonization, and (2) its contemporary deployment in the making of the Assessment Reports of the Intergovernmental Panel on Climate Change. By examining the work of scenario planners through archival and ethnographic research, I mean to elucidate the political significance of the epistemological and imaginative techniques that underpin global sustainability governance in a warming and unequal world.

Alice LACINY

(February 2019 – December 2021)

Alice Laciny is a former PhD student at the Department of Theoretical Biology at the University of Vienna and recently completed her thesis in the course of the WWTF project "Voluntary self-sacrifice in exploding ants: a mechanism to defend coevolved microbiomes?" at the Natural History Museum Vienna. She has been fascinated by insects from an early age and recently became president of the Austrian Entomologists' Association. Her scientific interests include myrmecology, parasitology, evolutionary developmental biology, and caste-characterization of social insects via morphological, statistical, and behavioral methods. Her postdoctoral work focuses on the influence of parasites on the morphology of ant hosts. Her current project at the KLI aims to review the body of current literature on this topic and highlight the overlapping aspects of ecology, evolution, and ontogenetic development therein.





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EcoEvoDevo in Action: Parasite-Induced Morphologies in Ants

Ant colonies can harbor a large number of diverse parasites and pathogens, many of which are known to induce phenotypic changes in their hosts. Although hitherto largely overlooked in the context of ecological evolutionary developmental biology, the study of parasitogenic morphologies can shed light on mechanisms and pathways relevant to the ontogenetic development of the host, their plasticity or robustness under environmental perturbations, as well as evolutionary and ecological consequences for the host. Within my postdoctoral fellowship at the KLI, I plan to assess the current body of scientific literature regarding parasite-induced morphological changes in ants. I aim to compile and publish a review article on parasite-induced morphological aberrations in the family Formicidae, within which I will compare previously described host-parasite systems and assess commonalities and differences of different parasitogenic phenotypes and their underlying developmental mechanisms. I will interpret my findings in light of current theories, especially from the field of (Eco)-EvoDevo, and identify systems suitable for further study. This will lay the groundwork for an international, interdisciplinary project researching host-parasite interactions and parasitogenic phenotypes in ants.



Luana POLISELI RAMOS

(September 2020 – August 2021)

Luana Polisele Ramos holds a PhD in history, philosophy and science teaching. She worked as a researcher at the National Institute of Science and Technology / Inter- and Transdisciplinary Studies in Ecology and Evolution (INCT/INTREE) of the Federal University of Bahia (UFBA). She is also a researcher involved in the ERC project 'Local Ecological Knowledge' coordinated by David Ludwig of the Wageningen University.

Ecological Understanding as Key to Improve Sustainability Sciences

Due to the aggravation of environmental problems, scientists are called to develop solutions for a sustainable future. Part of the models scientists develops to explain these problems rely strongly on visual representation in order to strengthen their intelligibility. According to the contextual theory of scientific understanding, the more intelligible a model, the bigger the chances to achieve understanding. This project aims to answer how can ecological understanding be improved through visual representations? This question will be tackled interdisciplinarily between philosophy, ecology, and aesthetics. If one of the epistemic goals of science is to explain and understand phenomena, to acquire a good philosophical knowledge about ecological understanding is of utmost importance to improve a sustainable world.

Stephanie Laurel SCHNORR

(April – June 2021)

Stephanie is a biological anthropologist interested in understanding the dietary landscape accessed by human ancestors that enabled the evolution of large brains and complex cognition. During her PhD she worked with the Hadza of Tanzania to investigate food acquisition and processing behaviors in how these alter the digestibility of plant food resources, mainly underground storage organs, or tubers. Through her research on digestion, Stephanie became interested in understanding the role of the gut microbiota in human nutritional acquisition, particularly in consideration of human foragers who often rely on refractory plant resources that are high in fiber. Her research ranges from work on reconstructing ancient microbiomes from human tissue to ethnographic modeling of food processing in understanding the dietary flexibility of present day humans. Stephanie Schnorr was a postdoctoral associate at the Oklahoma University and a KLI postdoctoral fellow. In





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September 2018, she was awarded a fellowship of the US National Science Foundation (NSF). She worked as an NSF fellow at the KLI on her project 'Relevance of Positive Selection on Human Salivary Amylase Gene' before completing her KLI postdoctoral fellowship, in 2021.

Archean Links to the Human Brain: Lipid Metabolism of Gut Microbiota Across the Terrestrial Biome

Lipids play an essential role in cellular structure, signaling, and energy storage. As nonpolar molecules composed of carbon and hydrogen, lipids form nonsoluble structural units that designate the inter- and extra-cellular spaces where biological activities take place. Critically, omega-3 long-chain polyunsaturated fatty acids (LC-PUFAs), form the main structural constituents of the brain, nervous system, and photoreceptors. While the emergence of higher-order aerobic organisms became possible only after oxygenation of the atmosphere, a mere 600 million years ago, primordial bacteria and archaea had a 2.5 billion year head-start to evolve lipid metabolism genes in an anaerobic marine environment especially enriched in the omega-3 LC-PUFAs. As complex life emerged on land, lipid availability switched to a dominance of omega-6 fatty acids, yet neural and retinal tissue still relied on omega-3 LC-PUFA. Since terrestrial sources of omega-3 LC-PUFAs are rare, the anaerobic polyketide PUFA-synthase complex presents an interesting yet unexplored process by which animals could derive essential fatty acids through their microbiome. The network of lipid coding genes, however, remains vastly understudied. Therefore, this proposal details an investigation on the network arrangements of prokaryote lipid metabolism from animal gut microbiota. The goal is to characterize different microbiomes by their ability to manufacture nutritionally important lipids, with particular attention to the essential omega-3 fatty acids. This research forms the proof of concept for a larger project initiative to resolve the paradox of human brain development in the presence of only terrestrial dietary resources.

Marco TREVEN

(June 2021 – May 2023)



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Marco Treven is an MD/Ph.D. and resident at the Department of Neurology, Medical University of Vienna (MUW). He received his PhD in neurobiology from the MUW with a dissertation about extrasynaptic GABA(A) receptors in neurological disorders and basal ganglia. Building on this pharmacological work, he has developed a particular focus on movement disorders and deep brain stimulation. He is interested in deliberate, automatic, and repetitive human behavioral patterns, expressed in movement and abstract cognition, and how such patterns are related to generative internal models or beliefs. In this context, he aims to expand the cognitive framework of Predictive Processing in neurological disorders and extended/distributed cognition. This includes the notion of individually and culturally shaped affordances and the principles of active inference, prediction error minimization, and determinants of belief revision. The potential relevance of this work extends from a better understanding of neuropsychiatric disorders to the interplay between public health and sustainable behavior within environmental niches.

Applying Predictive Processing to Behavioural Patterns in Neuropsychiatric Disorders and Distributed Cognition

Predictive Processing (PP) is a cognitive framework based on the principle that sentient systems (and specifically nervous systems) strive to anticipate homeostatic imperatives by minimizing prediction errors in immediate action-perception loops and detached, abstract cognition. PP provides the tools and language to describe how generative models or beliefs are constructed and dynamically handled through prediction error minimization. Overweighted high-level generative models or beliefs are increasingly recognized in neuropsychiatric disorders, underpinning maladaptive patterns and habits of movement, behavior, and thought. Understanding which factors might catalyze the flexible revision of generative models is relevant



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not only for neuropsychiatric disorders but also for maladaptive aggregate human behavior resting on overweighted socially and culturally held beliefs. This aggregate-level likely has emergent properties beyond the sum of individual preferences. The project outlined here aims to explore how PP can help understand and overcome rigid, stereotyped behavioral patterns resulting from overweighted generative models implemented in different, evolutionarily nested levels of cognition. Firstly, existing evidence will be recapitulated and synthesized regarding how generative models are structurally implemented at different levels of cognition, including extended/group/distributed cognition, and how they determine deliberate and automated behavioral trajectories. Secondly, potential parallels, analogies, and metaphors will be explored to understand maladaptive models at supra-individual cognitive levels. This approach will be positioned into a long tradition of extrapolating and understanding the interdependencies between individual and public health and how they interact with the environment. Accordingly, PP might become applicable for sustainable aggregate human behavior on a planet that is increasingly transformed by particular dominant, culturally held belief systems. Such an approach might help to revise conventional beliefs about human nature, from maximizing reward to maximizing feedback-driven adaptive fitness within ecological niches. Finally, specific novel experimental methodologies will be explored that are suitable to investigate belief revision.



Marco Paulo VIANNA FRANCO

(October 2020 – September 2022)

Marco Vianna Franco is a professor and researcher in applied sciences and public policies at Fundação João Pinheiro (Brazil). He received a PhD in economics from Cedeplar/UFMG with a dissertation on the history and philosophy of ecological economic thought. He is interested in human-nature relations from the perspectives of political economy, intellectual history, and philosophy of science.

A History of Ecological Economic Thought

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The project focuses on the development of a book manuscript to be published by Routledge in 2022. Its aim is to provide a historical account of the development of a set of ideas referred to as ecological economic thought, i.e., a body of knowledge presenting substantial articulations between ecology and economics. The latter is described by means of analyses of flows and stocks of energy and matter in complex socio-ecological systems, including their implications for processes of social provisioning and cultural development. It entails a biophysical and (co-)evolutionary approach to economic science, as well as philosophical views on the relations between humans and their environment, such as nature as a source of value, moral aspects regarding natural resource distribution, and technological and behavioral transformations.

Luis Alejandro VILLANUEVA HERNÁNDEZ

(January 2021 – March 2023)



Luis Alejandro Villanueva Hernández completed his BA in philosophy at the Benemérita University of Puebla BUAP, followed by a MA in ethnomusicology at the National Autonomous University of Mexico (UNAM). From January to June 2016 he did a PhD stay research under the supervision of Professor Ian Cross in the Centre for Music and Science at the Faculty of Music of the University of Cambridge. In his PhD dissertation, supervised by Professor Sergio F. Martínez, he explored models of niche construction, material culture evolution, social interaction, cognitive ethnomusicology, cognitive archaeology, and embodied music cognition, to develop a framework that would allow the integration of different scientific findings going on different disciplines that may be relevant to explain the origins of musical cognitive capacities. He has previously received a KLI writing-up fellowship to complete his PhD thesis.



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He is also an active musician and plays a wide range of traditional musical instruments from Mexico and South America. He has been, for many years, a member of a Mexican musical band called Tsasná (moonlight in Totonac language) with which he has recorded several albums and performed in many international music festivals in Mexico, Europe, South America, and Asia.

Social Affordances in the Transmission and Evolution of Music: A Theoretical Evo-Devo Approach

It has been argued that cultural evolution and genetic inheritance are driven by similar rules. However, such accounts of evolution misperceive an important set of disanalogies between the structure of genetic inheritance and the structure of complex processes of cultural transmission. Furthermore, these models usually left unattended the important role that the development of human organisms play in the production and transmission of cultural traits. Unlike a purely gene-centered approach, EvoDevo research agenda has focused on two key problems about evolution: how do evolutionary mechanisms generate and modify organismal developmental processes, and how does the structure of developmental processes shape back the patterns and processes of evolution. This implies that to understand either evolutionary or developmental processes, we need to understand how they shape one another. Music is a particularly rich cultural expression in which these interrelational processes can be explored.

The process through which individuals acquire a repertoire of musical skills is a multifactorial one (taking place during the personal development of individuals within a social group), and this is possible because social environments afford the maintenance of standing musical practices. The study of the reciprocal interrelation between the acquisition of musical skills and the maintenance and evolution of a musical tradition over time has not been explored yet. I suggest that the notion of social affordances – understood as a set of possibilities for social interaction provided by a sociomaterial environment – would shed valuable light on the way that these interrelational

processes function. Thus, the integration of this concept into an EvoDevo account of music would bridge this research gap, which constitutes the main theoretical contribution of this project.

Cristina VILLEGAS CERREDO

(September 2021 – August 2022)



Cristina Villegas is a philosopher of biology working on probabilities and the notion of chance in evolutionary biology. She graduated in philosophy at the University of Seville (2013), and obtained Master's Degrees in education (UGR, 2014) and logic and philosophy of science (USC, 2015). In 2015, she joined the Complutense University of Madrid with a predoctoral fellowship from the Spanish Ministry of Economy and Competitiveness. She obtained her PhD in 2020 (thesis title: 'Variational Probabilities and Developmental Propensities. A Philosophical Study of Chance in Evolutionary Variation').

Her main research interests include philosophy of evolutionary biology, philosophy of probability, interdisciplinarity in evolution, causality and dispositional explanations, and evolutionary developmental biology.

Evolutionary Propensities and their Evolution

Philosophers have paid attention to some probabilistic aspects of classical evolutionary genetics, while they have left aside the role of probabilities with respect to the origin and impact of phenotypic variation. In this project, I intend to fill an important gap of this situation by philosophically characterizing the interactions between the evolutionary propensities of the classical framework of evolutionary genetics (fitness and the capacity to drift) and those of new methodological approaches, notably EvoDevo, interested in the nature and impact of variation in evolution, known as 'variational tendencies' (evolvability, variability, robustness, modularity and plasticity). The aim of the project is to develop a coherent,



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integrative framework for the relationship between these two kinds of evolutionary properties, as well as the relevant notions of randomness and contingency that they demand. Such a coherent philosophical framework will move beyond the current acknowledgement of a pluralism of approaches to evolution towards an encompassing view of the current diversity in explanatory and predictive probabilistic models within the evolutionary disciplines. More particularly, filling this gap is an important step towards the overcoming of two dichotomies in the philosophy of evolution: the opposition between 'population' and 'typological' thinking, and the one between necessity and contingency.

2.4 Senior Fellowships



Orsolya Rita BAJER-MOLNÁR

(November 2021 – October 2022)

Orsolya Rita Bajer-Molnár is an evolutionary biologist, with a passion for both research and education. She received her Master's diploma from Eötvös Loránd University in evolutionary biology, ecology and systematics. Five years later, she completed her PhD in behavioural ecology and evolutionary biology. She then won a postdoctoral scholarship at Dartmouth College, NH, after which she continued research at UFRN in Brazil. Upon returning, she turned towards the evolutionary dynamics of emerging infectious diseases, which she is currently working on in collaboration with the University of Nebraska and Centre for Ecology Research (Hungary).

Throughout her research, she had always been interested in science communication. Overseas she organized networking events, conferences and outreach programmes, and taught graduate and undergraduate students. She took an active role in science communication, and after

numerous appearances she just recently gave a TedX talk. Her aim is to increase the visibility of research, and thus facilitate a combined effort to prevent the emerging infectious diseases.

Preaction Plan – Implementing Disease Prevention in Modern Society

Emerging Infectious Diseases (EIDs) are one of the major threats on global human health and economy, with an increasing number of novel epidemics appearing each year. Although they vary in pathogen and severity, the underlying evolutionary processes of emergence are shared by all, it is therefore through these drivers that we can predict and act to prevent outbreaks. The DAMA protocol was developed as a framework for coping with EIDs, where *Documentation* of potential pathogens is followed by an *Assessment* of the risk they pose. High-risk taxa and their reservoir hosts are then *Monitored* to reveal geographic distribution and an *Action* plan can be developed to avoid infection of human and/or economically significant species (livestock, crops).

As a comprehensive protocol, the DAMA's final Action phase requires the efficient and fluent collaboration of multiple diverse fields, such as research, health care, economics, politics and policy-making. My proposal aims to initiate targeted discussions with experts of the mentioned areas in an effort to create crucial guidelines and scenarios for the implementation of the DAMA protocol. My work will include contacting current and potential collaborators, round-table discussions, analysis of case studies, theoretical simulations of hypothetical epidemics and the creation of final reports containing significant challenges, recommendations and action plans specific for each field.

As a member of the KLI community, I will also use this opportunity to invite collaborators to contribute to the institute in the form of talks, seminars and symposia, and further raise awareness about EIDs among the general public through various tools of science communication.



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Roberto CAZZOLLA GATTI

(January 2020 – April 2021)

Roberto Cazzolla Gatti is an Italian environmental and evolutionary biologist, and a biodiversity expert, who studies the diversity, behaviour, evolution, and ecology of species on Earth. He is an associate professor and the head and scientific coordinator of the MSc program in biodiversity at the Biological Institute of the Tomsk State University, Russia.

He also works as a freelance documentary photographer and wildlife filmmaker and coordinates geographic and scientific explorations of some of the most remote places on Earth. In 2019, his documentary-film on the biodiversity of Congo river basin's forests entitled "Ivindo: a journey into the green heart of Africa" was released by the Colibri Studio Productions.

The Role of Niche Emergence and Diversity Autocatalysis in the Evolution of Biodiversity, Socio- Economic Sustainability, and Developmental Biology

There are few studies and theories that clearly explain why the number of niches is so variable through ecosystems and how can several similar species live in the same environment. In my early work, I showed that the number of niches in an ecosystem depends on the number of species extant in a particular time and that the species themselves allow the enhancement of niches in terms of space and number. I firstly resumed these hypotheses, after some empirical studies, in the Biodiversity-related Niches Differentiation Theory (BNDT). Then I suggested that biodiversity can indeed be considered a system of autocatalytic sets. Successively, I argued that niche partitioning, as a way to coexist, could be a limited means to share the environmental resources and condition during evolutionary time. Therefore, I proposed that niche emergence is what mostly drives ecological diversity.

These research lines constitute the basis for the concept of ecological autocatalytic networks (ecoRAFs), how this can

give rise to an expanding process of niche emergence (both in time and space), and how these networks have evolved over time (evoRAFs). This approach might be useful to estimate, with a power-law, the extent of extinction events and the “potential” number of species that could evolve in an eco-system or in the whole biosphere. I am now exploring the deep implications of these novel ideas on evolutionary patterns and socio-economic theories.

The aim of the current research proposal is to evaluate and predict the effect of present and future global changes on biological diversity and analyze the implications of niche emergence and biodiversity autocatalysis on evolutionary developmental biology (EvoDevo) and socio-economic aspects related to sustainability. I will attempt to address both a theoretical and empirical debate trying to provide an answer to three main interdisciplinary questions on the “unpredictability” and predictability of evolution, in terms of i) biodiversity expansion limits and biodiversity loss in the Anthropocene, ii) evolutionary developmental biology, and iii) economic growth.

2.5 Visiting Scientists

Emily R. BOCK

(November – December 2021)

Emily R. Bock is a cultural anthropologist whose research is situated at the intersection of black studies, queer theory, performance studies, ethnography, and ethics. Their current book project explores the contemporary ballroom scene, an underground, predominantly black, queer performance community, in Chicago and New York, and considers how people strive to imagine and secure existence beyond mere survival within an ordinary haunted by anti-black and anti-queer violences. This research tracks the practices for living that emerge from performances and presentations that





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experiment with and against normative US practices and values and asks how these practices elaborate an alternative narrative arc and structure to the American dream. They teach courses in gender and sexuality studies and black studies.

Theoretical Genealogies of Adaptation

This project intervenes in interdisciplinary, reflexive, and conceptual debates currently ongoing across ecology, anthropology, environmental studies, science studies, and sustainability studies over (a) how to envision of human flourishing and the good life under conditions of planetary-scale environmental volatility, and in consequence, (b) the conceptual resources and intellectual traditions relevant to diversifying “decolonizing” sustainability.

In the main, social scientists and humanists have raised these issues by turning toward cosmologies understood to rival or supplement orthodox North Atlantic technoscience. In this way, the academic project of diversifying and decolonizing sustainability has addressed itself primarily to the concepts and institutions of natural science, and it has done so by emphasizing the value of local, place-based, and traditional knowledge of the nonhuman world. Yet sustainability is, as we have noted above, not only a matter of natural science; it is equally an historical project concerned with how human forms of life ought to arrange themselves in response to ecological stress. And thus our project takes a novel path by exploring a heterodox modern tradition of reflection on, and experimentation with, adaptation. We examine historical debates in Black studies over the meaning, virtues, challenges, and hazards of adaptation to a world of racial capitalism, in an effort to see how it might make contact with scientific conceptions of adaptation, and in doing so, throw new light on the problem of adaptation to the volatile planet that racial capitalism has made.

Daniel R. BROOKS

(November 2021)

Daniel R. Brooks is Professor Emeritus, University of Toronto, and Senior Research Fellow of the H.W. Manter Laboratory of Parasitology, University of Nebraska State Museum. He received his BS with Distinction (1973) and MS (1975) from the University of Nebraska and his PhD from the University of Mississippi (1978). He is a Fellow of the Royal Society of Canada (Academy of Science) and Fellow of the Linnean Society of London. He has been awarded honorary doctorates from Stockholm University and the University of Nebraska-Lincoln and has been a Visiting Fellow of the Collegium Budapest, the Ciencias sem Fronteras program of Brazil, the Stellenbosch Institute of Advanced Study, Stellenbosch, South Africa, the Institute of Advanced Studies, Kőszeg, Hungary, and the Hungarian National Center for Ecological Research. Dan is an evolutionary biologist whose work ranges from field studies of the evolution of pathogen-host systems in tropical wildlands to foundational studies of evolutionary theory. He now focuses his efforts on the interface between science and science policy, integrating evolutionary principles into proactive and effective action plans for coping with the challenges of global climate. In 2019, Dan co-authored The Stockholm Paradigm: Climate Change and Emerging Disease (University of Chicago) with Eric Hoberg and Walter Boeger, and in 2020, he co-authored The Major Metaphors of Evolution: Darwinism Then and Now (Springer) with Salvatore Aosta. His newest book, also co-authored with Salvatore Agosta and scheduled for 2022, is Surviving the Anthropocene: A Darwinian Guide.



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The Evolutionary Biology of Emerging Infectious Diseases

Emerging Infectious Diseases in humans, livestock and crops currently cost the world 1 trillion dollars a year in production losses and treatment costs, more than the GDP of all but 15 countries. Evolutionary analysis of this crisis, based on the newly-formulated Stockholm Paradigm, links the potential for emerging infectious disease outbreaks directly to climate change. Highly specialized pathogens evolve in localized settings in association with one or a few hosts. Climate change and ecological disruption alters geographic distributions, bringing those pathogens into contact with susceptible but previously unexposed hosts. This has been true throughout the history of life on this planet. Human activities during the past 15,000 years, including domestication and agriculture, population growth, conflict and migration, urbanization and globalization have all increased the risk. Technological humanity now faces an existential crisis in global climate change and emerging infectious disease. We have run out of time and we are largely unprepared. But we can change that. The very evolutionary specializations that make pathogens a threat for widespread emergence also provide insights into how we can find them before they find us. The DAMA (document – assess – monitor – act) protocol links activities from neighborhood gardens to global surveillance systems that can allow us to anticipate to mitigate emerging diseases. We can lower costs to society, limiting the global impact of pathogens and slowing the expanding and accelerating crisis, while buying time for traditional efforts to medicate, vaccinate and eradicate.

Maria CEREZO

(August – September 2021)

María Cerezo is Professor of Logic and Philosophy of Science at the Department of Philosophy of the University of Murcia, Spain. Her initial interests centred on the philosophy of language, in particular, the Tractatus Logico-philosophicus of Ludwig Wittgenstein. From 2008 on, she has started working on issues of philosophy of biology, and in particular on metaphysical issues that arise in biological concepts and problems. She is the coordinator of the research project Metaphysics of biology: framing the interactions between molecular, developmental and evolutionary biology. Her interests in philosophy of biology center in issues such as: metaphysical theories of persistence applied to species evolution; causation, individuation and teleology in developmental biology; and dispositional theories of genes.



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Two Issues in Philosophy of Biology: Processes and Dispositions in the Analysis of Biological Entities

Recent work on philosophy of biology has focused on issues that can be considered to be at the intersection between metaphysics and biology: issues such as individuation of biological entities, the consideration of biological entities as things or as processes, recourse to 3D and 4D theories of persistence to account for the persistence and dynamical nature of biological systems (organisms, tissues, species, ecosystems, and so on) are some examples. But there is little reflection on the nature of such interactions between metaphysics and biology. The aim of the project is to offer a categorization of the interactions between metaphysics and biology, paying attention, in particular, to some philosophical issues that have arisen recently in molecular, developmental and evolutionary biology. Our hypothesis is that there are three forms of interaction, to be characterised by three propositions: “with,” “for,” and “from,” depending on the particular way in which the crossfertilization of the disciplines takes place.



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The relevance of the project derives from two factors: a) the strong interdisciplinarity presupposed to develop it: the interaction between the two disciplines requires real attention to both biological empirical advances and to contemporary philosophical theories; b) in the last decades there have been several individual and group research projects playing such interaction (among others, three paradigmatic examples are the following: project on biological processes at Exeter developed by J. Dupré and D. Nicholson; work on immuno-individuation at Burdeaux developed by T. Pradeu and his group, and project “*From biological practice to scientific metaphysics*” developed by A. Love, K. Waters and M. Weber).

Antoine MISSEMER

(October 2021)

Antoine Missemer is a CNRS researcher currently working at CIRED - Centre international de recherche sur l'environnement et le développement (Paris, France). He holds a PhD in economics from the University of Lausanne. His interdisciplinary work focuses primarily on the history of environmental, energy, and natural resource economics, i.e., on how the economic discipline and economists have approached energy and ecological transition in the past. He is the author of several books (in French) and articles (in French and English) crossing the history of ideas and sustainability issues. He is currently working, with Marco P. Vianna Franco (KLI), on a history of the relationship between economics and the science of ecology, to be published by Routledge.

What Dialogue between Economics and the Natural Sciences on Sustainability?

Since its publication in February 2021, the Dasgupta review, titled “*The Economics of Biodiversity*,” has had a strong impact. The report invites us to consider nature as an



“asset,” or a form of “capital,” whose value should be measured using controversial indicators and methodologies. The contributions of this capitalized nature to human societies would have then to be referred to as “ecosystem services”—the Dasgupta review devotes a full chapter to them. The literature on “natural capital” and “ecosystem services” has developed since the 1990s, but the concept of “nature’s services” is actually much older: we can find traces of it at least in the work of Alexander von Humboldt at the turn of the 19th century. One episode deserves special attention: the intertwining of economic and ecological expertise between the 1880s and the 1920s in the United States. At that time, some economists, ecologists, biologists and professionals of all kinds worked on the “services of nature,” particularly in forestry and agriculture. The concept of “natural capital” was also coined at that moment. The purpose of this presentation will be, therefore, to review that episode and to draw some lessons on the role of economic words in our understanding of environmental challenges. Economic imperialism, disciplinary hybridization, the role of biology and ecology in economics... these topics will be discussed to show how conceptual history can help answer the question: do economic words harm sustainability?

Nicole TORRES TAMAYO

(October 2021)

Nicole Torres Tamayo is a research fellow at the Department of Paleobiology at the National Museum of Natural Sciences (Madrid, Spain).

She uses 3D geometric morphometrics of sliding semi-landmarks to address the torso variation in living Homo sapiens and extant non-human hominoidea. She focuses her research on the study of the (co-)variation of torso structures in extant hominoidea. She is particularly interested in understanding the patterns of thorax and pelvis covariation in humans and other primates, and





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their impact on the evolution of human body shape. She analyzes torso 3D models through 3D geometric morphometric techniques.

She is also an advocate for open science and data sharing, and this defines her interests and concerns above any discipline.

Adaptations in the Pelvic Floor to Inner Organ Support in Humans

The human pelvis is a complex trait that has to perform multiple functions, from providing skeletal stability to enabling childbirth. Not all of these demands likely align so as to require an identical morphology; instead, the hard and soft tissue of the human pelvis reflect functional and evolutionary trade offs. One such, notable, trade off exists in the dimensions of the pelvic canal (birth canal in women). On the one hand, selection favors a spacious canal to enable birth of large brained fetuses. On the other hand, there is selection in the opposite direction favoring a smaller pelvic canal, evinced by the strong sexual dimorphism in the human pelvis. A long-standing explanation is that our bipedal mode of locomotion necessitates a narrow pelvis (Washburn 1960; Rosenberg 1992). Another hypothesis poses that a small pelvic canal benefits the supportive capacity of the muscles and connective tissue of the pelvic floor inside it (Abitbol 1988; Brown et al. 2013). The pelvic floor spans the 'open' space inside the pelvic canal and in upright, bipedal humans, provides critical support to the abdominopelvic organs and a heavy fetus during pregnancy. Indeed, the high incidence of pelvic organ prolapse and other pelvic floor disorders (e.g., incontinence) in women may reflect the evolutionary conflict between a pelvis that needs to be large enough to birth large babies and small enough to provide other functions vital to survival and reproductive functioning.

The extent to which human bony pelvic evolution may have been driven by the functions of the pelvic floor is gaining interest among researchers, but has received limited empirical attention thus far. Here, we propose to study how the dimensions and shape of the bony pelvis co vary with the size of the abdominal cavity. Specifically, we will investigate how pelvic canal size and shape scales with variation in body height and size of the abdominal cavity. One can demonstrate that intra abdominal pressure increases with an increase in stature, and thus one can predict that taller individuals would benefit from relatively smaller pelvic canals in order to compensate for the increase in pressure on their pelvic floor. Furthermore, women are known to possess absolutely wider pelvic canals than men across populations, and may thus be more susceptible to developing pelvic floor disorders as a result of this size increase alone. However, the abdominal contents are not only supported by the soft tissue of the pelvic floor; the upper part of the hipbones (the ilia) also contribute. I will therefore investigate whether the shape and orientation of women's hipbones result in a greater surface to support abdominal contents, relative to the size of the abdominal cavity and body height, as a way to mitigate the increased strain on the pelvic floor. In addition to yielding valuable new insights into co evolution between the upper and lower part of the human torso, the findings of this project may also have clinical relevance for understanding risks of pelvic floor disorders in women and men.



2.6 Researchers with Own Funding

Flavia FABRIS

(June 2021 – September 2022)

Flavia Fabris (PhD La Sapienza University of Rome) is a philosopher of biology who worked at Egenis, the Centre for the Study of Life Sciences, at the University of Exeter. Her background is in philosophy of science and evolutionary developmental biology. From 2011 to 2014, she worked at the La Sapienza, Department of Genetics and Molecular Biology “Charles Darwin,” focusing mainly on epigenetic inheritance and the canalization of development. Since 2013, she has been associated with the Centre for Applied Philosophy of Science (CAPS) at the Norwegian University of Life Sciences (NMBU), Ås. Her research examines a variety of conceptual issues in evolutionary and developmental biology, with an emphasis on causation and on methodological and ontological aspects of scientific practice. At present, she is particularly interested in re-examining the philosophy of cybernetics, its primary forms of reasoning, and its implications for theoretical biology, with particular regard to EvoDevo and the Extended Evolutionary Synthesis.

Rethinking Cybernetics in Contemporary Theoretical Biology

In recent years, the contributions of cybernetics to the development of evolutionary developmental (EvoDevo) biology have increasingly been recognized. The particular theories and models developed during the flourishing of cybernetics in the early 20th century laid the foundation for the systems approach, which is nowadays widely and fruitfully employed in molecular biology, genetics, genomics, immunology, developmental biology, and ecology. Nevertheless, in some quarters, scholars argue that cybernetics should be

treated with suspicion because many evolutionary phenomena cannot be explained reductively in terms of mechanisms, their parts, and their production. This debate, almost a decade long, has produced a considerable amount of literature, mostly centred on the long-protracted dispute between mechanistic philosophers of biology on one side, and those who argue for the superiority of a process view of life on the other. My project aims to re-examine the philosophy and epistemology of cybernetics, its history and its implications for contemporary theoretical biology. The philosophical analysis will focus on clarifying the epistemologies of both cybernetics and EvoDevo biology, and determining how and to what extent they overlap. I aim to provide positive arguments for the conclusion that, in contrast to the predominant view, cybernetic explanations within biology, when properly understood, are a form of non-reductionist explanation. My work will also help to evaluate the general assumption that cybernetics has, at its ground, a metaphysical commitment to the mechanistic nature of life. I will put this assumption in question, and therefore suggest that the suspicion mentioned above is misplaced.

Stephanie SCHNORR

(September 2018 – March 2021)

Stephanie is a biological anthropologist interested in understanding the dietary landscape accessed by human ancestors that enabled the evolution of large brains and complex cognition. During her PhD she worked with the Hadza of Tanzania to investigate food acquisition and processing behaviors in how these alter the digestibility of plant food resources, mainly underground storage organs, or tubers. Through her research on digestion, Stephanie became interested in understanding the role of the gut microbiota in human nutritional acquisition, particularly in consideration of human foragers who often rely on refractory plant resources that are high in fiber. Her research ranges from work on reconstructing ancient microbiomes from human tissue to ethno-





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graphic modeling of food processing in understanding the dietary flexibility of present day humans. Stephanie Schnorr was a postdoctoral associate at the Oklahoma University and a KLI postdoctoral fellow. In September 2018, she was awarded a fellowship of the US National Science Foundation (NSF) and works as an NSF fellow at the KLI on her project 'Relevance of Positive Selection on Human Salivary Amylase Gene.'

Relevance of Positive Selection on Human Salivary Amylase Gene

Human salivary alpha amylase (sAA) is the most abundant protein found in saliva. The expression of sAA is regulated by copy number variation (CNV) of the AMY1 gene, and the enzyme is responsible for the breakdown of starch into simple sugars. We lack specific knowledge as to how changes in sAA concentration impacts starch digestion during mastication or through downstream regulatory effects. Importantly, no empirical research exists that explores rate variation in the hydrolysis of raw versus cooked starch. Using a controlled *in vitro* and histological approach along with human subject validation trials, I intend to address questions about the starch degrading activity of sAA in the mouth, and the potential nutritional advantages brought about by a selective increase in AMY1 CNV in human evolutionary history. These questions address diet related selective events that occurred along human evolutionary history. Understanding the resulting nutritional benefits and potential susceptibilities to metabolic and inflammatory disease promises not only resolution of our distinctly human traits but also advances towards evolutionarily-informed models of targeted therapies. This project uses a multidisciplinary approach to tackle relevant questions in the field of anthropology and human evolutionary research.

Jacob Orion WEGER

(April – December 2021)



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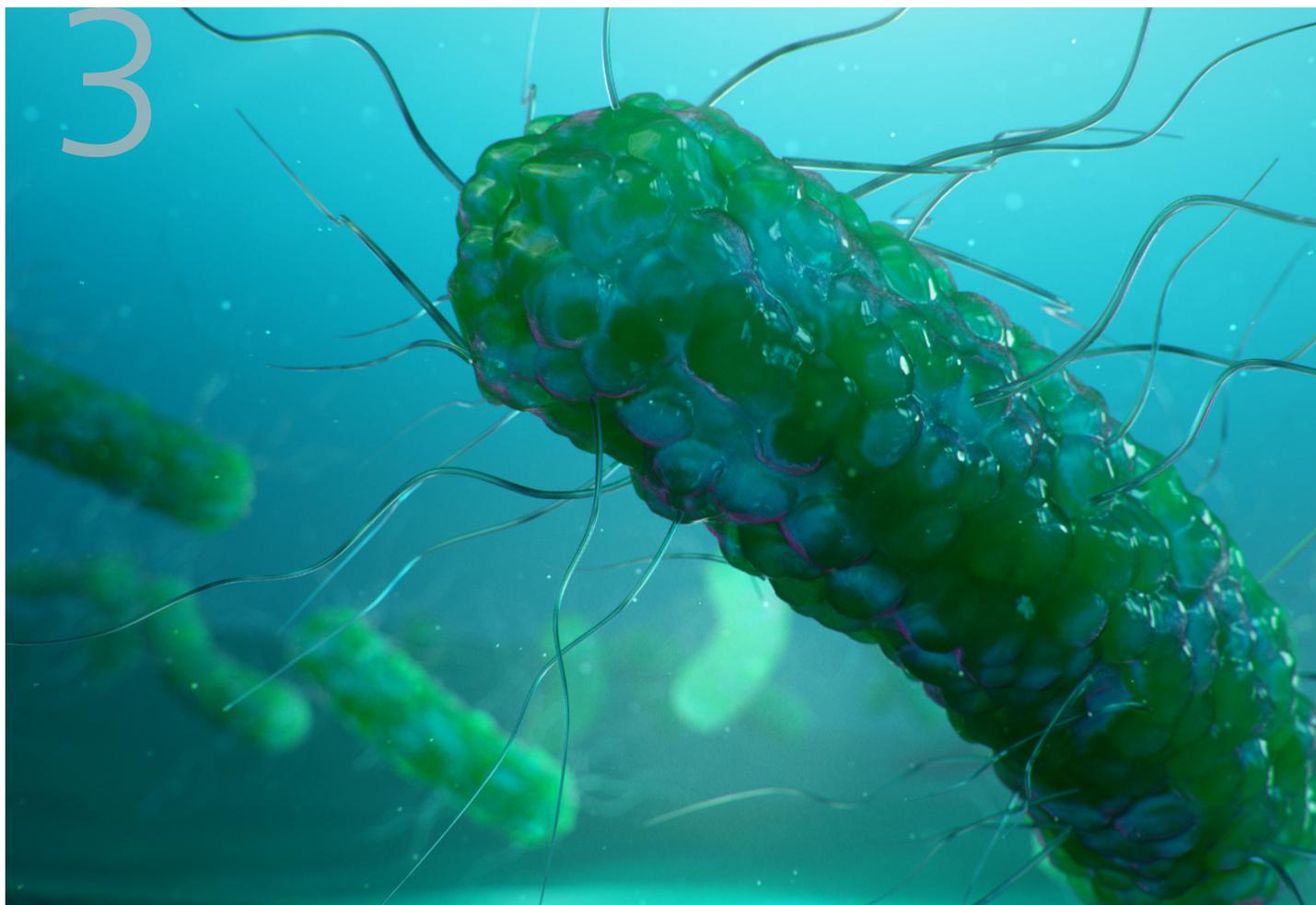
Jacob Weger is a PhD Candidate in anthropology at the University of Georgia and holds a Bachelor's degree in sociology/anthropology from Lewis & Clark College in Portland, Oregon. Specializing in environmental and cultural anthropology, he works at the intersection of political ecology and science & technology studies, with research interests in climate change, environmental governance, sustainability and development, delta transformations, and a regional specialization in Vietnam and Southeast Asia. His PhD dissertation focuses on the politics of knowledge and translation involved in the governance of climate change adaptation in the Mekong Delta and has been funded by the U.S. National Science Foundation, U.S. Department of Education Fulbright-Hays Fellowship, and the University of Georgia.

Delta Variations: Politics of Translation in the Governance of Climate Change Adaptation in the Mekong Delta, Vietnam

This project explores how knowledge is translated into practical action and socio-environmental change under the guise of climate change adaptation, shedding light on the evolution of deltaic landscapes in the context of climate change and socioeconomic development. Based on 19 months of multisited ethnographic fieldwork in the Netherlands and Vietnam, and employing data from a variety of sources, the study examines the politics of knowledge and translation involved in the transnational governance of climate change adaptation in the Mekong Delta. This project brings together anthropology, environmental history, Earth Systems science, and development studies, as well as the critical theoretical perspectives of political ecology and science and technology studies, to interrogate the cross-scalar governance of climate change adaptation. In doing so, it offers insights into processes of socio-material change in order to aid efforts to advance more just and sustainable transformations.



Meetings and Lectures



The KLI supports international workshops, symposia, and individual talks that are organized by the KLI or in cooperation with other institutions.



3.1 KLI Working Group

The KLI supports international groups of scholars in the life and sustainability sciences working on interdisciplinary projects to conduct their groundbreaking research at the institute. KLI Working Groups aim to develop ideas on a particular subject and generate suggestions for action. The participants have different scientific backgrounds and strive to develop specific, practical goals. Working Groups comprise 3 meetings over the course of one year and a half.



1st Working Group 8 October 2021

Evolutionary Approaches to Social-Ecological Change

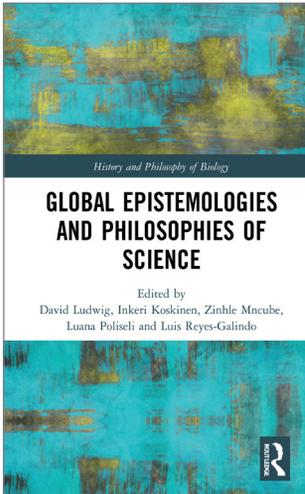
KLI, Klosterneuburg, online

Organization: Tim Waring & Maja Schlüter

*Participants: Monique Borgerhoff Mulder, Jamila Haider,
Peter Soegaard Joergensen*

Topic and Aims

Evolutionary and adaptive change are general processes that apply to a wide range of systems, including genetic, environmental and cultural systems. But, although evolutionary thinking may assist in the study of social-ecological systems, applying evolutionary logic to social-ecological systems remains a challenge. Our KLI working group proposes to explore, extend, and enrich the connections between evolutionary theory and social-ecological change. Given the growing interest in theorizing change processes as the field is maturing, speakers reflected on how evolutionary theory may help explain and theorize the emergence of social-ecological phenomena.

56 **3.2 KLI Special Event**

Meet the Editors & Authors 1 December 2021

Global Epistemologies and Philosophies of Science

KLI, Klosterneuburg, online

Organizer: Luana Poliseli Ramos

Topic and Aims

Global challenges such as climate change, food production, and infectious diseases raise complex questions about scientific knowledge production and its interactions with local knowledge systems and social realities. As academic philosophy provides relatively little reflection on global negotiations of knowledge, many pressing scientific and societal issues remain disconnected from core debates in epistemology and philosophy of science.

In bringing together a global community of philosophers, *Global Epistemologies and Philosophies of Science* develops novel perspectives on epistemology and philosophy of science by demonstrating how frameworks from academic philosophy (e.g., standpoint theory, social epistemology, feminist philosophy of science) and related fields (e.g., decolonial studies, transdisciplinarity, global history of science) can contribute to critical engagement with global dimensions of knowledge and science.

This book is an invitation to broaden agendas of academic philosophy by presenting epistemology and philosophy of science as globally engaged fields that address heterogeneous forms of knowledge production and their interactions with local livelihoods, practices, and worldviews. This integrative ambition makes the book equally relevant for philosophers and interdisciplinary scholars who are concerned with methodological and political challenges at the intersection of science and society.

Editors

David Ludwig is an associate professor in the „Knowledge, Technology and Innovation“ Group of Wageningen University and Research (Netherlands). His work combines philosophy of science and transdisciplinary research in addressing epistemological, ontological, political challenges in scientific practice.

Inkeri Koskinen is a senior research fellow at Tampere University (Finland), and a member of the Centre for Philosophy of Social Science (TINT). She works on scientific objectivity, democratisation of scientific knowledge production, social and cognitive diversity in science, demarcation, and philosophy of the humanities.

Zinhle Mncube is a lecturer in the Department of Philosophy at the University of Johannesburg and a PhD student in History and Philosophy of Science at the University of Cambridge. She works on issues related to personalising medicine, the role of genes in phenotypes, and philosophy of race, broadly construed.

Luana Poliseli is a postdoctoral researcher at the Konrad Lorenz Institute for Evolution and Cognition Research (KLI), Austria. Her works approach general philosophical questions through empirical knowledge of particular sciences, including themes of mechanistic explanation; model-building; knowledge production for sustainability sciences, and more recently aesthetic experiences in scientific understanding.

Luis Reyes-Galindo is an associate editor for the journal *Tapuya* and a postdoctoral researcher at the Global Epistemologies and Ontologies at Wageningen University & Research. His research includes the sociology of science and technology, scientific communication and open access publishing, and the role of experts in policy making.

Invited authors

Chad Harris is a senior lecturer in the Department of Philosophy at the University of Johannesburg, South Africa. He is director of the department's African Centre for Epistemology and Philosophy of Science (ACEPS) and works under the ACEPS project "Rationality and Power." His other research interests are in the methodology of social science, especially the problem of external validity. His previous publications have looked at traditional medical practices and how they can be reconciled with mainstream medicine.



58 **Inkeri Koskinen** is a senior research fellow at Tampere University (Finland), and a member of the Centre for Philosophy of Social Science (TINT). She currently works in the research project "Social and Cognitive Diversity in Science: An Epistemic Assessment" (2018– 2022). Her recent publications have focused on scientific objectivity, activist research, and the democratization of scientific knowledge production. Her research interests include also demarcation and the philosophy of the humanities.

Faik Kurtulmus is an assistant professor at Sabancı University. He works on issues that lie at the intersection of political philosophy, social epistemology, and philosophy of science. Recent publications have focused on justice in the distribution of knowledge and public trust in science.

Zinhle Mncube is a lecturer in the Department of Philosophy at the University of Johannesburg and a PhD student in History and Philosophy of Science at the University of Cambridge. She works on issues related to personalizing medicine, the role of genes in phenotypes, and philosophy of race, broadly construed.

3.3 KLI Colloquia

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KLI Colloquia are informal, public talks that usually take place at the KLI in Klosterneuburg. In 2021, several colloquia were carried out in a hybrid format, with speakers and fellows participating in-person at the KLI, while international guests joined virtually. Abstracts of the presentations and information about the lecturers can be found on the website of the institute.

GERALD STEINER

Donau University Krems

Why the Future Needs More Transdisciplinary Research and Universities: Theories, Competences, and Cases from the Field

DANIEL HAUSKNOST

Vienna University of Economics and Business

The Modern State and the Glass Ceiling for a Sustainability Transformation – A Systems Perspective

SHARON CRASNOW & KRISTEN INTEMANN

Norco College & Montana State University

Why Feminist Philosophy of Science?

HARINI NAGENDRA

Azim Premji University, Bangalore

Thinking Ecologically about Cities: A Global South Perspective

STUART A. NEWMAN

New York Medical College

Inherency and Agency in the Evolution of Development

SCOTT F. GILBERT

Swarthmore College

Holobiont EvoDevo: Animal Development as a Team Sport

MANDĚ HOLFORD & MARGA GUAL SOLER

City University of New York & SciDipGLOBAL

Science Diplomacy in the Post-COVID World

MANUEL SCHOLZ-WÄCKERLE

Vienna University of Economics and Business

Evolutionary Political Economy: Transformation and Simulation



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DAVID BERRY

University of Vienna

Building a Healthy (Microbial) Community: Establishment of the Gut Microbiota in Infants and its Role in Immune and Brain Development

KATRIN VOHLAND

Natural History Museum, Vienna

Opening Up Science in Museums – Experiences and Challenges

NAOMI ORESKES

Harvard University

Values in Science: Where Are We Now?

NICOLE GRUNSTRA

Konrad Lorenz Institute for Evolution and Cognition Research

Multiple Approaches to Understanding Human Pelvic Evolution – A Reappraisal of the Obstetrical Dilemma

MIHAELA PAVLICEV & LAURA NUÑO DE LA ROSA GARCÍA & ARANTZA ETXEBERRIA AGIRIANO

University of Vienna & Complutense University of Madrid &

University of the Basque Country

Pregnant Females as Historical Individuals: An Insight from the Philosophy of EvoDevo

BRIAN FATH

Towson University & IIASA, Laxenburg

Foundations for Sustainability

ANTOINE MISSEMER

CNRS/CIREN, Paris

Do Economic Words Harm Sustainability? Some Lessons from Conceptual History

GREGOR GRESLEHNER

University of Vienna

Two Dogmas of Molecular Biology: What Is the Explanatory Role of the Sequence–Structure–Function Relationship?

DANIEL R. BROOKS

University of Toronto

Surviving the Anthropocene; A Darwinian Guide

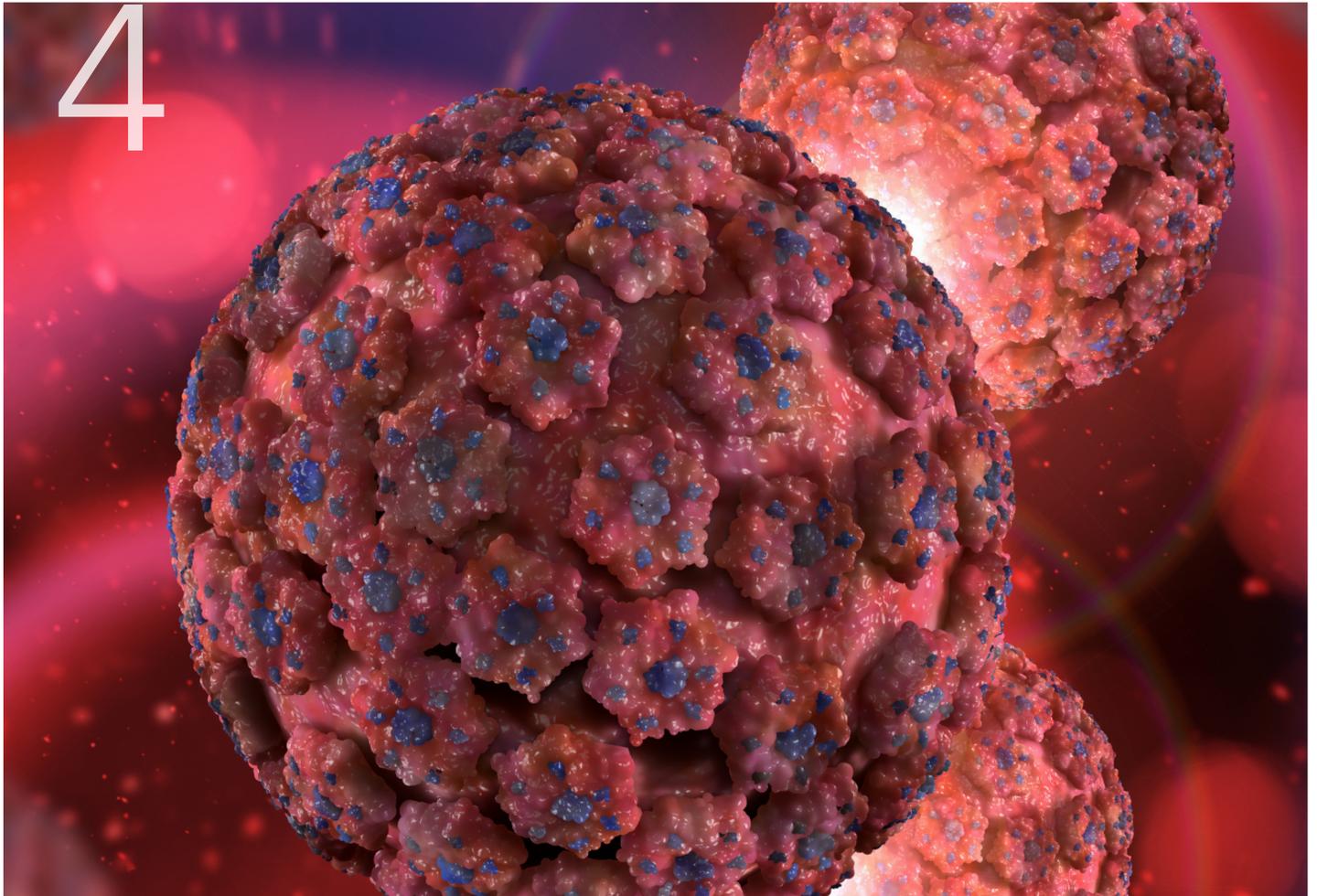
CHRISTINE MARIZZI

BioBus, Inc & Austrian Scientists in New York

Biobus – Driving Community Science and Education



Publications

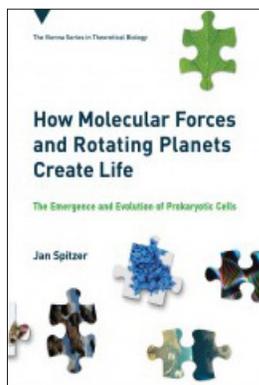


Scientific publications and presentations of KLI fellows and staff in 2021.

4.1 Vienna Series in Theoretical Biology

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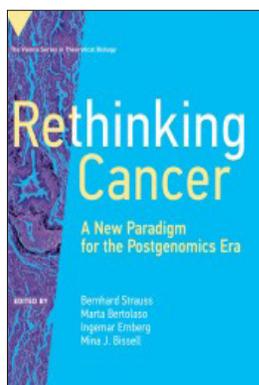
The 'Vienna Series' is published by The MIT Press as a book series. Books are mainly based on the Altenberg Workshops in Theoretical Biology and the resulting contributions and new syntheses. The book projects are subjected to a reviewing process by The MIT Press.



Volume 26:

JAN SPITZER

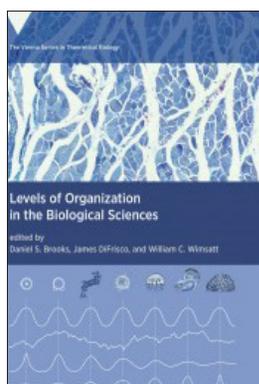
How Molecular Forces and Rotating Planets Create Life



Volume 27:

BERNHARD STRAUSS, MARTA BERTOLASSO,
INGEMAR ERNBERG & MINA J. BISSELL

Rethinking Cancer



Volume 28:

DANIEL S. BROOKS, JAMES DIFRISCO,
& WILLIAM C. WIMSATT

Levels of Organization in the Biological Sciences



64 4.2 Professional Papers and Books

ACHARYA A, SANYAL S.

Where There's Muck There's Brass: Making Money from Sewage in Kolkata

The Economist

<https://www.economist.com/1843/2021/01/13/where-theres-muck-theres-brass-making-money-from-sewage-in-kolkata>

APETREI C, CANIGLIA G, VON WEHRDEN H, LANG DJ.

Just Another Buzzword? A Systematic Literature Review of Knowledge-Related Concepts in Sustainability Science

Global Environmental Change 68: 102222

BOBADILLA RODRÍGUEZ H.

Review of "When Maps Become the World" by Rasmus Grønfeldt Winther

History and Philosophy of the Life Sciences 43: 73

BOBADILLA RODRÍGUEZ H.

Simulating Earthquakes: Explaining and Understanding with Highly Idealized Models

PhD Thesis, University of Vienna

BOOKSTEIN FL, BRAVO MORANTE GB.

The Fallacy of Forensic Age Estimation from Morphometric Quantifications of the Pubic Symphysis

In: Remodeling Forensic Skeletal Age (Algee-Hewitt B, Kim J, eds), pp. 199-213
Academic Press, Elsevier: London

BRAVO MORANTE G.

Morfometría geométrica y 3D en la antropología física, determinación de la edad al morir. Determinación de la edad al morir

PhD Thesis, University of Granada

BRAVO MORANTE G, BOOKSTEIN FL, FISCHER B, SCHAEFER K, ALEMÁN AGUILERA I, BOTELLA LÓPEZ MC.

Correlation of the Human Pubic Symphysis Surface with Age-at-Death: A Novel Quantitative Method Based on a Bandpass Filter

International Journal of Legal Medicine 135: 1935-1944

BRAVO MORANTE G, FISCHER B, BOTELLA LÓPEZ MC, BASTIR M.

The Outline of the Pubic Symphyseal Surface is Sexually Dimorphic and Changes with Age in Humans

Journal of Anthropological Sciences 99: 83-95

CANIGLIA G, JAEGER C, SCHERNHAMMER E, STEINER G, RUSSO F, RENN J, SCHLOSSER P, LAUBICHLER MD.

COVID-19 Heralds a New Epistemology of Science for the Public Good

History and Philosophy of the Life Sciences 43: 59

CANIGLIA G, ZENK L, SCHERNHAMMER E, BERTAU M, STEINER G, KAINZ M, JAEGER C, SCHLOSSER P, LAUBICHLER MD.

Scientists Responsibility for Global Futures

Science & Diplomacy 48

<https://www.sciencediplomacy.org/perspective/2021/scientists-responsibility-for-global-futures>

CARLS-DIAMANTE S.

Explanation within Arm's Reach: A Predictive Processing Framework for Single Arm Use in Octopuses

Erkenntnis

<https://doi.org/10.1007/s10670-021-00424-7>

CARMEN E.

How Do Social Relationships, Amongst Other Diverse Factors, Shape Community Change Initiatives in the Context of Climate Change?

PhD Thesis, University of York

CARMEN E, FAZEY I, CANIGLIA G, ANTHONY J, PENNY L.

The Social Dynamics in Establishing Complex Community Climate Change Initiatives: The Case of a Community Fridge in Scotland

Sustainability Science 17: 259-273

CAZZOLLA GATTI R.

Why We Will Continue to Lose our Battle with Cancers if we Do not Stop their Triggers from Environmental Pollution

International Journal of Environmental Research and Public Health 18: 6107



66 CAZZOLLA GATTI R.

A Multi-Armed Bandit Algorithm Speeds Up the Evolution of Cooperation

Ecological Modelling 439: 109348

CAZZOLLA GATTI, R, MENÉNDEZ LP,, LACINY A, BOBADILLA RODRIGUEZ H, BRAVO MORANTE G, CARMEN E, DORNINGER C, FABRIS F, GRUNSTRA NDS, SCHNORR SL, STUHLTRÄGER J, VILLANUEVA HERNANDEZ LA, JAKAB M, SARTO-JACKSON I, CANIGLIA G.

Diversity Lost: COVID-19 as a Phenomenon of the Total Environment

Science of the Total Environment 756: 144014

CAZZOLLA GATTI R, UGARKOVIC P, TIRALONGO F.

New Evidence of a Fish-Bird Interspecific Feeding Association between the European Seabass and the European Shag in the Mediterranean Sea

Aquatic Ecology 55: 1113-1119

CAZZOLLA GATTI R, VELICHEVSKAYA A, GOTTESMAN B, DEVIS K.

Grey Wolf Shows Signs of Self-Consciousness with the Sniff-Test of Self-Recognition (STSR)

Ethology, Ecology and Evolution 33: 444-467

DEPUY W, WEGER J, FOSTER K, BONANNO A, KUMAR S, LEAR K, BASILIO R, GERMAN L.

Environmental Governance: Broadening Ontological Spaces for a More Livable World

Environment and Planning E: Nature and Space 0: 1-29

DORNINGER C, HORNBERG A, ABSON DJ, VON WEHRDEN H, SCHAFFARTZIK A, GILJUM S, ENGLER J-O, FELLER R, HUBACEK K, WIELAND H.

Global Patterns of Ecologically Unequal Exchange: Implications for Sustainability in the 21st Century

Ecological Economics 179: 106824

DORNINGER C, VON WEHRDEN H, KRAUSMANN F, BRUCKNER M, FENG K, HUBACEK K, ERB K-H, ABSON DJ.

The Effect of Industrialization and Globalization on Domestic Land-Use: A Global Resource Footprint Perspective

Journal Global Environmental Change 69: 102311

DOUMMAR D, TREVEN M, QEBIBO L, DEVOS D, GHOUMID J, RAVELLI C, KRANZ G, KRENN M, DEMAILLY D, CIF L, DAVION J-B, ZIMPRICH F, BURGLIN L, ZECH M.

Childhood-Onset Progressive Dystonia Associated with Pathogenic Truncating Variants in CHD8

Annals of Clinical and Translational Neurology 8: 1986-1990

FISCHER D, FÜCKER S, SELM H, SUNDERMANN A.

Nachhaltigkeit erzählen: Durch Storytelling besser kommunizieren?

oekom: München

FISCHER B, GRUNSTRA NDS, ZAFFARINI, E, MITTEROECKER P.

Sex Differences in the Pelvis Did not Evolve De Novo in Modern Humans

Nature Ecology & Evolution 5: 625-630

GRUNSTRA NDS, BARTSCH SJ, LE MAÎTRE A, MITTEROECKER P.

Detecting Phylogenetic Signal and Adaptation in Papionin Cranial Shape by Decomposing Variation at Different Spatial Scales

Systematic Biology 70: 694-706

HABETS D, HU C, SCHAFER S.

This Extraordinary Rock

In: Expansive bodies: contesting design at Het Nieuwe Instituut (Cormier B, ed), pp. 95-98

nai010 uitgevers: Rotterdam

HABETS D, HU C, SCHAFER S.

This Extraordinary Rock

In: Lithium: States of Exhaustion (Diaz F, Kubrak A, Otero M, eds), pp. 12-15

Het Nieuwe Instituut: Rotterdam and Santiago

HAEUSLER M, GRUNSTRA NDS, MARTIN RD, KRENN VA, FORNAI C, WEBB NM.

The Obstetrical Dilemma Hypothesis: There's Life in the Old Dog Yet

Biological Reviews 96: 2031-2057

KNICKEL M, NEUBERGER S, KLERKX L, KNICKEL K, BRUNORI G, SAATKAMP H.

Strengthening the Role of Academic Institutions and Innovation Brokers in Agri-Food Innovation: Towards Hybridisation in Cross-Border Cooperation

Sustainability 13: 4899



- 68 KNICKEL K, ALMEIDA A, GALLI F, HAUSEGGER-NESTELBERGER K, GOODWIN-HAWKINS B, HRABAR M, KEECH D, KNICKEL M, LEHTONEN O, MAYE D, RUIZ-MARTINEZ I, ŠUMANEC S, VULTO H, WISKERKE JSC.

**Transitioning towards a Sustainable Wellbeing Economy—
Implications for Rural–Urban Relations**

Land 10: 512

KRISHNAN S, SODEN R, AGUIHON B, LIU R, KHATIWADA P.

**Cross-Country Use of Participatory Research Methods in Practice to
Enhance Inclusive Decision-Making**

Disaster Prevention and Management

<https://doi.org/10.1108/DPM-03-2021-0097>

LACINY A.

**Among the Shapeshifters: Parasite-Induced Morphologies in Ants
(*Hymenoptera, Formicidae*) and their Relevance within the EcoEvoDevo
Framework**

EvoDevo EvoDevo 12: 1-21

LACINY A.

**Review of “The Stockholm Paradigm: Climate Change and Emerging
Disease” by Daniel R. Brooks, Eric P. Hoberg, Walter A. Boeger**

History and Philosophy of the Life Sciences 43: 39

LACINY A.

Cycle

Consilience Journal 5: Rhythms

<https://www.consilience-journal.com/issue-5-cycle>

LEHNER L, GRIBI J, HOFFMANN K, PAUL KT, KUTALEK R.

**Beyond the “Information Deficit Model” – Understanding Vaccine-
Hesitant Attitudes of Midwives in Austria: A Qualitative Study**

BMC Public Health 21: 1671

LUDWIG D, KOSKINEN I, MNCUBE Z, POLISELI L, REYES-GALINDO L.

Global Epistemologies and Philosophies of Science

Routledge: London

LUEDERITZ C, CANIGLIA G, COLBERT B, BURCH S.

How Do Small Businesses Pursue Sustainability? The Role of Collective Agency for Integrating Planned and Emergent Strategy Making

Business Strategy and the Environment 30: 3376-3393

MITTEROECKER P, GRUNSTRA NDS, STANSFIELD E, WALTENBERGER L, FISCHER B.

Did Population Differences in Human Pelvic Form Evolve by Drift or Selection?

Bulletins et mémoires de la Société d'anthropologie de Paris 33: 11-26

MÜLLER GB, ABOUHEIF E.

Evolutionary Developmental Biology

Oxford Bibliographies, Oxford University Press: Oxford

NUÑO DE LA ROSA GARCÍA L, MÜLLER GB.

Evolutionary Developmental Biology: A Reference Guide

Springer International Publishing: New York

NUÑO DE LA ROSA GARCÍA L, MÜLLER GB.

EA Reference Guide to Evo-Devo

In: Evolutionary Developmental Biology: A Reference Guide (Nuño de la Rosa García L, Müller GB, eds), pp. 3-12

Springer International Publishing: New York

POLISELI L.

Série de investigações filosóficas: textos selecionados de filosofia da ciência II

Universidade Federal de Pelotas: Pelotas

<http://anpof.org/portal/index.php/en/comunidade/noticiasblog/2836-serie-investigacao-filosofica-serie-if>

POLISELI L, LEITE C.

Developing Transdisciplinary Practices: An Interplay between Disagreement and Trust

In: Global Epistemologies and Philosophies of Science (Ludwig D, Koskinen I, Mncube Z, Polisei L, Reyes-Galindo L., eds)

Routledge: London



70 RAMPELLI S, TURRONI S, DEBANDI F, ALBERDI A, SCHNORR SL, HOFMAN CA, TADDIA A, HELG R, BIAGI E, BRIGIDI P, D'AMICO F, CATTANI M, CANDELA M.

The Gut Microbiome Buffers Dietary Adaptation in Bronze Age Domesticated Dogs

iScience. 24: 102816

RAMPELLI S, TURRONI S, MALLOL C, HERNÁNDEZ C, GALVÁN B, SISTIAGA A, BIAGI E, ASTOLFI A, BRIGIDI P, BENAZZI S, LEWIS CM, WARINNER C, HOFMAN CA, SCHNORR SL, CANDELA M.

Components of a Neanderthal Gut Microbiome Recovered from Fecal Sediments from El Salt

Communications Biology 4: 169

REYES-GALINDO L, POLISELI L, MNCUBE Z, KOSKINEN I, LUDWIG D.

Postscript

In: Global Epistemologies and Philosophies of Science (Ludwig D, Koskinen I, Mncube Z, Poliseli L, Reyes-Galindo L, eds)

Routledge: London

SARTO-JACKSON I.

Narratives in Health Care: A Case for Psychoeducation Drawing on the Biopsychosocial Model

Balkan Journal of Philosophy 13: 67-76

SARTO-JACKSON I.

The Making and Breaking of the Mind. How Social Interactions Shape the Human Mind

Vernon Press: Wilmington

SCHNORR SL, BERRY D.

Lipid Synthesis at the Trophic Base as the Source for Energy Management to Build Complex Structures

Current Opinion in Biotechnology 73: 364-373

SRIDHAR H.

Reflections on Papers Past. Revisiting Old Papers in Ecology and Evolution through Interviews with their Authors

Wordpress Blog

<https://reflectionsonpaperspast.wordpress.com/about/>

STUHLTRÄGER J, SCHULZ-KORNAS E, KULLMER O, JANOCHA MM,
WITTIG RM, KUPCZIK K.

**Dental Wear Patterns Reveal Dietary Ecology and Season of Death
in a Historical Chimpanzee Population**

PLoS ONE 16: e0251309

STANSFIELD E, FISCHER B, GRUNSTRA NDS, VILLA POUCA M, MITTEROECKER P.

The Evolution of Pelvic Canal Shape and Rotational Birth in Humans

BMC Biology 19: 1-11

STANSFIELD E, KUMAR K, MITTEROECKER P, GRUNSTRA NDS.

**Biomechanical Trade-offs in the Pelvic Floor Constrain the Evolution of
the Human Birth Canal**

Proceedings of the National Academy of Sciences (USA) 118: e2022159118

TURCIOS-CASCO MA, CAZZOLLA GATTI R, DE SALES DAMBROS C,
FRANZOI DRI G, CACERES N, STEVENS R.

**Ecological Gradients Explain Variation of Phyllostomid Bat (Chiroptera:
Phyllostomidae) Diversity in Honduras**

Mammalian Biology 101: 949-961

VIANNA FRANCO MP.

**Ecological neo-Narodnism and the Peasant Economy: History and
Contemporary Relevance**

Journal of Political Ecology 28: 416-433

VIANNA FRANCO MP.

**Review of "Geopolitics, Culture, and the Scientific Imaginary in Latin
America" by María del Pilar Blanco and Joanna Page (Eds.)**

Technology and Society 4: 1919417

WEGER J.

**Deltas in Motion: Politics of Translation and the Governance of Climate
Change Adaptation in the Mekong Delta, Vietnam**

PhD Thesis, University of Georgia

WEITZER J, STEINER G, JÄGER C, BIRMANN BM, BERTAU M, ZENK L,
CANIGLIA G, LAUBICHLER M, SCHERNHAMMER E.

Vaccine Hesitancy and Trust in Government

Journal of Public Health 18: 2809



72 4.3 Forthcoming Publications

ACHARYA A.

Political Ecology of Small Things

PhD Thesis, The University of Edinburgh

BRIGANDT I, VILLEGAS C, LOVE A, NUÑO DE LA ROSA GARCÍA L.

Evolvability as a Disposition: Philosophical Distinctions, Scientific Implications

In: *Evolvability* (Hansen T, Houle D, Pavlicev M, Pélabon C, eds)
The Vienna Series in Theoretical Biology, MIT Press: Cambridge

CANIGLIA G, VOGEL C.

On Being Oriented: Queering Transdisciplinary Sustainability Science in Theory and in Practice

GAIA. Ecological Perspectives for Science and Society

EL-HANI C, POLISELI L, LUDWIG D.

Beyond the Divide between Indigenous and Academic Knowledge: Causal and Mechanistic Explanations in a Brazilian Fishing Community

Studies in History and Philosophy of Science

HICKEL J, DORNINGER C, WIELAND H, SUWANDI I.

Imperialist Appropriation in the World Economy: Drain from the Global South through Unequal Exchange, 1990–2015

Journal Global Environmental Change

KNICKEL M.

Powering Collaboration and Co-Learning in Transdisciplinary Innovation-Oriented Research

PhD Thesis, University of Pisa

MENÉNDEZ LP.

An Integral Study of Diet Composition and Diet Hardness in Late Holocene Southern South American Populations

In: *Trends in Biological Anthropology. Volumen III* (Mahoney Swales D, Nystrom P, eds)

BABAO Proceedings Annual Conference 2015

MENÉNDEZ LP.

Una introducción al concepto y cálculo del error de medición en estudios morfológicos

In: Avances en Antropología Forense (Quinto-Sánchez M, Gomez Valdez JA, eds)

Universidad Nacional Autónoma de México: Mexico City

MENÉNDEZ LP, BUCK LT.

Evaluating Potential Proximate and Ultimate Causes of Phenotypic Change in the Human Skeleton over the Agricultural Transition

In: The Convergent Evolution of Agriculture in Humans and Insects (Schultz TR, Peregrine P, Gawne R, eds)

MIT Press: Cambridge, MA

MSAFIRI MANGOLA S, LUND JR, SCHNORR SL, CRITTENDEN AN.

Advancing a More Ethical Microbiome Research Praxis with Indigenous cMmunities: Part 2 Community Inclusion

Nature Microbiology

POLISELI L, RUSSO F.

Philosophy of Science in Practice and Weak Scientism Together Apart

In: For and Against Scientism; Science, Methodology, and the Future of Philosophy (Mizrahi M, ed)

Roman & Littlefield: Lanham

POLISELI L, COUTINHO J, VIANA B, RUSSO F, EL-HANI C.

Philosophy of Science in Practice in Ecological Model Building

Biology & Philosophy

RENCK V.

Where the River Meets the Sea: Partial Overlaps between two Onto-Epistemologies

PhD Thesis, Federal University of Bahia

RENCK V, LUDWIG D, BOLLETTIN P, EL-HANI C.

Exploring Partial Overlaps between Knowledge Systems in a Brazilian Fishing Community

Human Ecology



74 RENCK V, APGAUA DMG, TNG DYP, BOLLETTIN P, LUDWIG D, EL-HANI C.

Cultural Consensus in Ethnotaxonomy – Lessons from a Fishing Community in Northeast Brazil

Journal of Ethnobiology and Ethnomedicine

SARTO-JACKSON I.

Neuroplastizität und soziale Bindungen

In: Professionelle Bindungs- und Beziehungsgestaltung – interdisziplinäre Perspektiven
Beltz Juventa: Weinheim

SCHLÜTER M, CANIGLIA G, ORACH K, BODIN O, MAGLIOCCA N, MEYFROIDT P, REYERS B.

Why Care about Theories? Innovative Ways of Theorizing in Sustainability Science

Current Opinions in Environmental Sustainability

SCHUSTER C, ARNOLD J, GOSEBERG T, SUNDERMANN A.

I Share because of Who I Am – Values, Identities, Norms, and Attitudes Explain Sharing Intentions

Journal of Social Psychology

SRIDHAR H.

More than Meets the Eye: The Human Stories Behind Classic Studies in Ecology and Evolution

Cambridge University Press: Cambridge

VIANNA FRANCO MP.

Discounting (incl. Discount Rate and Hyperbolic Discounting)

In: Dictionary of Ecological Economics (Haddad B, Solomon B, eds)
Edward Elgar: Cheltenham Glos

VIANNA FRANCO MP.

Nicholas Georgescu-Roegen e a história do pensamento econômico-ecológico

Boletim da Sociedade Brasileira de Economia Ecológica.

VIANNA FRANCO MP.

Social Provisioning

In: Dictionary of Ecological Economics (Haddad B, Solomon B, eds)
Edward Elgar: Cheltenham Glos

VIANNA FRANCO MP, MISSEMER A.

A History of Ecological Economic Thought

Routledge: London & New York

VIANNA FRANCO MP, MISSEMER A.

**Escrevendo a história do pensamento econômico-ecológico:
desafios e perspectivas**

Revista Iberoamericana de Economía Ecológica

VIANNA FRANCO MP, MOLNÁR O, DORNINGER C, LACINY A, TREVEN M,
WEGER J, ALBUQUERQUE EM, CAZZOLLA GATTI R, HERNANDEZ AV, JAKAB
M, MARIZZI C, MENENDEZ LP, POLISELI L, RODRIGUEZ H, CANIGLIA G.

**Diversity Regained: Precautionary Approaches to COVID-19 as a
Phenomenon of the Total Environment**

Science of the Total Environment

VIANNA FRANCO MP, RIBEIRO LC, ALBUQUERQUE EM.

**Beyond Random Causes: Harmonic Analysis of Business Cycles
at the Moscow Conjecture Institute**

Journal of the History of Economic Thought

VILLEGAS C.

**Review of "Uncertainty. How it Makes Science Advance" by Kostas
Kampourakis and Kevin McCain**

Daimon Revista Internacional de Filosofía

VILLEGAS C, LOVEL A, NUÑO DE LA ROSA GARCÍA L, BRIGANDT I,
WAGNER GP.

**Conceptual Roles of Evolvability across Evolutionary Biology: Between
Diversity and Unification**

In: Evolvability (Hansen T, Houle D, Pavlicev M, Pélabon C, eds)

The Vienna Series in Theoretical Biology, MIT Press: Cambridge

WHITE S, MENÉNDEZ LP.

Biosocial Complexity and the Skull

In: Behaviour in our Bones (Hirst C, ed)

Elsevier: Amsterdam



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Volume 16, Issue 1:

SARKAR S.

In Memoriam: Raphael Falk, 1929–2019

CASTRO L, CASTRO-NOGUEIRA MA, VILLARROEL M, TORO MA.

Assessor Teaching and the Evolution of Human Morality

MATSUMOTO S.

Making Sense of the Relationship Between Adaptive Thinking and Heuristics in Evolutionary Psychology

ROTTSCHAEFER WA.

Affording Affordance Moral Realism

SLUYS R.

Attaching Names to Biological Species: The Use and Value of Type Specimens in Systematic Zoology and Natural History Collections

Volume 16, Issue 2:

FÁBREGAS-TEJEDA A, NIEVES DELGADO A, BAEDKE J.

Revisiting Hans Böker's "Species Transformation Through Reconstruction: Reconstruction Through Active Reaction of Organisms" (1935)

BANDINI E, REEVES JS, SNYDER WD, TENNIE C.

Clarifying Misconceptions of the Zone of Latent Solutions Hypothesis: A Response to Haidle and Schlaudt

HAIDLE MN, SCHLAUDT O.

Taking the Historical-Social Dimension Seriously: A Reply to Bandini et al.



PLANER RJ, REED LW.

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Like Hand, Like Mouth: On the Role of Gesture-Linked Mouth Actions in the Evolution of Language

STENCEL A, SUÁREZ J.

Do Somatic Cells *Really* Sacrifice Themselves? Why an Appeal to Coercion May be a Helpful Strategy in Explaining the Evolution of Multicellularity

BÖKER H.

Species Transformation Through Reconstruction: Reconstruction Through Active Reaction of Organisms

Volume 16, Issue 3:

EVANS N, LEVINSON S, STERELNY K.

Kinship Revisited

SILK JB.

The Phylogenetic Roots of Human Kinship Systems

LAYTON R.

Kinship Without Words

PLANER RJ.

Towards an Evolutionary Account of Human Kinship Systemse

WILSON RA.

Rethinking Incest Avoidance: Beyond the Disciplinary Groove of Culture-First Views

PASSMORE S, BARTH W, QUINN K, GREENHILL SJ, EVANS N, JORDAN FM.

Kin Against Kin: Internal Co-selection and the Coherence of Kinship Typologies





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HILL C, PAVESE C.

A Tribute to Karen Neander (1954–2020)

NYHART LK, LIDGARD S.

Revisiting George Gaylord Simpson’s “The Role of the Individual in Evolution” (1941)

DAVISON DR, ANDERSSON C, MICHOD RE, KUHN SL.

Did Human Culture Emerge in a Cultural Evolutionary Transition in Individuality?

FORSDYK DR.

Complementary Oligonucleotides Rendered Discordant by Single Base Mutations May Drive Speciation

RIORDAN DV.

The Scapegoat Mechanism in Human Evolution: An Analysis of René Girard’s Hypothesis on the Process of Hominization

NEWMAN SA, GODFREY-SMITH P, HARTL DL, KITCHER P, PAUL DB, BEATTY J,
SARKAR S, SOBER E, WIMSATT WC.

Remembering Richard Lewontin (1929–2021)

SARKAR S.

Who was J. B. S. Haldane?

Referees for Volume 16

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NINA ATANASOVA
QUENTIN ATKINSON
JAN BAEDKE
JENNIFER BATES
KEVIN BIRD
PIERRICK BOURRAT
DANIEL BROOKS
LINNDA CAPORAEL
LAUREANO CASTRO
ROBERTO CAZZOLLA GATTI
MARK COLLARD
LINDLEY DARDEN
HELEN DE CRUZ
BRENDAN DE KENESSEY
CHRISTOPHER DONOHUE
PIERRE DURAND
KEITH FARNSWORTH
ALAN FISKE
DORIAN FULLER
RICHARD GAWNE
SHANE GLACKIN
STUART GLENNAN
JAMES GRIESEMER
JEAN-BAPTISTE GRODWOHL
NICOLE GRUNSTRA
DAVID HAIG
ELIZABETH IRVINE
TETSUYA ISHII
ÁNGEL JIMÉNEZ
SVERKER JOHANSSON
KATHRYN KAVANAGH

CHARLES KEMP
JONATHAN KLASSEN
MELVIN KONNER
KASIA KOZLOWSKA
MICHAEL LEVIN
SAM LIN
MANOLO MARTÍNEZ
ALESSANDRO MINELLI
ARMIN MOCZEK
LENNY MOSS
DAVID NASH
D. KIMBROUGH OLLER
MATTHEW ORR
ANYA PLUTYNSKI
ANNA PRENTISS
RICHARD RICHARDS
WILLIAM ROTTSCHAEFER
SERGIO RUBIN
ISAAC SALAZAR-CIUDAD
KARL SALLIN
SAHOTRA SARKAR
ISABELLA SARTO-JACKSON
THEO SMIT
SUBRENA SMITH
QUAYSHAWN SPENCER
KIM STERELNY
EÖRS SZATHMARY
FERHAT TAYLAN
MICHAEL TOMASELLO
DENIS WALSH
ROBERT WILSON



80 4.5 Scientific Presentations

BARKIN D, FUENTE M, VIANNA FRANCO MP.

Economía Ecológica Radical: Aplicaciones en Latinoamérica

XIV Conference of the Brazilian Society for Ecological Economics, Federal University of the South of Bahia, online

CANIGLIA G.

Empowering with Evidence in Sustainability Science

(with Russo F.)

American Association for the Advancement of Science (AAAS), online

CANIGLIA G.

Queering Transdisciplinary Sustainability Research

Global Transdisciplinary Conference, Donau University Krems

CANIGLIA G.

Action-Oriented Knowledge for Sustainability: Between Pluralism and Integration

Transformation Conference, online

CANIGLIA G.

On Being Oriented: Queering Transdisciplinary Research to Enhance its Practice

International Transdisciplinary Conference, online

CANIGLIA G.

Sustainability Science for Transformations: Aspirations, Realities, and Opportunities

EDGE Lecture, University of Vienna

CANIGLIA G.

Action-Oriented Knowledge for Sustainability in Theory and in Practice

Td-Academy, Leuphana University Lüneburg, online

CANIGLIA G.

What is Action-Oriented Knowledge for Sustainability?

"Action, Knowledge, Transformation" Workshop at The Finnish Environment Institute (SYKE), online

CANIGLIA G.

Doing Philosophy in Transdisciplinary Sustainability Science

Bosch Academy for Transformational Leadership, Leuphana University Lüneburg

CANIGLIA G.

Working at the Frontiers of Transformational Sustainability Science

Bosch Academy for Transformational Leadership, Leuphana University Lüneburg

CAZZOLLA GATTI R, CANIGLIA G, VIANNA FRANCO MP.

Covid-19 as a Phenomenon of the Total Environment

V National Meeting of Industrial Economics and Innovation, Brazilian Society for Industrial Economics and Innovation, online

GRUNSTRA NDS, KUMAR K, MITTEROECKER P, STANSFIELD K.

**Trade-offs in the Pelvic Floor Constrain Human Pelvic Evolution:
A Finite Element Approach**

90th Annual Meeting of the American Association of Physical Anthropologists,
online

HAEUSLER M, GRUNSTRA NDS, FORNAI C, KRENN VA, MARTIN RD, WEBB NM.

**Which Came First: The Pelvis or the EGG? Energetics of Gestation and
Growth vs. the Obstetrical Dilemma**

90th Annual Meeting of the American Association of Physical Anthropologists,
online

HU C.

On Sanaz Sohrabi's Archives of Oil

Centre Clark, Montreal

HU C.

An Eviscerated Goldfinch and Other Examples

Technische Universiteit, Delft

HU C.

Two Hundred Years Is a Short Time

Jan Van Eyck Academie, Maastricht

HU C.

Perpetual Motion Machine

Society for Social Studies of Science, Toronto



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Sovereignty and Economy in Planetary Geopolitics

German Society for Social and Cultural Anthropology Annual Meeting, Bremen

HU C.

Planetary Portfolio

Royal Geographical Society Annual Conference, London

HU C.

Conscripts of the Planetary

Brown University, Providence

LACINY A.

Die faszinierende Welt der explodierenden Ameisen

Pint of Science Austria, online

LACINY A.

Neurodiversity in Social Insect Research

Autism in Austria Symposium, IST Austria, Klosterneuburg

LACINY A.

Studying Exploding Ants: Tales from Field and Lab

Edinburgh Entomological Club, online

POLISELI L.

Imaging, Modeling and Understanding during Real-Time Scientific Practice

Geneva Aesthetics of Science Workshop, online

POLISELI L.

Aesthetic Experience and Scientific Understanding

Geneva Aesthetics of Science Workshop, online

POLISELI L.

Imaging, Modeling and Understanding during Real-Time Scientific Practice

Institute Vienna Circle, online

RENCK V.

Exploring Partial Overlaps between Knowledge Systems in a Brazilian Fishing Community

LICCI Scientific Seminars (Local Indicators of Climate Change Impacts), Barcelona



SARTO-JACKSON I.

Cognitive Biology

Comenius University Bratislava, online

SARTO-JACKSON I.

Biocognition: Knowledge Accumulation in Biological Systems

MeiCogSci Lecture Series, University of Vienna, online

SARTO-JACKSON I.

Warum ich weiß, was du fühlst

Brain Awareness Week 2021, Medical University of Vienna, online

SARTO-JACKSON I.

Neurobiologie sozialer Bindungen

Vivantes Klinikum im Friedrichshain, online

SARTO-JACKSON I.

Interdisciplinary Collaboration

International Society for the History, Philosophy, and Social Studies of Biology (ISHPSSB) Meeting 2021, Cold Spring Harbor, online

SARTO-JACKSON I.

Nahe am Wasser gebaut

Walk & Talk – VHS Wiener Urania

SARTO-JACKSON I.

Das soziale Gehirn

Gewaltschutzakademie, Graz

SARTO-JACKSON I.

Symposium: Neurowissenschaft & Elementarpädagogik

17th Austrian Neuroscience Association (ANA) Meeting, Salzburg

SARTO-JACKSON I.

Die Evolution des sozialen Gehirns

Bundesseminar der ARGE-Biologie, online

SARTO-JACKSON I.

Die Evolution des sozialen Gehirns

Jahrestreffens der ARGE-Biologie, KLI, Klosterneuburg





84 SCHNORR SL.

Microbial Networks of DHA Synthesis

REWIRE Retreat, Leibnitz

SCHNORR SL.

Cultivating Health through the Study of Human-Environmental Interactions

University of Vienna, online

TREVEN M, SPEE B.

Can Predictive Processing Account for the Spectrum of Stereotyped Repetitive Behaviours in Parkinson's Disease?

17th Austrian Neuroscience Association (ANA) Meeting, Salzburg

VIANNA FRANCO MP.

Austro-German Social Energetics in the History of Ecological Economic Thought, 1880s-1930s

Socioeconomics Research Seminar, Vienna University of Economics and Business, online

VIANNA FRANCO MP.

The Revolutionary Potential of Ecological Economics

The Future of Ecological Economics Webinar, Brazilian Society for Ecological Economics, online

VIANNA FRANCO MP.

The Role of Energy in Economic Value and Social Reform: Lessons from the History of Ecological Economic Thought

Séminaire International Centre for Research on Environment and Development (CIRED), Paris

VIANNA FRANCO MP.

Time Discounting in Harold Hotelling's Approach to Natural Resource Economics: The Unsolved Ethical Question

2^o Academic Seminars in Economics and Development, Federal University of São Paulo, online

VIANNA FRANCO MP, MISSEMER A.

**Episode Forty-Nine. Smith and Marx Walk into a Bar:
A History of Economics**

Podcast by Jennifer Jhun, Carlos Eduardo Suprinyak, Scott Scheall & Çınla Akdere
<https://hetpodcast.libsyn.com/episode-forty-nine>

VIANNA FRANCO MP, MISSEMER A.

**Writing the History of Ecological Economic Thought:
Challenges and Prospects**

XIV Conference of the Brazilian Society for Ecological Economics, Federal
University of the South of Bahia, online

VILLEGAS C.

Modeling Evolutionary Propensities

10th Congress of the Spanish Society of Logic, Methodology and Philosophy
of Science, University of Salamanca

VILLEGAS C.

Evolutionary Propensities and their Evolution

Philosophy of Biology BioKoinos Research Seminar, Complutense University
of Madrid

VILLEGAS C.

**Incertidumbre en la ciencia: el caso de las vacunas [Uncertainty in
Science: The Case of Vaccines]**

Rey Juan Carlos University, Madrid, online

VILLEGAS C.

Evolutionary Sample Spaces

University of Kraków, online

WEGER J.

**Environmental Governance: Broadening Ontological Spaces for a
More Livable World**

Global Epistemologies and Ontologies (GEOS) Lab, Wageningen University

WEGER J.

**Mekong Mediations: Cross-Scalar Knowledge Translation and the Politics
of Climate Change Adaptation in Vietnam**

American Association of Geographers (AAG) Annual Meeting, online



Further Activities

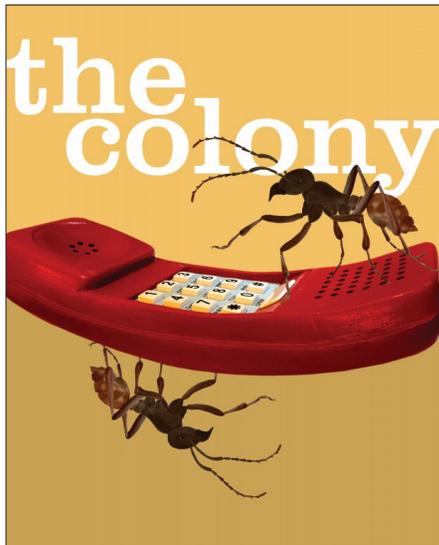


Many activities of the KLI support its mission and vision. Some representative activities are listed here.



5.1 Arts & Science Events

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The Colony

28 January 2021

*KLI Klosterneuburg,
online*

*Organizers & Artists: Anna LINDEMANN (University of Connecticut) &
Lucy Fitz Gibbon (Cornell University)*

Event description

Screening and discussion of the EvoDevo art science performance *The Colony*, a show about sisterhood and the evolution of communication in two of the most social creatures on earth: humans and ants. Informed by scientific research on ant colonies, *The Colony* ventures into speculative fiction and includes projected animations and imagery alongside live spoken and musical performance. Funny, poignant, enlightening, and just the right amount of strange, *The Colony* aims to kindle a sense of awe and understanding of our diverse biological world, while using the ant colony as a lens for understanding the ever-present challenge of human connection.

The screening was accompanied by behind-the-scenes insights and discussion with *The Colony* composer, co-writer, animator, and performer Anna Lindemann and soprano and performer Lucy Fitz Gibbon. They were joined by KLI fellow and myrmecologist Alice Laciny.



88 Synopsis

The Colony is a new art-science performance about sisterhood and the evolution of communication in two of the most social creatures on earth: humans and ants. Informed by scientific research on ant colonies, *The Colony* ventures into speculative fiction and includes projected animations and imagery alongside live spoken and musical performance.

For more about the performance visit www.thecolony.show.

Biographical notes

As both an artist and educator, **Anna Lindemann** is devoted to integrating art and science. Her work combines animation, music, video, and performance to explore the emerging field of Evo Devo (Evolutionary Developmental Biology). She graduated magna cum laude with honors from Yale with a BS in Biology and received an MFA in Integrated Electronic Arts from Rensselaer Polytechnic Institute, where she was awarded the DeWitt Wallace Fellowship, the Ellis and Karin Chingos Graduate Fellowship, and the Rensselaer Graduate Fellowship. She is currently Assistant Professor in the Digital Media and Design Department at the University of Connecticut.

Noted for her “dazzling, virtuoso singing” (Boston Globe), soprano **Lucy Fitz Gibbon** is a dynamic musician who believes that creating new works and recreating those lost in centuries past makes room for the multiplicity and diversity of voices integral to classical music’s future. A graduate of Yale University, Ms. Fitz Gibbon has spent summers at the Tanglewood Music Center and Marlboro Music Festival. She is currently Director of the Vocal Program at Cornell University and on the faculties of Bard College-Conservatory’s Undergraduate and Graduate Vocal Arts Programs.

For more information, see www.lucyfitzgibbon.com.

Alice Laciny is a former PhD student at the Department of Theoretical Biology at the University of Vienna and completed her thesis in the course of the WWTF project “Voluntary self-sacrifice in exploding ants: a mechanism to defend coevolved microbiomes?” at the Vienna Natural History Museum. Her scientific interests include myrmecology, parasitology, Evo Devo, and caste-characterization of social insects. Her postdoctoral work at the KLI focuses on the influence of parasites on the morphology of ant hosts, and the overlapping aspects of ecology, evolution and ontogenetic development within host-parasite relationships.



- 90 **GLACIER NEX US** (led by artist Ida-Marie Corell and glaciologist/climate scientist Lindsey Nicholson) an embodied glacier performance that critically engages and interweaves glaciology and climate sciences with themes of personal and zoom identity, pandemic technocracy, patriarchy, disturbance, and social change.

Artists, scientists, & philosophers

Francesca Aldegani is an artist based in Vienna. „The Scarecrow Sisters“ is part of her ongoing work exploring „the meaning of Animism, the Morphic, & the Unified Field.“

IG <https://instagram.com/thespacearound>

Lindsey Nicholson is a climate scientist also interested in the power of the arts. As stated on her website: „As the scientific understanding becomes deeper, simplistic solutions seem less realistic and there is an increasing need to engage many interest groups to respond in the best possible way.“

Artist *Ida-Marie Corell*, partially based in Lower Austria, made a splash with her interrogations on plastic bags. Watch her profile here: <https://youtu.be/tz3uF-W5Ah7k>. She is the co-founder of Kunstraumretz.

FB <https://facebook.com/AdiEiram> IG <https://instagram.com/idamariecorell/>

KLI fellow *Luis Alejandro Villanueva Hernández* works on material culture evolution, cognitive ethnomusicology, cognitive archaeology, embodied music cognition & more! An active musician, he plays traditional musical instruments from Mexico & South America.

KLI fellow *Luana Poliseli* will collected data on #ClimArtLab to see how our ideas about solutions to climate change might change in the course of our interdisciplinary collaborations.

The individual contributions to this exciting event can be found on the KLI YouTube channel.

<https://www.youtube.com/hashtag/startclim2020>

5.2 Grants & Prizes

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L'Oréal Grant of the Austrian Academy of Sciences (ÖAW)

Alice LACINY (KLI)

KLI Postdoctoral Fellow *Alice Laciny* was awarded an ÖAW L'Oréal grant for her project "Neurodiversity and anthropomorphism in social insect research" for a funding period of 6 months.



Medical Neuroscience Cluster Seed Grant

ISABELLA SALZER (Medical
University of Vienna) &
MARCO TREVEN (KLI &
Medical University of Vienna)

KLI Postdoctoral Fellow *Marco Treven* together with his collaboration partner I. Salzer received a Cluster Seed Grant provided by the Medical University of Vienna for their project "Cerebellar Tonic GABA-Current Modulating Compounds in Essential Tremor."



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International Centre for Integrated Mountain Development

RONGKUN LIU (KLI)

KLI Writing-Up Fellow *Rongkun Liu* received a research grant from the International Centre for Integrated Mountain Development (ICIMOD) for his project “Knowledge Hybridization for Community Resilience Building in Mountain Environments.”

5.3 Professional & Personal Development



Visualization Workshop
SOPHIE VEIGL &
MATTHIAS GIL HAWRANECK

15 & 17 March 2021

KLI Klosterneuburg, online
Organized by KLI Writing-up Fellows

The KLI Visualization Workshop is a professional development event with the aim to train our fellows to prepare visualizations and infographics that can translate, depict, and more effectively communicate scientific research.

Part I is a general and practical introduction to preparing scientific visualizations and infographics with visualization tools and hand-on guidance.

Part II is a feedback session for participants to showcase their work for peer and instructor feedback.



Diversity and Awareness Training Workshop

ZARA

13 October 2021

KLI Klosterneuburg, online

Our fellows come from a wide array of backgrounds, so we need to find a sensitive & sensible way to recognize our diversity & set a solid foundation for life at the KLI (KLife). We thus invited anti-racism organization Zara to lead an introduction and diversity training workshop to help us better understand and communicate with each other.

We told the stories of our names, discussed categories and identities, and engaged in exercises that probed how it is and what it is like to take a public stance and/yet (not) be able to explain oneself. We did role-playing exercises that put us in the shoes of others.

By weaving introductions with diversity training, we hope to co-create a safe space for fellows to feel welcomed and a sense of belonging as they work together in at the institute.



Interactive Creative Writing

ANDRAS BALAZSY

14 December 2021

KLI Klosterneuburg, online

Part I – essence of popular science writing

Part II – essence of fiction writing

Part III – the mechanics of writing

Part I – Popular science writing - the benefits of writing for a scientist

- o What do people want to read? How the human brain processes information. The importance of a personalized story.
- o How to write science like a story
- o Interactive exercise using a scientific study – how to write about a study like a story



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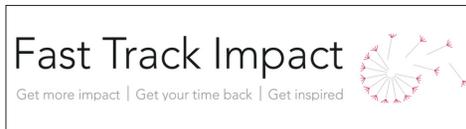
- o How to start a story – the seed scene
- o How to come up with seed scenes
- o Interactive mayhem – seed scene of a writing workshop for a group of scientists, where something goes HORRIBLY WRONG.
- o What does and does not matter in a story
- o Characters vs Plot
- o Head-hopping, empathy development
- o Demonstration of fiction writing by showing in real time the controlled hallucination/movie the author sees and then records on paper by switching roles between participants (e.g. the participants switch nametags) and roleplaying them, proceeding from the seed scene.

Part III – The mechanics of writing; how to record the vision

- o Discipline - the 1-2 thousand words per day rule
- o Slow it down
- o Put it in third person; no head-hopping within the same scene
- o Never tell – always show
- o No word attribution, no adverbs (almost never, anyway)
- o Clunky bad
- o Interactive exercise – writing the scene that just transpired in Part II
- o How to write description – interactive exercise
- o How to write dialogue – interactive exercise
- o Editor is always right
- o Comments are almost as good as gold
- o Redlining with comments is better than gold

Demonstration of redlining a participant's work at the workshop

Final questions, follow-up, feedback



The Health Resilient Researcher

FAST TRACK IMPACT

15 December 2021

KLI Klosterneuburg, online

Course outline

During this course you will discover new ways to view personal health and become a more resilient researcher. Start to address the key cornerstones of a healthy lifestyle and help yourself to become significantly more productive as a researcher, whilst finding a more authentic version of you. Rather than learning (yet more) about health fads, you will learn practices and life hacks that will slot into your busy schedule and start you on a road to achieving whole health.

The course is based on Dr. Joyce Reed's manual, *The Health Resilient Researcher*, in which she draws on the biomedical evidence base, clinical experience and personal experience of balancing lifestyle and regaining whole health. Dr Reed reveals that the evidence needed to change your mindset on health is hidden in plain sight and that relying on the absence of disease is only a small part of health. You will be empowered to put this evidence into practice in your own life, without compromising your time or energy. In fact, after affecting a few small changes, you will discover more energy and time than ever before.

How does it work?

Following on from the work you may have already done in *The Productive Researcher* training, this course works by shifting you from focusing on disease to focusing on health-based priorities. These are linked to your own identity and priorities. By working regularly on your most important priorities, even if only for a small proportion your time, you can become increasingly motivated to make time for healthy habits, creating a powerful positive feedback loop between your physical and emotional resilience as a researcher. Rather than encouraging you to add more things onto your daily to-do list, the emphasis is on discovering practices you enjoy that fit with your busy life. These will give you better work-life balance, and teach you how to rest and sleep well, and lead to even more effective work.

Key benefits:

- Leave with practical tools you can use immediately to prioritise limited time to achieve whole health and become a more resilient researcher
- Gain a deeper understanding of the concepts that underpin your view of health, and why change has previously been hard

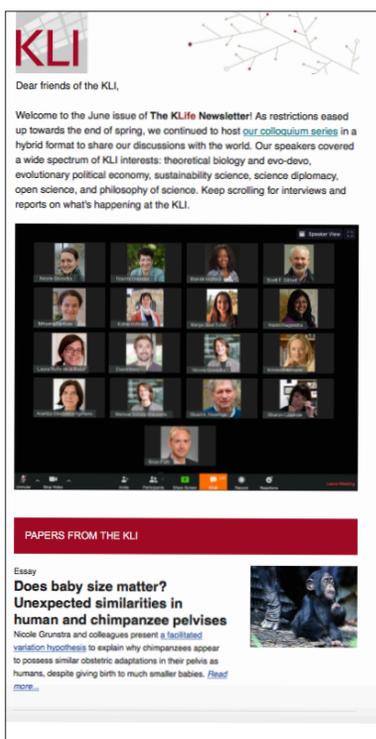


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- Identify the four cornerstones of whole health, and start to see small changes as steps towards returning to whole health
 - Turn these into “experiments” to make practical changes that create a positive feedback loop between your physical and emotional resilience as a researcher, so you can become increasingly healthy, focussed and productive
 - You get a PDF of The Health Resilient Researcher, and Dr. Reed answers all queries from participants in a one hour zoom drop in session within one month, to ensure you have support in becoming more resilient for good

The online Health Resilient Researcher courses feature additional follow-up after each training. Participants are invited back to a drop in one hour zoom session where they can check in on actions, they committed to doing within a month, based on the course.

Participants are invited to get help applying what they learned if they have not completed their intended actions when they attend the follow-up zoom session.

5.4 Science Communication & Outreach



In December 2020, we sent out our inaugural newsletter **KLI Life** that featured the different activities and achievements of the KLI, important papers published by KLI fellows and staff as well as interviews performed by Lynn Chiu of KLI fellows and collaboration partners. In 2021, the newsletter was published quarterly, in March, June, October, and December.

The newsletter also ensured connection with KLI alumni and friends of the KLI during phases of lockdown. As a consequence of multiple lockdowns in 2021, the KLI continued to strengthen bonds with scientific communities by holding events in a hybrid format taking advantage of its new, cutting-edge media room equipment.



A list of various hybrid events held, including KLI Colloquia, Arts & Science Events as well as Professional and Personal Development Workshops are listed in this report. Moreover, to ensure interconnectedness with collaboration partners and other institutions, a second media room was set-up for online lectures and smaller meetings.

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5.5 Acknowledgment

The KLI is grateful for financial support of the ClimArt project (grant provided by the Austrian Ministry of Education, Science, and Research; the Austrian Ministry of Climate Protection, Environment, Energy, Mobility, Infrastructure & Technology; the Climate and Energy Fund; the Government of Upper Austria).





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