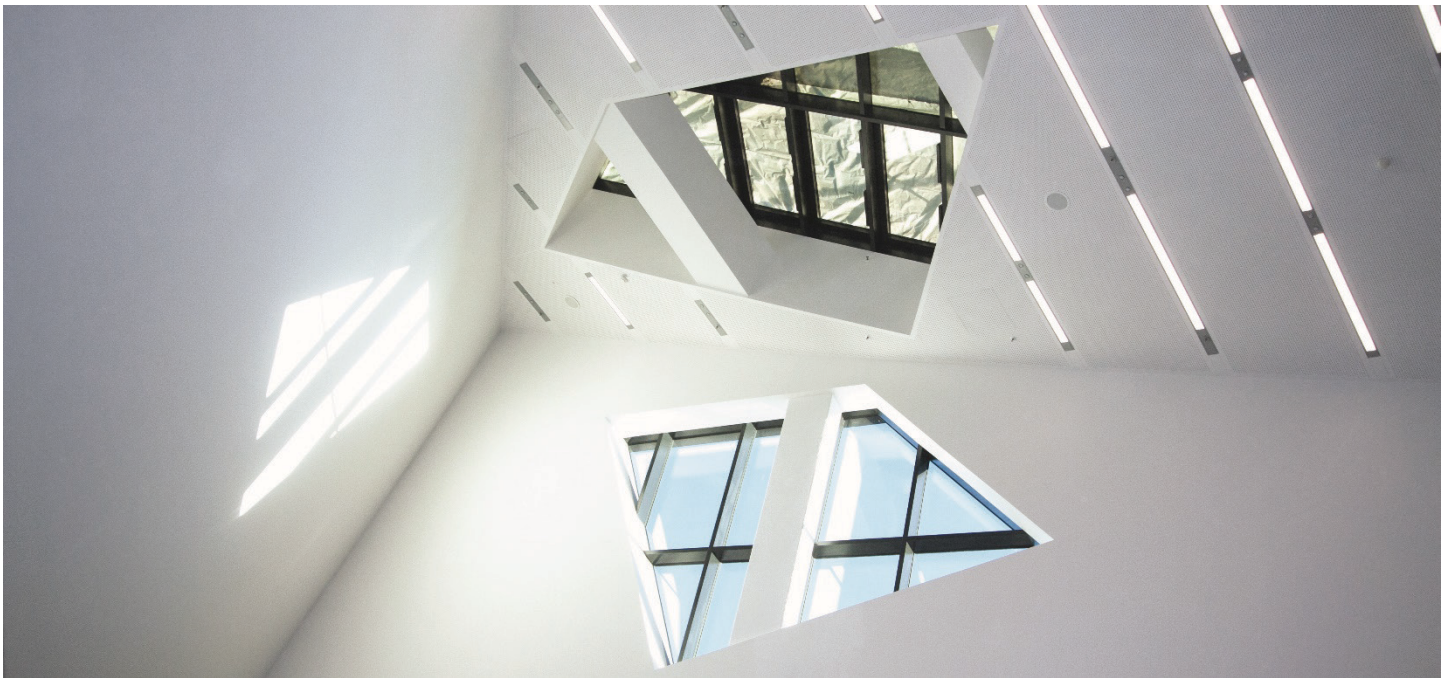




ITD CONFERENCE 2017

Transdisciplinary Research and Education –
Intercultural Endeavours



ABSTRACT BOOKLET

11– 15 September 2017

Imprint

Organising institutions

Leuphana University of Lüneburg

Methodology Center

Universitätsallee 1

21335 Lüneburg

Germany

td-net

Network for Transdisciplinary Research

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INTERNATIONAL TRANSDISCIPLINARITY CONFERENCE 2017

**Transdisciplinary Research and Education –
Intercultural Endeavours**

Where can I find a man who has forgotten words
so I can talk with him?
Zhuangzi
(ca. 369-286 BC)

TD-NET AND THE INTERNATIONAL TRANSDISCIPLINARITY CONFERENCES

The Network for Transdisciplinary Research (td-net) was initiated by the Swiss Academic Society for Environmental Research and Ecology (SAGUF) at the first International Transdisciplinarity Conference 2000 in Zürich. Since 2008 td-net is an initiative of the Swiss Academies of Arts and Sciences. The main goal of td-net is to advance transdisciplinary research and teaching in all thematic fields. As a platform, td-net advances the mutual learning between inter- and transdisciplinary researchers and lecturers across thematic fields, languages and countries and thereby supports community and capacity building. As centre of competences td-net disposes of expertise, methods and tools for co-producing knowledge between academic and non-academic actors. With these competences td-net supports inter- and transdisciplinary projects in research and teaching.

As a cornerstone in its activities, td-net organises International Transdisciplinarity Conferences (ITD). These conferences aim at building and fostering transdisciplinary communities, bringing together scholars from different epistemic backgrounds and enabling to show and reflect the state of td-research and to spark further development and cooperation. After the initial conference in 2000, the years from 2008-2011 have seen a series of conferences tackling main challenges of transdisciplinary projects: Problem Framing (2008), Integration (2009), Implementation (2010) and Evaluation (2011). In 2015, the relationship between Sustainability and Health and Transdisciplinarity was explored.

At these conferences, an open and dynamic international network was growing, with an increasing number of organisations engaged in various aspects of transdisciplinarity and related fields. It is a great pleasure to welcome an important number of these organisations as partners for this year's conference – please find the list of partners on the inside of the back cover. The partner organisations represent important transdisciplinary communities and cultures and will be part of several panel discussions and sessions.

As an important further step of collaboration, the 2017 conference is the first ITD completely co-organised with a partner university, the Leuphana University of Lüneburg. At this conference, we emphasize the intercultural dimensions of transdisciplinary research. The outstanding engagement of Leuphana enables this year's conference not only to take place, but also to engage with new communities and cultures in td-research. td-net likes to express its warmest gratitude to the Leuphana team!

In future, td-net plans bi-annual international conferences, co-organised with changing partners, moving through Europe and abroad.

As president of the Scientific Advisory Board of td-net I am very proud to carry on with my team and the international partners what my predecessors, the Founding President Prof. Dr. Gertrude Hirsch Hadorn and the Past President Prof. Dr. Pasqualina Perig-Chiello, had successfully launched.

Jakob Zinsstag,
President of the Scientific Advisory Board of td-net
www.transdisciplinarity.ch

TRANSDISCIPLINARITY IN AN INTERCULTURAL PERSPECTIVE

The ever-expanding discourse on transdisciplinarity is gaining considerable attention in different research communities world-wide. Transdisciplinary research practices have developed in various knowledge fields and deal with a multitude of issues, ranging from climate change to medical care, from technological impact assessment to justice. It is a fragmented field and still a contested concept. Transdisciplinary research is concerned with different ways of knowing and acting, which raises a lot of questions that are also discussed in other research traditions.

With the ITD Conference 2017, we endeavour to explore different conceptualizations and practices of transdisciplinarity and related approaches. We aim to strengthen the communities of transdisciplinary research and education, and to increase visibility of theoretical, empirical and transformative advances. With the focus on interculturality, we seek to create a culturally-sensitive space to elaborate the different dimensions of culturality that are inherent to transdisciplinarity. In doing so, we want to draw attention to the ways we conceptualize ‚the own‘ and ‚the other‘, how we deal with heterogeneity and difference, and as a consequence, with values, norms, beliefs, and ultimately, power relations.

The strong response to the call for contributions confirmed the relevance of tackling transdisciplinarity from an intercultural perspective. The participants of the ITD Conference 2017 come from a wide range of fields, research communities and regions of the world. They will share experiences and results through case studies, discuss the advances of transdisciplinary methodologies and methods for inter- and transdisciplinary research, as well as theoretical and epistemological considerations. There will be three international panels and a series of international plenary speakers and respondents. Established international networks are hosting open meetings, and many colleagues have organized workshops and side events. To complement this conference, Co-conferences will be held in Mexico, New Zealand, Uruguay and Chile, and will connect with Lüneburg via live video conferencing.

It is an astonishing that the ITD Conference 2017 will be the first international conference to be held in a building that was literally designed for intercultural and transdisciplinary endeavours. Leuphana University's new central building was designed for encounters between researchers from different disciplines and research cultures. In addition to serving as a cultural events venue, it includes a room of silence, which provides a space for dialogue between the public, religions and science. It was designed by the same architect behind the Jewish Museum in Berlin. When he was asked how he began with the design of the Museum, he explained: „It was their names, that's how I started. I didn't start with the building. I didn't start with the walls“ (Daniel Libeskind).

Thanks for joining us and for collaborating to make the ITD Conference 2017 happen! We hope that your stay in Lüneburg will be enriching and memorable!

Ulli Vilsmaier
President's Delegate for Inter- and Transdisciplinarity
Leuphana University of Lüneburg

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TEAMS AND COMMITTEES

STRATEGIC CONFERENCE BOARD

Responsible for the strategic governance of the conference, the strategic board integrates leaders of transdisciplinary partner networks and communities, and leaders of the two organising institutions.

- Gabriele Bammer, Australian National University, Australia and National Socio-Environmental Synthesis Center USA, and Leader Integration and Implementation Science (I2S), Australia
- Matthias Bergmann, isoe – Institute for Social-Ecological Research, Germany
- Timon Beyes, Leuphana University of Lüneburg, Faculty of Social Science and Humanities and Digital Cultures Research Lab (DCRL), Germany
- Tobias Buser, Network for Transdisciplinary Research (td-net), Switzerland
- Mathieu Denis, Executive Director International Social Science Council (ISSC), France
- Kara L. Hall, National Cancer Institute, Director Science of Team Science Team (SciTS), USA
- Sabine Hoffmann, aquatic research (EAWAG), Group Leader Transdisciplinary Research, Switzerland
- Machiel Keestra, University of Amsterdam, Institute for Interdisciplinary Studies and President Association for Interdisciplinary Studies (AIS), The Netherlands
- Julie Thompson Klein, Wayne State University and Association for Interdisciplinary Studies (AIS), USA
- Daniel J. Lang, Leuphana University of Lüneburg, Faculty of Sustainability, Germany
- Roderick J. Lawrence, University of Geneva, Institute of Environmental Sciences and Network for Transdisciplinary Research (td-net), Switzerland
- Stefan Schaltegger, Leuphana University of Lüneburg, Faculty of Sustainability, Germany
- Jan C. Schmidt, University of Applied Science Darmstadt and Network for Transdisciplinary Research (td-net), Germany
- Bianca Vienni Baptista, Leuphana University of Lüneburg, Methodology Center and UdelaR, Espacio Interdisciplinario, Germany and Uruguay
- Ulli Vilsmaier, Leuphana University of Lüneburg, Methodology Center, Faculty of Sustainability and Digital Cultures Research Lab (DCRL), Germany
- Julia Webersik, Leuphana University of Lüneburg, Head of Teaching Service, Germany
- Sebastian Weinert, Leuphana University of Lüneburg, Presidency Office, Germany
- Jakob Zinsstag, University of Basel, Swiss TPH, President Network for Transdisciplinary Research (td-net), Switzerland

SCIENTIFIC COMMITTEE

Responsible for the review of contributions.

- Gabriele Bammer, Australian National University, College of Medicine, Biology and Environment, and Leader Integration & Implementation Sciences (I2S), Australia
- Dena Fam, University of Technology Sydney, Institute for Sustainable Futures, Australia
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- Christian Pohl, ETH Zurich, D-USYS TdLab, Switzerland
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- Jan C. Schmidt, University of Applied Science Darmstadt and Network for Transdisciplinary Research (td-net), Germany
- Martina Ukowitz, Alpen-Adria-Universität Klagenfurt, Faculty of Interdisciplinary Studies, Austria
- Coleen Vogel, University of Witwatersrand, Johannesburg, South Africa

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- Ulli Vilsmaier, Leuphana University of Lüneburg, Methodology Center, Faculty of Sustainability and Digital Cultures Research Lab (DCRL), Germany
- Tobias Buser, Network for Transdisciplinary Research (td-net), Switzerland
- Bianca Vienni Baptista, Leuphana University of Lüneburg, Methodology Center and UdelaR, Espacio Interdisciplinario, Germany and Uruguay

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- Natalie Schwarz, Leuphana University of Lüneburg, Methodology Center
- Lydia Moreno, Network for Transdisciplinary Research (td-net)
- Mirjam Kamal, Leuphana University of Lüneburg, Methodology Center
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- Alexa Böckel, Leuphana University of Lüneburg, Institute for Ethics and Transdisciplinary Sustainability Research

EXTENDED TEAM

- Moritz Engbers, Research Associate, Leuphana University of Lüneburg, Project Leverage Points for Sustainability Transformation
- Rebecca Freeth, PhD Candidate, Leuphana University of Lüneburg, Methodology Center and Project Leverage Points for Sustainability Transformation
- Jeremias Herberg, Research Associate, Leuphana University of Lüneburg, Center for Global Sustainability and Cultural Transformation (CGSC), Project Complexity or Control? Paradigms for Sustainable Development
- Stephanie Jahn, Research Associate, Leuphana University of Lüneburg, Institute for Ethics and Transdisciplinary Sustainability Research
- Sacha Kagan, Research Associate, Leuphana University of Lüneburg, Institute of Sociology and Cultural Organization
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- Daniela Peukert, PhD Candidate, Leuphana University of Lüneburg, Methodology Center and Project Leverage Points for Sustainability Transformation
- Robin Pascal Straub, PhD Candidate, Leuphana University of Lüneburg, Methodology Center and Zukunftszentrum Lehrerbildung - ZZL
- Vicky Temperton, Professor for Ecosystem Functioning and Ecosystem Services, Leuphana University, Institute of Ecology
- Insa Winkler, Artist and PhD Candidate, studio kunst und landschaft and Leuphana University of Lüneburg, Institute of Sociology and Cultural Organization and Associate Project Leverage Points for Sustainability Transformation

CONFERENCE SCHEDULE

Time	Monday, 11 Sept 17	Tuesday, 12 Sept 17	Wednesday, 13 Sept 17	Thursday, 14 Sept 17	Friday, 15 Sept 17
Early Morning	Morning Coffee	Meditation / Morning Coffee / Morning Stretch	Meditation / Morning Coffee / Morning Stretch	Meditation / Morning Coffee / Morning Stretch	Morning Coffee
Morning I 9:15 – 11h	Excursions — or — Training workshops	Key-note Transdisciplinary research revisited	Plenary talks and respondents Transdisciplinary research in different world regions (Part II)	Panel discussion Teaching and learning in transdisciplinary environments	Excursions — or — Training workshops
Coffee/Tea Break 11 – 11:30h	— or — Workshops	Parallel sessions (no. 7, 14, 21, 23, 26, 27, 28)	Coffee/Tea Break	Parallel sessions (no. 12, 15, 22, 30, 32, 33, 34)	— or — Workshops
Morning II 11:30 – 13h	Special meetings	Parallel sessions (no. 13, 25, 29) — or — Poster-parcours — or — Open stage	Open stage	Special meetings	Special meetings
Lunch 13 – 14h	Lunch				
Afternoon I 14:00 – 15:30h	Excursions — or — Training workshops	Parallel sessions (no. 5, 6, 16, 17, 20, 26)	Parallel sessions (no. 1, 2, 3, 18, 24, 29)	Parallel sessions (no. 4, 8, 9, 10, 19, 32, 35)	Special meetings — and / or — Fading out ...
Coffee/Tea Break 15:30 – 16h	Workshops — or — Special meetings	Panel talks Transdisciplinary research in different world regions (Part I)	Panel discussion Research integration & Implementation. Commonalities and differences among diverse communities	Open panel Conference observations	
Afternoon II 16 – 17:45h	17:15 – 21h Opening event & get together Polylog on transdisciplinary research and education as intercultural endeavours	18 – 19:30h Forum for young researcher — or — After work walk — or — Open stage	19 – 23h Conference dinner & Open stage	18 – 19:30h Network meeting — or — Frisbee	
Evening					

OVERVIEW SESSION ROOMS

Room	Mon AM	Mon PM	Tue AM	Tue PM	Tue EVE	Wed AM	Wed PM	Thu AM	Thu PM	Thu EVE	Fri AM
Kunstraum					OS Windy	OS Windy					WS 11:30-13:00 Embodying positionality
C40.108	SM 9:15-10:45 AIS Meeting	TWS 13:45-15:15 Game Lab	S 28	S 5		S 13	S 1	S 12	S 4		WS 11:30-13:00 Transformative learning HE
C40.146	SM 9:15-12:45 COST Thinking Future	SM 13:45-17:00 COST Exploring ID Careers	S 27	S 17		S 25	S 18	S 30	S 8		TWS 9:15-13:00 Meaningful co-creation
C40.147	TWS 9:15-12:45 Generative Picturing	WS 13:45-17:00 Design Thinking	S 21	S 20			S 31	S 15	S 35		WS 9:15-11:00 Challenging worldview
C40.152	WS 9:15-12:45 Trans-Place- Making	TWS 13:45-17:00 Under Pressure	S 23	S 11			S 2	S 34	S 10		WS 9:15-13:00 Actors evaluating TD research
C40.153	TSW 11:15-12:45 Toolbox	TSW 15:30-17:00 Improving TD Com	S 14	S 6			S 24	S 22	S 19		WS 9:15-11:00 Outcomes urban labs
C40.154	TWS 11:15-12:45 Toolbox (breakout)	TWS 15:30-17:00 Improving TD Com (breakout)	S 7	S 16			S 3	S 33	S 9		TWS 9:15-13:00 Co-creation in TD-processes
C40.704		SM 13:15-17:00 MONA	DS 26	DS 26	FYR	DS 29	DS 29	DS 32	DS 32	18:00-19:30 Network- Meeting	SM 9:15-17:00 KLASICA- Workhosp
C40.164	Open working space										
C40.165	Open working space										
C40.175	Open working space										
C40.176	Open working space										

DETAILED PROGRAMME

MONDAY, 11 SEPTEMBER 2017

8:30 – 9h

SIDE EVENTS

[Forum] Morning Coffee with *td Methods Team, Leuphana University Lüneburg, Germany*

9:15 – 12:30h

EXCURSION

[City hall*] City of the Future Lüneburg 2030+/ Zukunftsstadt Lüneburg 2030+, *Daniel J. Lang, Annika Weiser, Antje Seidel, (Lüneburg, DE)*

9:15 – 10:45h

TRAINING WORKSHOP

[C40.147] Generative Picturing – A methodological framework for transdisciplinary boundary work (part. I), *Vera Rosamaria Brandner (Lüneburg, DE, Wien, AT)*

WORKSHOP

[C40.152] Trans-Place-Making: a 'Walking with Video' workshop (part I), *Sacha Kagan (Lüneburg, DE)*

SPECIAL MEETINGS

[C40.108] Interdisciplinary and Transdisciplinary Connections and Collaborations: An Open Meeting Hosted by the Association for Interdisciplinary Studies (AIS), *Machiel Keestra (Amsterdam, NL), Rick Szostak (Edmonton, CA) and Julie Thompson Klein (Detroit, US)*

[C40.146] Thinking about the Future of Universities (part I), *Olivia Bina, Marta Varanda, Andy Inch (Lisbon, PT)* – COST INTREPID (open to all conference participants)

11:15 – 12:45h

TRAINING WORKSHOP

[C40.147] Generative Picturing – A methodological framework for transdisciplinary boundary work (part. II), *Vera Rosamaria Brandner (Lüneburg, DE and Wien, AT)*

WORKSHOPS

[C40.153] Doing transdisciplinary research I Addressing challenges faced by early career researchers, *Marco Sonnberger, Johanna Kramm, Carolin Völker, Antonia Graf, Christian Albert, Kathleen Hermans, Melanie Jaeger-Erben, Steffen Lange, Tilman Santarius, Barbara Schröter, Stefanie Sievers-Glotzbach, Janis Winzer (DE)*

[C40.152] Trans-Place-Making: a 'Walking with Video' workshop (part II), *Sacha Kagan (Lüneburg, DE)*

SPECIAL MEETING

[C40.146] Thinking about the Future of Universities (part II), *Olivia Bina, Marta Varanda, Andy Inch (Lisbon, PT)* – COST INTREPID (open to all conference participants)

13:15 – 17h

SPECIAL MEETING

[C40.704] Modes of sustainability related research in comparison (MONA) – final symposium, *Daniel J. Lang, Jens Newig, Judith Kahle and Stephanie V. Jahn (Lüneburg, DE), Matthias Bergmann (Frankfurt a.M., DE)* (open to all conference participants)

13:45 – 15:15h

TRAINING WORKSHOPS

[C40.108] Game Lab on Resilience, *Sabine Toussaint, The interdisciplinary Bavarian Research Consortium Fit for Change (Munich, DE)*

[C40.152] Under pressure; A transdisciplinary education method (part I), *Linda de Greef, Machiel Keestra and Coyan Tromp (Amsterdam, NL)*

WORKSHOP

[C40.147] Design thinking, systems modeling, and transdisciplinary research for complex environmental problem solving in higher education: An introductory workshop on integrative design-based inquiry (part I), *BinBin J. Pearce, Lisette Senn, Christian Pohl, Pius Krütli (Zurich, CH)*

SPECIAL MEETING

[C40.146] Exploring interdisciplinary careers: an interactive discussion workshop (part I), *Catherine Lyall and Laura Meagher (Edinburgh, UK)* – COST INTREPID (open to all conference participants)

13:45 – 17h

EXCURSION

[Foyer*] Exploring Leuphana's university and study model, *Bastian Hagmaier and representatives of Faculties and Schools (Lüneburg, DE)*

15:30 – 17h

TRAINING WORKSHOPS

[C40.152] Under pressure; A transdisciplinary education method (part II), *Linda de Greef, Machiel Keestra and Coyan Tromp (Amsterdam, NL)*

[C40.153] Improving transdisciplinary communication: an introduction to the toolbox dialogue method, *Michael O'Rourke (Michigan, US) and Julie Thompson Klein (Detroit, US)*

WORKSHOP

[C40.147] Design thinking, systems modeling, and transdisciplinary research for complex environmental problem solving in higher education: An introductory workshop on integrative design-based inquiry (part II), *BinBin J. Pearce and Lisette Senn (Zurich, CH)*

SPECIAL MEETING

[C40.146] Exploring interdisciplinary careers: an interactive discussion workshop (part II), *Catherine Lyall and Laura Meagher (Edinburgh, UK)* – COST INTREPID (open to all conference participants)

17:15 – 19:30h

PLENARY SESSION – OPENING EVENT

[Audi-Max]

Moderation: *Rebecca Freeth, Leuphana University of Lüneburg (D)*

WELCOME LEUPHANA UNIVERSITY

Beate Söntgen, Vice-President Leuphana University of Lüneburg (DE)

WELCOME td-net

Jakob Zinsstag, President of the td-net Scientific Advisory Board & University of Basel (CH)

INTRODUCTION TO THE CONFERENCE CONCEPT

Ulli Vilsmaier, Residence Delegate for inter- and transdisciplinarity, Leuphana University of Lüneburg (DE)

OPENING PANEL

Polylog on transdisciplinary research and education as intercultural endeavors

Coordination & Moderation: *Ulli Vilsmaier, Leuphana University of Lüneburg (DE)*

- *Stephan Rist, td-net Advisory Board and University of Bern, Center for Development and Environment (CH)*
- *Coleen Vogel, University of the Witwatersrand Johannesburg, Global Change and Sustainability Institute (ZA)*
- *Hans Dieleman, Autonomous University of Mexico City, College of Science and Humanities (MX)*
- *Michi Knecht, University of Bremen, Departement of Anthropology and Cultural Research (DE)*

INTRODUCTION TO CO-CONFERENCES IN CHILE, URUGUAY AND MEXICO

- *Bianca Vienni Baptista, Leuphana University of Lüneburg (D) and Universidad de la República (UY)*
- *Romina Adaos and Christian Cerutti, Doctorado en Estudios Interdisciplinarios sobre Pensamiento, Cultura y Sociedad, Universidad de Valparaíso (CL)*
- *Gustavo Ferreira, Centro Universitario en Tacuarembó, Universidad de la República (UY)*
- *Alejandro Guevara, Laboratorio de Problemas Multidimensionales, Universidad Autónoma de Querétaro (MX)*

19:30 – 21h **GET TOGETHER**
[Forum]

TUESDAY, 12 SEPTEMBER 2017

8:30 – 9h **SIDE EVENTS**
[Forum] Morning Coffee with *td-net Team*
[Bridge] Morning Stretch with *Rebecca Freeth*
[Room of Silence] Morning Meditation with *Mirjam Kamal*

9:15 – 11h **PLENARY SESSION**
[Audi-Max]
Moderation: *Tobias Buser, td-net (CH)*

INTRODUCTION TO CO-CONFERENCES IN NEW ZEALAND
Melissa Robson, Landcare Research (NZ)

KEYNOTE
Transdisciplinary Research Revisited
Gertrude Hirsch-Hadorn, Institute for Environmental Decisions, ETH Zurich (CH)

11:30 – 13h **PARALLEL SESSIONS**
Session 7: Transformational learning in transdisciplinary processes
[C40.154]
Moderation: *Daniel J. Lang (Lüneburg, DE)*

- Sharing knowledge, feelings and emotions for a mutual learning and transformative knowledge co-creation, *Adriana Moreno Cely and Tom Vanwing (Brussel, BE)*
- The practice of transdisciplinary research: principles and patterns for transformational learning and knowledge co-production, *Elizabeth Clarke (Lüneburg, DE)*
- Learning from reflexive monitoring in transdisciplinary sustainability research? A case study in the Dutch Natural Capital Program, *Frederiek van Lienen, Karen Fortuin, Eva Kunseler (NL)*

Session 14: Transdisciplinary climate research and stakeholder dialogue
[C40.153]
Moderation: *Cecilia Hidalgo, (Buenos Aires, AR)*

- How can insights from transdisciplinarity research improve stakeholder dialogues within a given setting? Preliminary results of the new Swiss climate scenarios CH2018,
- Can Td research and climate modelling be combined? Preliminary results of the stakeholder dialogue of the new Swiss climate scenarios CH2018, *Maurice Skelton, Michiko Hama and David N. Bresch (Zurich, CH)*
- Initiatives for the development of the relationship between climate knowledge and the agricultural sector in the Río de la Plata: exploration of the concepts of knowledge co-production and transference, *Claudia Simón (Montevideo, UY) and María Inés Carabajal (Buenos Aires, AR)*

- Co-creating climate change adaptation tools in the City of Johannesburg, *Coleen Vogel, Mzukisi Gwata, Kaera Coetser, Mutizwa Mukute (Johannesburg, ZA)*

Session 21: Opportunities and challenges of scientific careers in transdisciplinary research

[C40.147]

Moderation: *Judith Kahle (Lüneburg, DE)*

- Who is doing transdisciplinary research? An empirical case study of characteristics, traits and attitudes, *María Helena Guimarães (Évora, PT), Christian Pohl (Zurich, CH), Marta Varanda (Lisbon, PT), Olivia Bina (Hong Kong, China)*
- Conceptions and assessments of transdisciplinarity as a research mode – Empirical indications from td-researchers in sustainable land use science, *Sebastian Rogga, Jana Zscheischler and Nadin Gaasch (Berlin, DE)*
- Meta-considerations for Planning, Introducing and Standardising Interdisciplinary Learning in Higher Degree Institutions, *Dena Fam, Scott Kelly, Lesley Hitchens, Michelle Callen (Sydney, AU)*

Session 23: Building student capacity to address complex societal challenges

[C40.152]

Moderation: *Ilan Chabay (Potsdam, DE)*

- Learning in-between academia and society: design principles and an example from Wageningen University, *Valentina C. Tassone (Wageningen, NL)*
- Enhancing complexity thinking to deal with wicked problems, *Coyan Tromp (Amsterdam, NL)*
- Science meets design: a methodological approach for evaluation of interdisciplinary re-search-based learning in sustainability research, *Anett Kuntosch, Anne Dombrowski, Lukas Wortmann, Bettina König, Alexandra Toland, Myriel Milicevic (Berlin and Potsdam, DE)*

Double Session (part I): To control or not to control? Social and epistemic dilemmas of control

[C40.704]

Organizers: *Jeremias Herberg (Lüneburg, DE) and Gerald Midgley (Hull, UK)*

- Post-truth, anthropocene politics and the new normal of post-normal Science, *Katharine N. Farrell (Berlin, DE and Barcelona, ES)*
- Losing control in transdisciplinary research: New forms of leadership, entitlement and responsibility, *Merritt Polk (Gothenburg, SE)*
- Prior hierarchies in transdisciplinary research? *Jan Herrmann (Stuttgart, DE)*
- Transdisciplinary research topographies, *Ulli Vilsmaier (Lüneburg, DE)*
- Controlling for evidence. What role can experiments play in transformational sustainability science? *Guido Caniglia (Lüneburg, DE)*

Session 27: Beyond rhetoric: constructive dialogue on interdisciplinary futures

[C40.146]

Organizer: *Roderick J. Lawrence (Geneva, CH)*

- Arguments against interdisciplinarity, *Julie Thompson Klein (Detroit, US)*
- Divergence and plurality: definitive challenges of inter- and transdisciplinary integration? *Machiel Keestra (Amsterdam, NL)*
- Responses to recent rhetoric, *Rick Szostak (Edmonton, CA)*

Session 28: Transdisciplinary knowledge communication under conditions of multilinguality

[C40.108]

Organizers: *Kristina Pelikan, Tilo Weber, Jakob Zinsstag (Berlin, DE, Liberec, CZ and Basel, CH)*

- Functional multilingualism in transdisciplinary research projects, *Kristina Pelikan and Jakob Zinsstag (Berlin, DE and Basel, CH)*
- One workshop, four working languages: a best practice example, *Tilo Weber (Liberec, CZ)*
- Multivocality makes disciplinary cultures explicit when researchers engage in interdisciplinary team science, *Kristine Lund (Lyon, FR)*
- Transfer Sciences, *Thorsten Roelcke, Kristina Pelikan, Tilo Weber (Berlin, DE, Liberec, CZ and Basel, CH)*

14 – 15:30h

PARALLEL SESSIONS

Session 5: Impact, Effectiveness and Success of Transdisciplinary Research in the Field of Sustainability

[C40.108]

Moderation: *Martina Schäfer (Berlin, DE)*

- Success in Transdisciplinary Sustainability Research, *Tobias Luthe (Zurich, CH)*
- How do participation of practice partners and societal impacts interrelate? Perspectives from science and practice actors in transdisciplinary sustainability research projects, *Livia Fritz, Thorsten Schilling and Claudia R. Binder (Lausanne, CH)*
- Governance of sustainability problems through transdisciplinary research: pathways to impact in agricultural systems, *Theresa Tribaldos, Flurina Schneider, Christoph Oberlack and Stephan Rist (Bern, CH)*

Session 6: Climate Change and Transdisciplinarity

[C40.153]

Moderation: *Isabell Schrickel (Lüneburg, DE)*

- Embracing uncertainty in participatory climate change risk management, *Petra Döll (Frankfurt, DE)*
- Transdisciplinary research for local climate change initiatives. Combining formative scenario analysis and institutional fit analysis in multi-stakeholder foresight, *Tom Dedeurwaerdere (Louvain-la-Neuve, BE)*
- Adaptation to climate changes: An iterative trans-disciplinary procedure for connecting science and society in the case of attribution of extreme weather events, *Ioan M. Ciomasu, Jean-Paul Vanderlinden and Natalia Capelini (Versailles, FR)*

Session 16: Facilitating institutional change through inter- and transdisciplinarity

[C40.154]

Moderation: *Catherine Lyall (Edinburgh, UK)*

- Managing Hybridity in academia: heterogeneity and differences in transdisciplinary work across art, science and technology, *Nina Horstmann (Berlin, DE) and Juuso Tervo (Espoo, FI)*
- Cultivating aesthetics in and through transdisciplinary collaborations for sustainability, *Mathilda Tham, Ola Ståh (Växjö, SE)*
- Inter- and transdisciplinary knowledge production at universities: institutions, cultures and communities (ICC), *Bianca Vienni Baptista, Andrés Carvajales, Ana Egaña, Florencia Ferrigno, María Nohelia Lorda, Claudia Simón (Lüneburg, DE and Montevideo, UY)*

Session 17: Transdisciplinary research in situations of marginalization

[C40.146]

Moderation: *Willington Ortiz (Wuppertal and Lüneburg, DE)*

- Sustainable and efficient woodfuel systems in sub-Saharan Africa: Application of a transdisciplinary research and development approach, *Mary Njenga, Cecilia Sundberg and Ruth Mendum (Nairobi, KE), (Pennsylvania, US)*
- Integrated pest management to achieve on-farm quality improvement: a transdisciplinary approach, *Lauren Rosenberg, Mark Swilling and Walter Vermeulen (Stellenbosch, ZA and Utrecht, NL)*
- Transdisciplinary study of natural resource management under poverty conditions – collaborating with vulnerable sectors, *Tetsu Sato (Kyoto, JP)*

Session 20: Transdisciplinarity in and through education

[C40.147]

Moderation: *Maik Adombent (Lüneburg, DE)*

- Designing for transdisciplinary learning in higher education, *Tanja Golja (Sydney, AU)*
- Team science education – a comparison of approaches in the US, UK, and the Middle East, *Sawsan Khuri (Exeter, UK)*
- The boundary crossing rubric: A new tool to develop and assess inter- and transdisciplinary learning outcomes, *Carla Oonk, Judith Gulikers and Karen Fortuin (Wageningen, NL)*
- A proposal for a transdisciplinary hermeneutics based on Basarab Nicolescu's concept of transdisciplinarity, *Hans Dieleman (Mexico City, MX)*

Double Session 26 (part II): To control or not to control? Social and epistemic dilemmas of control

[C40.704]

Organizers: *Jeremias Herberg (Lüneburg, DE) and Gerald Midgley (Hull, UK)*

- Post-truth, anthropocene politics and the new normal of post-normal Science, *Katharine N. Farrell (Berlin, DE and Barcelona, ES)*
- Losing control in transdisciplinary research: New forms of leadership, entitlement and responsibility, *Merritt Polk (Gothenburg, SE)*
- Prior hierarchies in transdisciplinary research? *Jan Herrmann (Stuttgart, DE)*
- Transdisciplinary research topographies, *Ulli Vilsmaier (Lüneburg, DE)*
- Controlling for evidence. What role can experiments play in transformational sustainability science? *Guido Caniglia (Lüneburg, DE)*

16 – 17:45h

PLENARY SESSION

PLENARY TALKS – TRANSDISCIPLINARY RESEARCH IN DIFFERENT WORLD REGIONS (PART I)

[Audi-Max]

Moderation: *Beate Littig, Institute for Advanced Studies, Vienna (AT)*

Dealing with informality and social fluidity in transdisciplinary research processes

John van Breda, Stellenbosch University, Tsama Hub (ZA)

Of what use is Art? Blending arts practices and academic research in Canada

David Maggs, University of British Columbia (CA)

Research, Learning and Innovation for territory sustainable development: the CAMPUS experience in Tacuarembó, Uruguay (from Co-conference, online)

Gustavo Ferreira, Centro Universitario de Tacuarembó, Universidad de la República (UY)

- 18 – 19:30h** **OPEN STAGE**
 [Kunstraum]
It might be windy, it will be dark – a tactile search in visual silence
Lisa Hinterreithner (A) und Laura Navndrup Black (DK)
- 18 – 19:30h** **FORUM FOR YOUNG RESEARCHERS – ENGAGING WITH TRANSDISCIPLINARITY** (open to public)
 [C40.704]
 Organizers: *Esther Meyer, Judith Kahle, Stephanie V. Jahn, Leuphana University of Lüneburg (DE) with:*
- *Marco Sonnberger, University of Stuttgart (D)*
 - *Maria Helena Guimarães, Évora University (PT)*
 - *Daniel J. Lang, Leuphana University of Lüneburg (DE)*
 - *Gertrude Hirsch Hadorn, ETH Zurich (CH)*
 - *Catherine Lyall, University of Edinburgh (UK)*
 - *Laura Meagher, Technology Development Group (UK)*
- 18 – 19:30h** **SIDE EVENT**
 [Main Entrance*] After-Work-Walk

WEDNESDAY, 13 SEPTEMBER 2017

- 8:30 – 9h** **SIDE EVENTS**
 [Forum] Morning Coffee with *td-net Team*
 [Bridge] Morning Stretch with *Rebecca Freeth*
 [Room of Silence] Morning Meditation with *Mirjam Kamal*
- 9:15 – 11h** **PLENARY SESSION**
- PLENARY TALKS – TRANSDISCIPLINARY RESEARCH IN DIFFERENT WORLD REGIONS (PART II)**
 [Audi-Max]
 Moderation: *Beate Littig, Institute for Advanced Studies, Vienna (AT)*
- Powhiri: An indigenous example of research collaboration from New Zealand** (from Co-conference, online)
Rawiri Smith, Kaiwhakahaere Taiao for Kahungunu Ki Wairarapa (NZ)
- Transforming science for society: Ways to integrate science with local learning processes and knowledges with data, within a transformations framework**
Robin Reid, Colorado State University (US)
- RESPONSES TO PRESENTATIONS FROM DIFFERENT WORLD REGIONS**
Michael O'Rourke, Michigan State University (US)
Anna Katharina Hornidge, University of Bremen and Leibniz Center for Tropical Marine Ecology (D)

- 11:30 – 13h** **OPEN STAGE**
 [Kunstraum]
It might be windy, it will be dark – a tactile search in visual silence
Lisa Hinterreithner (A) und Laura Navndrup Black (DK)
- 11:30 – 13h** **POSTER PARCOURS**
 [Foyer/Forum]
- 11:30 – 13h** **PARALLEL SESSIONS**
Session 13: Water politics
 [C40.108]
 Moderation: *Beate Littig, Institute for Advanced Studies (Vienna, AT)*
- Water institutions in the Awash Basin of Ethiopia: The discrepancies between rhetoric and realities, *Reta Hailu, Degefa Tolossa and Getnet Alemu (Addis Ababa, ET)*
 - Shaping transdisciplinary research in management paved the pathways to poverty reduction, *Dorothea Agnes Rampisela (Makassar, ID and Kyoto, JP)*
 - Barriers and opportunities for transdisciplinarity in water management: findings from a case study in a multi stakeholder watershed committee in Laguna del Sauce, Uruguay, *Andrés Carvajales, Bianca Vienni Baptista (Montevideo, UY and Lüneburg, DE)*
- Session 25: Effects, success and quality: evaluating transdisciplinary research**
 [C40.146]
 Moderation: *Matthias Bergmann (Frankfurt a.M., DE)*
- Success of transdisciplinary research for sustainable land use – Individual perceptions and assessments, *Jana Zscheischler, Sebastian Rogga (Berlin, DE)*
 - What is successful transdisciplinary case study research? *Silvia Tobias, Maarit Ströbele and Tobias Buser (Bern, CH)*
 - Transdisciplinary development of quality criteria for transdisciplinary research, *Rico Defila and Antonietta Di Giulio (Basel, CH)*
- Double Session 29 (part I): Framework for thinking about research and institutional conditions for interdisciplinary and transdisciplinary research, teaching, and learning in higher education**
 [C40.704]
 Organizers: *Bianca Vienni Baptista and Julie Thompson Klein (Lüneburg, DE and Detroit, US), with:*
- *Marcel Burstyn (Brasilia, BR)*
 - *Catherine Lyall (Edinburgh, UK)*
 - *Maik Adomssent (Lüneburg, DE)*
 - *Gabriele Bammer (Sydney, AU)*
- 14 – 15:30h** **PARALLEL SESSIONS**
Session 1: Philosophical perspectives on the ‘problems’ of transdisciplinarity
 [C40.108]
 Moderation: *Michael O’Rourke (Lansing, US)*
- Problems with “problems”? Towards a philosophy of problem-oriented inter- and transdisciplinarity, *Jan C. Schmidt (Darmstadt, DE)*
 - Problems of transdisciplinary Sustainability Sciences. An approach to diagnoses, *Esther Meyer (Lüneburg, DE)*
 - A philosophical perspective on reflexive problem solving and transdisciplinarity, *Gregor Schmieg (Lüneburg, DE)*

Session 2: De-Re-Identification: Artful participatory doing

[C40.152]

Moderation: *Sacha Kagan (Lüneburg, DE)*

- Photography's transdisciplinary spaces, *Harri Laakso (Espoo, FI)*
- Scientific and social interculturality: from monodisciplinarity to transdisciplinarity, *Frédéric Darbellay, Zoe Moody, Philip D. Jaffé (Geneva, CH)*
- Bhabha's difference and Freire's praxis – A transdisciplinary boundary concept, *Vera Rosamaria Brandner (Lüneburg, DE and Wien, AT)*
- Parasites As Landmarks: Sound And Object Design In Public Spaces, *Marcelo Tramontano, Luciana Roça and Gabriele Landim, Anja Pratschke and Diego Digiandomenico (Sao Paulo, BR)*

Session 3: Making implicit heterogeneities visible

[C40.154]

Moderation: *Moritz Engbers (Lüneburg, DE)*

- Dealing with heterogenic needs, requirements, and desires: Providing public transportation in terms of development infrastructures, *Alexander Brandies and Mandy Dotzauer (Braunschweig, DE)*
- When untold aims and perspectives between scientists and practitioners collide: experiences from a European project, *Leonhard Späth and Andrzej Ceglaz (Zurich, CH and Potsdam, Berlin, DE)*
- Insights into a transdisciplinary case study in an intercultural context: the experience of the Brazilian Research Network on Climate Change (Rede CLIMA), *Gabriela Litre, Marcel Bursztyn, Saulo Rodrigues-Filho and Diego Lindoso (Brasilia, BR)*

Session 18: South-North context

[C40.146]

Moderation: *Rebecca Freeth (Lüneburg, DE)*

- From transdisciplinary research to intercultural dialogues – practical, conceptual and methodological experiences, *Stephan Rist, Karl Herweg and Johanna Jacobi (Bern, CH)*
- Acknowledging multicultural agendas in health research: transdisciplinarity as a tool for collective voicing among the Maya of Guatemala, *Mónica Berger-González, Brigit Obrist, Jakob Zinsstag, Danilo Álvarez, John McCracken and Celia Cerdón (Guatemala City, GT and Basel, CH)*
- Interfaces in transdisciplinary development research: the fine line in complex field realities, *Girma Kelboro and Till Stellmacher (Bonn, DE)*
- Tracing inter- and transdisciplinary research in the post-colonial making. Insight from a North-South collaboration, *Laura Schmidt (Hamburg, DE)*

Session 24: Intercultural studying and teaching – a glimpse into concepts and practice

[C40.153]

Moderation: *Daniela Peukert (Lüneburg, DE)*

- Challenges in multicultural teamwork-students' experiences and perceptions, *KPJ Fortuin, D. Brinkman, R. Lie, A. Pap and V. Popov (Wageningen, NL and San Diego, US)*
- Teaching in intercultural and transdisciplinary collaborations between universities – The Glocal Curriculum, *Guido Caniglia and Beatrice John (Lüneburg, DE)*
- The Open Design Master program – Interdisciplinary teaching by Design, *Christian Stein (Berlin, DE)*

Double Session 29 (part II): Framework for thinking about research and institutional conditions for interdisciplinary and transdisciplinary research, teaching, and learning in higher education

[C40.704]

Organizers: *Bianca Vienni Baptista (Lüneburg, DE and Montevideo, UY) and Julie Thompson Klein (Detroit, US)* with:

- *Marcel Burstyn (Brasilia, BR)*
- *Catherine Lyall (Edinburgh, UK)*
- *Maik Adomssent (Lüneburg, DE)*
- *Gabriele Bammer (Sydney, AU)*

16 – 17:45h PLENARY SESSION

[Audi-Max]

PANEL ON RESEARCH INTEGRATION AND IMPLEMENTATION – COMMONALITIES AND DIFFERENCES BETWEEN DIVERSE COMMUNITIES

Coordination & Moderation: *Gabriele Bammer, Australian National University, Australia and National Socio-Environmental Synthesis Center USA, (AU), Integration and Implementation Sciences, I2S*

Panelists:

- Systems Sciences: *Gerald Midgley, University of Hull (UK)*
- Science of Team Science: *Kara Hall, National Cancer Institute (US)*
- Participatory Action Research: *Danilo Romeu Streck, Universidade do Vale do Rio dos Sinos (BR)*

Discussants:

- Transdisciplinarity: *Roderick J. Lawrence, td-net Advisory Board and University of Geneva (CH)*
- Transdisciplinarity: *Ulli Vilsmaier, Leuphana University of Lüneburg (D)*

19 – 23h CONFERENCE DINNER & OPEN STAGE

[Mensa]

THURSDAY, 14 SEPTEMBER 2017

8:30 – 9h SIDE EVENTS

[Forum] Morning Coffee with *td Methods Team*

[Bridge] Morning Stretch with *Rebecca Freeth*

[Room of Silence] Morning Meditation, *Mirjam Kamal*

9:15 – 11h PLENARY SESSION

[Audi-Max]

PANEL ON TEACHING AND LEARNING IN TRANSDISCIPLINARY ENVIRONMENTS. PREPARING THE NEXT GENERATION FOR NAVIGATING BETWEEN DIFFERENT ENVIRONMENTS

Coordination & Moderation: *Machiel Keestra, University of Amsterdam and Association of Interdisciplinary Studies (NL)*

Panelists:

- *Marcel Bursztyn, University of Brasilia (BR)*
- *Dena Fam, University of Technology Sydney (AU)*
- *Christian Pohl, ETH Zürich (CH)*
- *Esther Meyer, Leuphana University Lüneburg (DE)*
- *Daniel J. Lang, Leuphana University Lüneburg (DE)*

PARALLEL SESSIONS**Session 12: Enhance, transfer, transcend. Challenges for the future of transdisciplinary research**

[C40.108]

Moderation: *Coleen Vogel (Johannesburg, ZA)*

- Enhancing transformative research for sustainable development: mutual learning within the Future Earth research platform, *Flurina Schneider and Theresa Tribaldos (Bern, CH)*
- What type of knowledge is transferred across transdisciplinary case studies? Preliminary results from a study on transferability in transdisciplinary research, *Carolina Adler, Gertrude Hirsch Hadorn, Gabriela Wuelser, Christian Pohl (Zurich, CH)*
- Productive irritation – institutional dynamics in nature conservation, *Martina Ukowitz, Christina Pichler-Koban and Michael Jungmeier (Klagenfurt, AT)*
- Transcending the local and alternative features of grassroots innovations. What can transdisciplinary research contribute to diffusion of sustainable innovations? *Willington Ortiz (Wuppertal and Lüneburg, DE)*

Session 15: Clarifying roles and expectations

[C40.147]

Moderation: *Christian Erik Pohl (Zurich, CH)*

- Determinants of researchers' roles in real-world laboratories: the case of Wuppertal, *Michael Rose, Annaliesa Hilger and Matthias Wanner (Wuppertal, DE)*
- Voices from within, voices from without: transdisciplinary climate change adaptation research, art and coastal communities, *Jean-Paul Vanderlinden, Juan Baztan, Ioan Ciomasu (Versailles, FR)*
- The role of scientific research in guiding an island's sustainability transition, *Panos Petridis (Vienna, AT)*

Session 22: Quality and effects of transdisciplinary research. Reflections on transdisciplinarity graduate programs

[C40.153]

Moderation: *Anna Henkel (Lüneburg, DE)*

- Quality criteria for assessing transdisciplinary doctorates and implications for the examination process, *Juliet Willetts and Cynthia Mitchell (Sydney, AU)*
- Bridging theory and practice in transdisciplinary research – a case study of a multi-stakeholder-workshop with the CCES Winter School "Science Meets Practice" 2017, *Daniel Ketzer (Stockholm, SE and Karlsruhe, DE), Gabriel Abu-Tayeh (Bern, CH), Johanna Goetter (Cottbus, DE), Marilou Jobin (Zurich, CH), Simon Knüsel (Birmensdorf, CH), Valeria Superti (Lausanne, CH), Rohini Athavale (Kastanienbaum, Zurich, CH), Patricia Fry (Zurich, CH), Matthias Zimmermann (Kastanienbaum, Zurich, CH), Sandra Probst-Rüd (Zurich, Dübendorf, CH), Carolina Adler (Zurich, CH)*
- When worlds collide – first experiences with inter- and transdisciplinarity, *Anna-Lena Berscheid, Nils Wingenbach (Paderborn, DE)*
- Experiences from and conceptual framework of FlüGe – A graduate school following principles of inter- and transdisciplinarity in research and training, *Florian Fischer and Alexander Kraemer (Bielefeld, DE)*

Session 30: Modes and impact of transdisciplinary research? concepts, methods, processes and case-based evidence

[C40.146]

Organizers: *Matthias Bergmann, Alexandra Lux, Lena Theiler and Thomas Jahn (Frankfurt a.M., DE), Martina Schäfer and Emilia Nagy (Berlin, DE), Stephanie Jahn, Jens Newig, Judith Kahle and Daniel J. Lang (Lüneburg, DE)*

- TransImpact – Effective transdisciplinary research: Analysis and transfer of standards for transdisciplinarity, *Oskar Marg, Alexandra Lux, Martina Schäfer (Frankfurt a.M. and Berlin, DE)*
- Solution Readiness Levels: Measuring impact of innovation groups for Sustainable Land Management, *Christian Eismann, Susanne Schön (Berlin, DE)*

- Does transdisciplinarity improve academic and societal research outcomes? Empirical results from a large-N comparative study, *Stephanie V. Jahn, Judith Kahle, Jens Newig (Lüneburg, DE), Matthias Bergmann (Frankfurt a.M., Berlin), Daniel J. Lang, (Lüneburg, DE)*

Double Session 32 (part I): Transdisciplinarity between ideality and reality

[C40.704]

Organizer: *Stefan Emmenegger and Gaudenz Welti (Bern, CH)*

- It's about asking the wrong questions, *Gaudenz Welti (Bern, CH)*
- Limits and possibilities of transdisciplinary discourse - the Dak'Art Biennale as a case-study of dynamic multiperspectivism, *Stefan Emmenegger (Bern, CH)*
- Art and transdisciplinarity – Evoking dialogue through photography, *Adji Dieye (Milano, IT)*
- Arte Latinoamericano – Alternative approaches through transdisciplinarity, *Laura Bohnenblust (Bern, CH)*

Session 33: Transdisciplinarity in action – How does transdisciplinary research emerge from heterogeneous cultures?

[C40.154]

Organizers: *Jeremias Herberg and Nico Lüdtke (Lüneburg, DE)*

- If transdisciplinarity is the answer, then what is the question? How science policy cultures clash in practicing the opening up of academic knowledge production, *Jan-Peter Voß (Berlin, DE)*
- Boundary work in transdisciplinary energy research. Negotiating scientific identities, skills and normativities, *Mirko Suhari (Friedrichshafen, DE)*
- Transdisciplinary sustainability studies between deliberation and technocracy – Mapping of a bipolar field, *Jeremias Herberg (Lüneburg, DE)*

Session 34: Advancing TD research in Africa through LIRA 2030 Africa

[C40.152]

Organizers: *Katsia Paulavets, Vivi Stravou (Paris, FR), Kouamé Parfait Koffi (Abidjan, CI), Ng'weina Francis Magitta (Dar es Salaam, TZ)*

14 – 15:30h

PARALLEL SESSIONS

Session 4: Evaluation of case studies and research programs

[C40.108]

Moderation: *Jana Zscheischler (Berlin, DE) and Thomas Weith (Potsdam, DE)*

- Exploring transdisciplinary integration: Empirical lessons from four thematic synthesis processes, *Sabine Hoffmann (Dübendorf, CH), Christian Pohl (Zurich, CH) and Janet G. Hering (Dübendorf, Zurich, Lausanne, CH)*
- Towards a framework to evaluate transdisciplinary products within climate and coastal research, *Susanne Schuck-Zöller, Holger Brix, Christian Buschbaum, Jörg Cortekar, Christiane Eschenbach, Irene Fischer-Bruns, Stephan Frickenhaus, Klaus Grosfeld, Lars Gutow, Wolfgang Hiller, Daniela Jacob, Elke Keup-Thiel, Gesche Krause, Elke Meyer, Insa Meinke, Lars Nerger, Diana Rechid, Johannes Schulz-Stellenfleth, Emil Stanev, Renate Treffeisen (Geesthacht, Bremerhaven, DE)*
- How to assess process quality and product quality of transdisciplinary research projects? – an evaluation concept for a self-reflection and learning process, *Lukas Wortmann, Bettina König and Anett Kuntosch (Berlin, DE)*

Session 8: Dealing with cultural difference

[C40.146]

Moderation: *Hans Dieleman (Mexico City, MX)*

- Cultural differentiation in transdisciplinary sustainability research, *Moritz Engbers (Lüneburg, DE)*
- Methods and methodologies revisited – recommendations from an intercultural transdisciplinary research project on sustainable land use in Eastern Europe, *Hubert R. Schübel (Stuttgart, DE), Evelyn Rusdea (Freiburg, DE), Florin Păcurar (Cluj-Napoca, RO) and Albert Reif (Freiburg, DE)*
- Ngā kete e toru: an indigenous (māori) transdisciplinarity, *Anthony O. Cole me ōna Tūpuna (Palmerston North, NZ)*

Session 9: Social dependencies in transformative transdisciplinary research

[C40.154]

Moderation: *Esther Meyer (Lüneburg, DE)*

- Involving stakeholders, civil society, practitioners, citizens, or uncertified experts: Just a Babylonian confusion or is there more to it? *Antonietta Di Giulio and Rico Defila (Basel, CH)*
- Rethinking truth to power: the role academics and non-academics have in changing the culture of knowledge creation in the context of urban sustainability, *Kareem Buyana (Kampala, UG)*
- Social relationships across spatial scales matter in ecosystem services research, *María Felipe-Lucía (Bern, CH), Berta Martín-López (Lüneburg, DE), Elena Bennett (Montreal, CA), Tobias Plieninger (Copenhagen, DK), Marina García-Llorente (Madrid, ES), Christina Hicks (Stanford, US), Sander Jacobs (Brussels, BE), Bruno Locatelli (Montpellier, FR), Albert Nostrom (Stockholm, SE) and Garry Peterson (Stockholm, SE) and Francis Turkelboom (Brussels, BE)*

Session 19: Brokering beyond education

[C40.153]

Moderation: *Jeremias Herberg (Lüneburg, DE)*

- Intergenerational dialogue as research tool to save cultural heritage, *Andrea Sieber (Klagenfurt, AT)*
- Teachers as brokers: Adding an out-of-school perspective to higher education teacher profiles, *Carla Oonk, Judith Gulikers, Renate Wesselink, Pieter J. Beers and Martin Mulder (Wageningen, Rotterdam, NL)*
- Conceptualizing transdisciplinary cooperation in teacher education, *Robin Straub (Lüneburg, DE)*

Double Session 32 (part II): Transdisciplinarity between ideality and reality

[C40.704]

Organizer: *Stefan Emmenegger and Gaudenz Welti (Bern, CH)*

- It's about asking the wrong questions, *Gaudenz Welti (Bern, CH)*
- Limits and possibilities of transdisciplinary discourse - the Dak'Art Biennale as a case-study of dynamic multiperspectivism, *Stefan Emmenegger (Bern, CH)*
- Art and transdisciplinarity – Evoking dialogue through photography, *Adji Dieye (Milano, IT)*
- Arte Latinoamericano – Alternative approaches through transdisciplinarity, *Laura Bohnenblust (Bern, CH)*

Session 35: Sustainability-driven entrepreneurship – Curriculum for new approaches to business development

[C40.147]

Organizers: *Petra Biberhofer (Vienna, AT), Johan Boman (Gothenburg, SE), Bohuslav Binka (Brno, CZ), Jan Cincera (Brno, CZ), Antje Disterheft (Vechta, DE), Susanne Elsen (Bolzano, IT), Claudia Lintner (Bolzano, IT), Marco Rieckmann (Vechta, DE), Christian Rammel (Vienna, AT) and Gabriela Schaad (Gothenburg, SE)*

- 16 – 17:45h** **PLENARY SESSION**
 [Audi-Max]
- OPEN PANEL: WHAT IS GAINING IMPORTANCE FOR ME DURING THE ITD CONFERENCE 2017?**
 Moderation: *Bianca Vienni Baptista, Leuphana University Lüneburg (D) and Universidad de la República (UY)*
- CONFERENCE OBSERVATIONS**
- *Juan-Carlos Ruíz, Pontificia Universidad Católica de Chile (CL)*
 - *Julie Thompson Klein, Wayne State University (USA)*
- VOICES FROM THE CO-CONFERENCES**
- *Romina Adaos and Christian Cerutti, Doctorado en Estudios Interdisciplinarios sobre Pensamiento, Cultura y Sociedad, Universidad de Valparaíso (CL)*
 - *Gustavo Ferreira, Centro Universitario en Tacuarembó, Universidad de la República (UY)*
 - *Alejandro Guevara, Laboratorio de Problemas Multidimensionales, Universidad Autónoma de Querétaro (MX)*
- THOUGHTS FROM THE CONFERENCE ORGANISERS**
- 18 – 19:30h** **NETWORK MEETING**
 [C40.704]
Building Alliances beyond Transdisciplinarity (open to all conference participants)
 Coordination & Moderation: *Gabriele Bammer, Australian National University, Australia and National Socio-Environmental Synthesis Center USA (AU)*
- 18 – 19:30h** **SIDE EVENT**
 [Mensawiese] Frisbee with *Moritz Engbers*

FRIDAY, 15 SEPTEMBER 2017

- 8:30 – 9h** **SIDE EVENT**
 [Forum] Morning Coffee with *Cynthia Mitchell, Dena Fam, University of Technology Sydney (AU)*
- 9 – 12h** **EXCURSION**
 [Foyer*] Exploring Leuphana's university and study model, *Bastian Hagmaier and representatives of Faculties and Schools (Lüneburg, DE)*
- 9 – 13h** **EXCURSION**
 [Foyer*] Traditional orchard restoration and permaculture gardens as a form of restoration for sustainability: transdisciplinary collaborations of sustainability students at Leuphana, *Vicky Temperton, Olaf Anderson, N.N. (students) (Lüneburg, DE)*
- 9:15 – 17h** **SPECIAL MEETING**
 [C40.704] Leuphana-KLASICA Workshop of the Knowledge, Learning, and Societal Change Alliance – Fostering collective behaviour change toward sustainable futures: models, narratives and experiments, *Ilan Chabay and Daniel J. Lang (Potsdam and Lüneburg, DE)* (open to all conference participants)

9:15 – 11h

TRAINING WORKSHOPS

- [C40.154] Co-creation in transdisciplinary processes – a designerly approach (part I), *Daniela Peukert (Lüneburg, DE) and Jana Thierfelder (Zurich, CH)*
- [C40.146] Meaningful co-creation in inter- and transdisciplinary research – experimenting with Dragon Dreaming Project Design (part I), *Antje Disterheft and Sandra Caeiro (Lisbon, PT)*

WORKSHOPS

- [C40.147] Challenging my and your worldview – recognizing ontological (beliefs), epistemological (knowledge) and axiological (values) assumptions to enrich TD research and practice, *Dena Fam, Cynthia Mitchel, Katie Ross, Emilia De La Sienra (Sydney, AU), Martina Ukowitz (Klagenfurt, AT)*
- [C40.152] How could actors from practice and society evaluate applied and transdisciplinary research?, *Birge Wolf, Thorsten Michaelis (Kassel, DE)*
- [C40.153] The outcomes of transdisciplinary research with urban labs: the URB@Exp LAB - kit in action (part I), *Christian Scholl (Maastricht, NL)*

11:30 – 13h

TRAINING WORKSHOPS

- [C40.154] Co-creation in transdisciplinary processes – a designerly approach (part II), *Daniela Peukert (Lüneburg, DE) and Jana Thierfelder (Zurich, CH)*
- [C40.146] Meaningful co-creation in inter- and transdisciplinary research – experimenting with Dragon Dreaming Project Design (part II), *Antje Disterheft and Sandra Caeiro (Lisbon, PT)*

WORKSHOPS

- [C40.153] The outcomes of transdisciplinary research with urban labs: the URB@Exp LAB - kit in action (part II), *Christian Scholl (Maastricht, NL)*
- [C40.147] Embodying positionality in inter- and transdisciplinary research, *Rebecca Freeth (Lüneburg, DE)*
- [C40.108] How does transformative learning contribute to transdisciplinary higher education?, *Ruth Förster and Clemens Mader (Zurich, CH)*

CO-CONFERENCES

WHAT IS A CO-CONFERENCE? THE CONFERENCE MODEL OF THE FUTURE!

The Co-conference format aims to create a virtual space for discussion and engagement with the topic of the ITD Conference 2017. It incorporates various virtual components to connect with the main conference via a live stream (plenary talks, short reports from Co-conferences, contributions and discussions), which makes it possible to participate online. The goal of this novel conference structure is to overcome distance, to reduce conference travel, to avoid discrimination for economic reasons, and ultimately, to connect people and discourses that focus on transdisciplinary research and education. Institutions organizing a Co-conference have designed a programme with face-to-face activities on site. Those local events are organized around the ITD_Conference 2017 streams and categories, with a particular focus related to the local interests of each institution/country. These local events will not be streamed live, but complement the contributions of the ITD Conference 2017. Each Co-conference will connect with Lüneburg during specific time slots and present a short summary of the Co-conference discussions. Co-conferences were organized for the first time during the Integration and Implementation Science Conference in 2013, organized by Gabriele Bammer.

INSTITUTIONS ORGANIZING CO-CONFERENCES AROUND THE ITD CONFERENCE 2017

- Chile: Doctorado en Estudios Interdisciplinarios sobre Pensamiento, Cultura y Sociedad, Universidad de Valparaíso and Colectivo 360° (<http://www.dei.uv.cl> and <http://elcolectivo360.com>)
- Mexico: Centro de Estudios Interdisciplinarios and Doctorado en Estudios Interdisciplinarios sobre Pensamiento, Cultura y Sociedad, Universidad Autónoma de Querétaro (<http://filosofia.uaq.mx/index.php/programas/deipcs>)
- Uruguay: Centro Universitario de Tacuarembó, Universidad de la República Oriental del Uruguay (<http://www.tacuarembou.udelar.edu.uy>)
- New Zealand: Landcare Research - MANAAKI WHENUA (<https://wwwuat.landcareresearch.co.nz/home>)

CO-CONFERENCE CHILE

Thursday, 31.08.2017

[Valparaíso]

TRANS-VERSIONS: INTER- AND TRANSDISCIPLINARY DIALOGUES FROM LATIN AMERICA

The panel aims to discuss and reflect on the question, “How are inter- and transdisciplinary challenges confronted in Latin America?”. Different actors and institutions have been invited to present their experiences and projects as well as teaching and learning programmes. This event is an initiative of two students, Romina Adaos and Diana Rodríguez, who participated in the *Td Escuela de Verano – Investigación Transdisciplinaria en la Interfáz Ciencia / Sociedad* (Td Summer School – Research at the Science / Society Interface) organized by the Doctorado en Estudios Interdisciplinarios sobre Pensamiento, Cultura y Sociedad (DEI), Universidad de Valparaíso, the Espacio Interdisciplinario (EI) Universidad de la República, Uruguay and Leuphana University in March 2017.

CO-CONFERENCE MEXICO

Thursday, 31.08.2017 and 01.09.2017

[Querétaro]

INTERDISCIPLINARY AND INTERINSTITUTIONAL DIALOGUES IN THE FACE OF GLOBAL MERCANTILIZATION OF SOCIO-ENVIRONMENTAL SPACES

Over two days, the Lab for Multidimensional Problems (Laboratorio de Problemas Multidimensionales) of the Center for Interdisciplinary Research (Centro de Investigaciones Interdisciplinarias), Universidad Autónoma de Querétaro (UAQ), will open different spaces for academic and social reflection to share experiences and insights on transdisciplinary, interdisciplinary and intersectoral projects. The Co-Conference forms part of the inauguration of the Permanent Seminar of the PhD program Doctorado en Investigaciones Interdisciplinarias sobre Pensamiento, cultura y Sociedad. The main objective of the event is to link different universities, researchers and organizations through a deep questioning of the barriers found in the development of transdisciplinary agendas in Latin America and to share strategies towards urgent socio-ecological problems in this region.

CO-CONFERENCE URUGUAY

Wednesday, 06.09.2017

[Tacuarembó]

WORKSHOP: TRANSDISCIPLINARITY AS A MEANS FOR SUSTAINABLE AND LOCAL DEVELOPMENT: THE CASE OF TACUAREMBÓ

The purpose of the workshop is to bring together actors with different experiences on inter- and transdisciplinary work, and to reflect on the learning processes they have gone through. The question that will guide the discussion is: "How was the dialogue among the actors achieved during the inter- or transdisciplinary initiative and how did they elaborate and carry out the proposal?" Different institutions from Tacuarembó are being invited to present their experiences and to build stronger links with the Centro Universitario, which is currently building its inter-institutional campus.

CO-CONFERENCE NEW ZEALAND

Wednesday, 13.09.2017

[Lincoln]

TRANSDISCIPLINARY AND INTERCULTURAL RESEARCH: INSIGHTS FROM THE OUR LAND & WATER NATIONAL SCIENCE CHALLENGE AND THE PRIMARY INNOVATION PROGRAMME

With an intercultural perspective, this Co-conference provides some visions of transdisciplinary collaboration and co-innovation projects. This event will also analyze different practices that reveal the essential gestures of collaboration through emergence, and propagates intercultural capacity. An example of this approach is Robson's presentation, "Road testing the Integration and Implementation Science framework for delivering more fit for purpose science for policy".

PLENARY ACTIVITIES

OPENING PANEL

POLYLOG ON TRANSDISCIPLINARY RESEARCH AND EDUCATION AS INTERCULTURAL ENDEAVOURS

Coordination and moderation: *Ulli Vilsmaier, Leuphana University of Lüneburg, Germany*

Monday, 11.09.2017, 17:45 – 19h

[Audi-Max]

The ITD Conference 2017 reflects on transdisciplinarity as an intercultural endeavor and tackles this challenge in a multifaceted way. We will take different discourses, epistemologies and practices of transdisciplinarity and related research approaches into consideration. We will explore the different dimensions of culturality that are inherent to transdisciplinary research, and will approach transdisciplinarity as a phenomenon that is gaining considerable attention concurrently in different world-regions. Thus, we also address place-based differences in order to consider social, political, economic, and historical conditions that may influence the way we conceptualize and practice transdisciplinarity. With the opening panel we will outline these different dimensions of the conference theme and will take a culturally sensitive look at transdisciplinarity, exploring different conceptualizations, experiences, and perspectives. We attempt a polylog that emphasizes heterogeneity and difference to provide a basis for mutual learning during the conference days. A Polylog is a procedure that was developed in intercultural philosophy, and takes the question of 'What is?' towards the question 'Why?' it seeks to address convictions, i.e. the immanent logic and context of a position. For the praxis of polylogs, Franz Wimmer formulated a minimum rule that we will try to realize during the opening panel (and hopefully throughout the conference): "Wherever possible, look for transcultural overlapping of philosophical concepts, since it is probable that well-founded theses have developed in more than one cultural tradition." (Wimmer 2004: 67, translated)

Discussants:

Stephan Rist, *td-net Advisory Board and University of Bern, Switzerland*

Stephan Rist is holder of the UNESCO Chair 'Natural and Cultural Heritage of Sustainable Mountain Development', and also works at the Centre for Development and Environment (CDE) of the University of Bern, where he and heads the Cluster on Sustainability Governance of Land and Natural Resources. The geographic focus is on Latin America and Africa being involved in several international research projects, dealing with critical sustainability assessments of large scale land investments, REDD+schemes, and other rural development policies. Further areas of research concern food sustainability, local knowledge, social movements, and transdisciplinary approaches that are able to include intra and inter-epistemological dialogue into of research that is aiming at the enhancement of societal transformation in view of environmental justice.

Coleen Vogel, *University of the Witwatersrand Johannesburg, South Africa*

Coleen Vogel is a distinguished professor in the Global Change Institute. She was previously a full professor at the University of Pretoria and a 'visiting' Professor with the University of Stellenbosch working on climate change adaptation and transdisciplinarity. She is a climatologist by training but has increasingly worked on the social dimensions of climate change, focusing particularly on climate change adaptation. She has chaired and been the vice chair of international global environmental change

scientific committees (e.g. IHDP, LUCC). She currently serves on various international boards and is the co-vice chair of African science committee of Future Earth. She has been Chapter Lead Author and co-author of chapters in the IPCC (4th and 5th assessment reports). She has also received the Burtoni Award for international excellence in adaptation research and received the University of the Witwatersrand Vice Chancellor's teacher's award for excellence in teaching.

Hans Dieleman, *Autonomous University of Mexico City, Mexico*

Hans Dieleman is of Dutch/Flemish origin, has a doctoral degree in social sciences from the Erasmus University in Rotterdam, the Netherlands, and works as a full professor in the Autonomous University of Mexico City. He is the coordinator of the universities environmental program and a member of the academic council of the college of Sciences and Humanities. He is an extended professor in the National Mexican Polytechnic Institute and a fellow of the Texas-based Academy of Transdisciplinary Learning and Advanced Studies. He is a co-coordinator of Cultur21-International, a platform for Cultural Fieldworks for Sustainability. His research themes center on education, art, transdisciplinarity and embodied cognition, merging in the new field of neurotransdisciplinarity, all in relationship with transition processes towards sustainability.

Michi Knecht, *University of Bremen, Germany*

Michi Knecht is Professor for Social and Cultural Anthropology at Bremen University. Her research focuses on interconnections between knowledge practices and social forms. At the intersections of Anthropology and STS she has investigated assisted reproductive technologies, political and religious movements, new forms of kinship and recent constellations of poverty and inequality. Her current research focuses on regimes of anonymity in transformation. With Michael Flitner and Friederike Gesing she has co-founded the Bremen NatureCultures Lab as think tank for new research designs in human-body, human-other species and human-environment relations. Methodologically, she is interested in further extending the ethnographic tool kit through permanent field sites, collaborative knowledge production and experiments. Most recent publications in English: „The Social Productivity of Anonymity“ (Ephemera 17/2, with Anderas Wittel and Götz Bachmann, 2017) „Crisis in Anthropology– Rethinking a Missing Concept“ (Handbook of International Crisis Communications Research, with Stefan Beck 2016).

Ulli Vilsmaier, *Leuphana University of Lüneburg, Germany*

Ulli Vilsmaier holds the position of a Junior Professor for Transdisciplinary Methods and is President's Delegate for Inter- and Transdisciplinarity at Leuphana University of Lüneburg. She is member of the Methodology Center, the Institute for Ethics and Transdisciplinary Sustainability Research at the Faculty of Sustainability, Senior Researcher at the Digital Cultures Research Lab, and adjunct faculty of the School of Sustainability at Arizona State University, USA. She was trained as a Geographer at Salzburg University. Her main concern is the acknowledgement of research as a way of appropriation of and belonging to the world and thus, a human right. Her work is strongly inspired by Paulo Freire's pedagogy and a responsive logic developed by Bernhard Waldenfels. She is accompanying inter- and transdisciplinary research teams, is involved in a series of projects related to the development of methods for boundary work, as well as epistemological and methodological foundations of inter- and transdisciplinary research and sustainability science.

KEY NOTE

TRANSDISCIPLINARY RESEARCH REVISITED

Gertrude Hirsch Hadorn, *ETH Zurich, Switzerland*

Tuesday, 12.09.2017, 9:30 – 10:15h

[Audi-Max]

Integrating different perspectives on a real-world problem that is addressed in a transdisciplinary project is a core requirement of transdisciplinarity. At the same time, it constitutes a major challenge for the transdisciplinary research team. A typical recommendation for how to meet this challenge has been widely approved from the early days of transdisciplinary research until today. It suggests "to develop a common language" right from the beginning of a project on throughout all phases of the research process. I revisit this recommendation and show why it leads to a dead end. A common language hinders a transdisciplinary team to account for the perspectives of the different cultures involved, since the knowledge of a culture is tied to its language. Hence, a more promising alternative to speaking the same language is speaking many, at least to a certain degree. It seems that we can-

not bypass taking the effort of understanding the different epistemic cultures to some extent in coproducing knowledge to promote what is conceived to be the common good. This also sheds new light on how knowledge gained in disciplinary frameworks may matter in a transdisciplinary project.

Gertrude Hirsch Hadorn has acted as the first president of the Network for Transdisciplinary Research td-net of the Swiss Academies of Arts and Sciences. She is an adjunct professor at the Department of Environmental Systems Science, Swiss Federal Institute of Technology ETH, Zurich. Her research topics include the philosophy of environmental and sustainability research, environmental ethics, and decisions under deep uncertainty, with case studies in the fields of climate change and ecology. She has contributed to the methodology of transdisciplinary research as a lead editor of the "Handbook of Transdisciplinary Research" (Springer 2008) and as a co-editor of "The Argumentative Turn in Policy Analysis: Reasoning about Uncertainty" (with Sven Ove Hansson, Springer 2016).

PLENARY TALKS

TRANSDISCIPLINARY RESEARCH IN DIFFERENT WORLD REGIONS

DEALING WITH INFORMALITY AND SOCIAL FLUIDITY IN TRANSDISCIPLINARY RESEARCH PROCESSES

John van Breda, *Stellenbosch University, South Africa*

Tuesday, 12.09.2017, 16 – 16:30h

[Audi-Max]

Transdisciplinarity is not a new science per se, but rather a new methodology for doing science with society. A particular challenge in doing science with society is the engagement with non-academic social actors to enable joint problem formulation, analysis and transformation. How this is done practically differs from context to context – given the deep structural, educational and institutional asymmetries between the countries / societies of the developed North vs. the developing South. So, for example, in the developed North – with its much more formal and well-established democratic societal institutions and practices – the presence of and engaging with 'legitimised' stakeholders (Scholz, 2011) has become a fundamental feature for the way in which transdisciplinary research (TDR) processes are being conducted. However, these legitimised stakeholders can never be assumed or guaranteed when working with unmobilised poor communities in the developing South – with its much higher levels of social fluidity and informality. In this context, the challenge is how to engage with people more directly in their informal social networks and settings – rather than via their representatives who have been institutionally mandated to speak on their behalf in any decision-making processes on the future. To be sure, for this new approaches are needed for the way in which to conduct TDR processes. One such new approach that has emerged from a case study of the Enkanini informal settlement in Stellenbosch (South Africa) – which can be called the emergent transdisciplinary design research (ETDR) approach – will be presented and discussed in my presentation. An important point of departure of this approach is that the presence of so-called legitimised stakeholders is not a fundamental precondition for initiating the TDR process. Instead, the latter can be co-designed with individual people, which, in the context of the Enkanini case, meant working with people on an individual shack-by-shack basis. This Enkanini case however not only serves the purpose of demonstrating the importance of context – namely that context matters – when undertaking TDR in emergent real-life situations. However, it also serves another important purpose, at a more theoretical level, namely of demonstrating what methodological innovation can in fact come out of conducting TDR with communities in social environments with no formalised decision-making structures, practices and institutions. In this regard, what was needed to be developed during the unfolding TDR process was a new set of guiding logics and principles for the ETDR approach as well as exploring and experimenting with a new narrative-based method for knowledge co-production. What exactly this entails and how this was achieved in a grounded-theory way of a constant back and forth between theory and practice (Glaser and Strauss, 2009; Strauss and Corbin, 1997) will form a major part of my presentation. However, suffice to mention here, is that the wide body of literature that was consulted – including complex systems theory, assemblage theory, narrative theory, emergent design theory and human learning theory – was not written explicitly from a transdisciplinary perspective and the challenge we faced was to bring this together in the form of a new set of guiding logics and principles of the ETDR approach.

John van Breda is the Programme Manager: Centre of Complex Systems in Transition (CST) an inter-faculty research centre at Stellenbosch University which offers a transdisciplinary doctoral programme in sustainable development. John holds post-graduate degrees in philosophy, theology and sociology and is currently working towards his PhD with a specific focus on developing context-relevant transdisciplinary research approaches for conducting solution-oriented research in a developing world context. His expertise is in transdisciplinary methodologies and methods for tackling complex social-ecological systems challenges. Prior to the CST, John has been actively involved in building and managing the TsamaHub and has been instrumental in raising international funding for conducting transdisciplinary doctoral programmes on food security and climate change on the African continent, known as the TRECCAfrica and ACCAIprogrammes.

OF WHAT USE IS ART? BLENDING ARTS PRACTICES AND ACADEMIC RESEARCH IN CANADA

David Maggs, *University of British Columbia, Canada*

Tuesday, 12.09.2017, 16:30 – 17h

[Audi-Max]

The usefulness of art has been a subject of growing interest in recent decades, with an increasing number of ostensibly non-aesthetic fields turning to art for assistance with their more intractable dilemmas. Just as this enthusiasm is growing however, disillusionment with the relationship between art and its non-aesthetic engagements is on the rise. Several recent studies are increasingly dismissive of art's non-aesthetic utility. This presentation explores this troubling paradox by focusing on whether a prescriptive relationship between art and the non-aesthetic is simply the wrong idea, or whether it is the right idea, but typically poorly executed. Assuming the latter raises a series of questions that have been almost systematically ignored amidst hasty enthusiasm for the larger social utility of art:

1. Why do we think art has agency and where does this instinct typically lead?
2. How do standard approaches to problem-solving in Western contexts structure the relationship between art and the non-aesthetic? How does this impact artistic agency?
3. What is art? Despite the essentially-contested nature of artistic practice in a Western context, how can we structure its relationship with non-aesthetic agendas without some guiding theory of what it is, how it functions, and how it integrates with non-aesthetic priorities of knowledge and/or behaviour change?
4. Why now? Beyond perennial instincts towards artistic agency, why is an interest in the utility of the arts increasing now, particularly from contexts attempting to navigate complex adaptive systems dynamics? What does this suggest for the social role of art?

These questions will be explored through Sustainability in an Imaginary World (imaginesustainability.today). This three-year research project brought together a large team of artists and researchers to develop an augmented reality experience that was an attempt to use artistic engagement as a means of fostering relationships with difference notions of self and world and thereby broadening public perceptions of sustainability challenges. From there, I hope to identify functional parameters for an integration of artistic practices with non-aesthetic interests more generally and point to a possible horizon for a continued engagement with the social agency of art.

David Maggs is active in the arts and academia. He is the pianist for Dark by Five (darkbyfive.com), has written works for the stage, worked in augmented reality, and is developing a digital immersion lab with partners from across Canada. David is the director of the Gros Morne Summer Music (gmsm.ca), the founder and publisher of Old Crow Magazine (oldcrowmagazine.com), and the director of The Graham Academy, a youth performing arts training academy, and the instigator and co-producer of an upcoming CBC documentary about indigenous identity in Eastern Canada. David's academic focus is on cultural dimensions of sustainability. His doctoral thesis *Artists of the Floating World* led to the SSHRC funded Sustainability in the Imaginary World (www.imaginesustainability.today). David has founded the Liminus Institute, fostering applied dimensions of academic practice along themes of Arts, Health, Sustainability, Indigeneity, Technology, and the Natural World.

RESEARCH, LEARNING AND INNOVATION FOR TERRITORY SUSTAINABLE DEVELOPMENT: THE CAMPUS EXPERIENCE IN TACUAREMÓ, URUGUAY (online from Co-conference)

Gustavo Ferreira, *Universidad de la República, Sede Tacuarembó, Uruguay*

Tuesday, 12.09.2017, 17 – 17:30h

[Audi-Max]

Concern about the sustainability of environmental and economic systems has been mounting during the last decade (Sariskan-darajah et al. 1989; Moonen 1996). Never before has the rate of change been so rapid. The integration and transfer of knowledge are promoting a revolution in technical and scientific spheres, a process spurred by this concern and by information technology (McCalla 1994). Those changes, impact in a different way in society and territories, such as Tacuarembó, Uruguay; and are prompting governments and institutions to introduce changes to develop better conditions for sustainable growth and improvement in welfare. An initiative that was lead initially by the National Institute of Agricultural Research (INIA) to develop an interinstitutional CAMPUS for research, learning and innovation in Tacuarembó. This experience is based on inter-institutional integration is gestated in parallel with the transformation of other institutions. The objective is to develop trans-disciplinary and multidisciplinary. The CAMPUS experience starts in 2007 incorporating the Direction of Veterinaries Laboratories (DILAVE) at the 110 hectares owned by INIA. As an example those institutions are; Tacuarembó Government, Private Entrepreneur Association, the public University (CUT), the Development Agency, Latin American Centre of Human Development, Ministry of Agriculture and Fisheries, Regional Innovation Centre for fine Wool research, Public-Private Forestry services, etc. Today at the University we have 10 research team, 8 teaching groups, 5 research laboratories and 8 University degrees programmes, INIA has 8 research laboratories, 5 research groups. A total of 75 full time researchers and teachers are located and seated in Tacuarembó. That is 386 km far from the capital. Product of the different alliances we are carry on a complex research projects, of foresight analysis, "Tacuarembó Vision 2050". On this project different disciplines and people have participated citizens, public servants, private entrepreneur people, working unions, young associations, etc, and the Governance is integrated by INIA, CUT, Presidency Office of Strategic Planning, the Local Development group of Tacuarembó. We are working on by the transdisciplinary dialog among all the stakeholders involved is increasing the social capital in the territory.

Gustavo Ferreira is Associate Professor, of the Department of Economic Science, in the Tacuarembó branch of the University of the Republic, was Director of Tacuarembó Regional Centre, of the National Agricultural Research Institute (INIA), Gustavo holds a PhD, University of Edinburgh Scotland in Agro-economics and systems (modelling and complex systems). Member of the executive Board of the Tacuarembó Development Agency, Member of the Tacuarembó Basin River Committee for sustainable development, Senior Researcher at (INIA). Member of the propellant team that promote the interinstitutional CAMPUS of Research, Learning and Innovation and also from the change of the Center of Agricultural Research "Alberto Boerger" dependent on the Ministry of Livestock, Agriculture and Fisheries to a new Private-Public Institution financially independent from the central budget, the National Institute of Agricultural Research INIA, founded by law in 1989. He is tutor of thesis of PhD, Master and grade, consultant at national and international level.

POWHIRI: AN INDIGENOUS EXAMPLE OF RESEARCH COLLABORATION FROM NEW ZEALAND (online from Co-conference)

Rawiri Smith, *Environment Manager (Kaiwhakahaere Taiao) for Kahungunu Ki Wairarapa, New Zealand*

Wednesday, 13.09.2017, 9:15 – 9:45h

[Audi-Max]

Collaboration is important in New Zealand as a method of bringing communities together to work on complex problems. A useful collaborative model is the Powhiri, practiced by Maori, the indigenous people of New Zealand, for hundreds of years. The principles and values of the Powhiri could help groups to weave a unified and resilient community. The formal welcome to an area in New Zealand is a Maori process known as the Powhiri. The Powhiri recognises the mana of all the participants. One of the most important values of the Maori people is manaaki, or caring for the mana of everyone. The Maori word mana means the importance associated with a person. The performance of a Powhiri acknowledges the importance of a person being welcomed to an area. One example where Powhiri was realized was in a context of understanding significance. This example showed how Powhiri allowed for weaving together different ways of knowing and different kinds of knowledges, when groups involved in construction came together to meet the Maori community who were their clients. My mother stood and gave the voice of invitation to the guests. The speakers spoke of the Maori community's vision for their place and why it was significant. The construction

group spoke of how they were builders of communities and their work would acknowledge the significance. Amongst those who would construct were people who had been disconnected from their Maori community. Amongst the hosts were families who had not lived on their traditional lands for more than 50 years. The local politicians listened as these groups wove together a vision of how community was the common unity. The songs that supported each speech reaffirmed the importance of place. At the conclusion the hongī, or sharing of breath, signalled a shared understanding of the project.

Ko Maungarake taku maunga kaitiaki
My mountain guardian is Maungarake
Ko Ruamahanga taku awa oranga
My life giving river is the Ruamahanga
Ko Takitimu te waka o oku tohunga tawhito
The canoe of my ancient priests is Takitimu
Ko Ngati Kahungunu taku iwi
My tribe Ngati Kahungunu
Ko Ngati Kaiparuparu me Ngai Taneroa me Ngati Muretu oku hapu
My sub tribes are Ngati Kaiparuparu, Ngai Taneroa and Ngati Muretu
Ko Nukupewapewa taku tangata me kaiwhakaora
My person and liberator is Nukupewapewa
Ko Rangikaiwhiria Reiri raua ko Rangiuea Namana oku poupou
My grandfathers are Rangikaiwhiria Reiri and Rangiuea Namana
Ko Ida Ihaka Namana raua ko Hera Huaki oku nanny
My nannies are Ida Ihaka Namana and Hera Huaki
Ko Frances taku whaea
My mother is Frances
Ko Rawiri Smith taku ingoa
My name is Rawiri Smith
No Wairarapa ahau
I am from Wairarapa

Rawiri (Ra) Smith is an Environment Manager (Kaiwhakahaere Taiao) for Kahungunu Ki Wairarapa, an indigenous tribal authority in Wairarapa, New Zealand. As a proponent of indigenous models from New Zealand, he is a part of national initiatives (Our Land and Water National Science Challenge Collaboration Lab, Land and Water Forum), a part of political bodies at a regional level (Greater Wellington Regional Council's subcommittee, Te Upoko Taiao, Ruamahanga Whaitua Committee), a part of district organisations (Masterton District Council, Sustainable Wairarapa, Te Hauora Runanga o Wairarapa), and a part of traditional Maori entities (Ngati Kahungunu Ki Wairarapa Tamakinui-A-Rua Treaty Trust, Kahungunu Ki Wairarapa, Hurunui-o-Rangi Marae Trust). Most of these organisations

TRANSFORMING SCIENCE FOR SOCIETY: WAYS TO INTEGRATE SCIENCE WITH LOCAL LEARNING PROCESSES AND KNOWLEDGES WITH DATA, WITHIN A TRANSFORMATIONS FRAMEWORK

Robin Reid, *Colorado State University, USA*

Wednesday, 13.09.2017, 9:45 – 10:15h

[Audi-Max]

In the last 50 years, globalization and industrialization have increased tele-connections across places and scales, leading to more complex, interconnected, and urgent problems. Here our objective is to describe ways to connect transdisciplinary science within a transformations framework, to better promote transformations towards sustainability. We call this process 'transformative science for society'. We give practical examples from multi-cultural case studies of the first steps towards practicing this new scientific and learning process in pastoral herding societies in Africa and Asia, and our lessons learned from this work. We will highlight not only the process, but also practical methods we used to bring together local pastoral knowledge with quantitative and qualitative scientific data. Our work suggests that this new science must focus directly on ways to catalyze transformative social change place-by-place, in appropriate ways for different cultures. It weaves together the ideas and practices of par-

ticipatory research and transdisciplinary science with community development within a transformations framework. This approach is initiated and implemented not in halls of science, as some transdisciplinary work is today, but in self-organized, place-based arenas bridging science and society that create full co-learning and production processes with diverse stakeholders. These arenas then purposely build the capacity of all stakeholders to act together to promote transformative social change. This new science is democratized, and is initiated by any of the involved stakeholders. Our case studies integrate diverse forms of knowing and knowledges at multiple scales into collective 'sense-making' with local and indigenous pastoral people, policy makers, scientists, business people, and others. Our work often integrates observations from local residents with systematically-collected large scale quantitative data, with careful negotiation of meanings and interpretation of all of these data. We also explicitly develop processes that are appropriate for the different cultures involved in this collaborative work. This ensures a broad range of understandings and interpretations form the foundation of the actions and adaptations taken by actors across landscapes and scales. The approach contributes to the resilience of place-based social-ecological systems by avoiding top-down, one-size-fits-all approaches. Uniting these ideas and practices allows this new science to become truly transformative, by building the joint capacity of local communities, scientists and policy makers so that they make change, learn faster, and act more effectively from local to national scales.

Robin Reid is the Director of the Center for Collaborative Conservation and Professor in the Department of Ecosystem Science and Sustainability at Colorado State University in the US. For the last three decades she has led education, research and community engagement projects in the drylands of Africa, Asia and North America. Her current work focuses on collaborative governance in communities around the world and its social and ecological outcomes. She also focuses on ways to transform science so that it supports local peoples and our broader society better. From 1992–2007, she lived and worked in east Africa, doing research with pastoral people, on the social and ecological sustainability of their ecosystems. Her most recent book, *Savannas of Our Birth*, charts human origins in the savannas of Africa, and the unexpected role that pastoralists currently play in enriching savannas for the region's abundant wildlife. The presented research was realized with: Corrie Knapp, Western State Colorado University, Maria Fernandez-Gimenez, Colorado State University, Kathy Galvin, Colorado State University, Julia Klein, Colorado State University, USA.

RESPONDENTS TO CONTRIBUTIONS FROM DIFFERENT WORLD REGIONS

Michael O'Rourke, *Michigan State University, USA*

Anna Katharina Hornidge, *Leibniz Center for Tropical Marine Ecology and University of Bremen, Germany*

Wednesday, 13.09.2017, 10:15 – 11h

[Audi-Max]

Anna-Katharina Hornidge (Dr. phil.) is Professor of Development and Knowledge Sociology, University of Bremen as well as Head of Department of Social Sciences and of the Working Group 'Development and Knowledge Sociology' at the Leibniz-Center for Tropical Marine Research (ZMT). Trained in Sociology and Southeast Asian Studies from Bonn, Singapore and Berlin, her research interests include the social construction and materiality of (environmental) knowledges, sustainability futureing (discourses) in contexts of globally prevailing social inequality, and social, cognitive, epistemic (im-)mobilities in the context of coastal transformation processes. Her regional focus lies on Southeast Asia (Indonesia, Singapore, Philippines, Malaysia), with additional past and partly collaborative work having been conducted in Central Asia (Uzbekistan, Tajikistan) and East Africa (Ethiopia).

Michael O'Rourke is Professor of Philosophy and faculty in AgBioResearch at Michigan State University. His research interests include epistemology, philosophy of environmental science, communication and epistemic integration in collaborative, cross-disciplinary research, and linguistic communication between intelligent agents. He is Director of the Toolbox Dialogue Initiative, a US NSF-sponsored research initiative that investigates philosophical approaches to facilitating interdisciplinary research (<http://toolbox-project.org/>). He has published extensively on the topics of communication, interdisciplinary theory and practice, and robotic agent design in journals such as *The Journal of Philosophy*, *Synthese*, *BioScience*, *Clinical and Translational Science*, and *The Journal of the American Society of Information Science and Technology*. He has been a principal investigator, co-principal investigator, or collaborator on funded projects involving environmental science education, the facilitation of cross-disciplinary communication, biodiversity conservation, sustainable agriculture, resilience in environmental systems, and autonomous underwater vehicles.

PLENARY DISCUSSIONS

PANEL ON RESEARCH INTEGRATION AND IMPLEMENTATION – COMMONALITIES AND DIFFERENCES BETWEEN DIVERSE COMMUNITIES

Coordination & moderation: **Gabriele Bammer**, *Australian National University, Australia and National Socio-Environmental Synthesis Center USA, Australia*

Wednesday, 13.09.2017, 16 – 17:45h

[Audi-Max]

The aim of the panel is to bring together key players from various communities undertaking research integration and implementation to discuss similarities and differences and to explore the possibility of building alliances to strengthen influence with funders and with research and higher education policy makers. Three communities will be represented: Systems Thinking (Gerald Midgley), Action Research (Danilo Streck) and Team Science (Kara Hall). Each speaker has been asked to address the question “What can systems thinking/action research/team science and transdisciplinarity learn from each other?” The panel chair, Gabriele Bammer will briefly introduce the role of Integration and Implementation Sciences (I2S) in this context. Ulli Vilsmaier and Roderick J. Lawrence will act as discussants, reflecting on “Three things the transdisciplinary community can do to build bridges”, one from an institutional level and the other from a researcher/research team level. Audience discussion will be encouraged.

Panelists:

Gerald Midgley, *University of Hull, United Kingdom*

Gerald Midgley is Professor of Systems Thinking in the Centre for Systems Studies, Business School, University of Hull, UK. He also holds Adjunct Professorships at Mälardalen University, Sweden; the University of Queensland, Australia; the University of Canterbury, New Zealand; and Victoria University of Wellington, New Zealand. He has had over 300 papers on systems thinking, problem structuring methods, community operational research and conflict management published in international journals, edited books and practitioner magazines, and has been involved in a wide variety of public sector, community development, technology foresight, sustainability and resource management projects. He was the 2013/14 President of the International Society for the Systems Sciences, and has written or edited 11 books including, *Systemic Intervention: Philosophy, Methodology, and Practice* (Kluwer, 2000); *Systems Thinking, Volumes I-IV* (Sage, 2003); and *Community Operational Research: OR and Systems Thinking for Community Development* (Kluwer, 2004).

Kara Hall, *National Cancer Institute, USA*

Kara L. Hall is Director of the Science of Team Science (SciTS) and the Theories Initiative at the US National Institutes of Health. Dr. Hall helped launch and build the SciTS field through her leadership conducting empirical studies, developing conceptual frameworks, creating practical strategies and resources, editing special journal issues, and chairing the Annual International SciTS Conferences. Her work aims to build an evidence base for effective team science approaches and support the translation of emerging knowledge into policies and practices. Notably, she served as a member of The National Academies Committee on the Science of Team Science (2012-15); the resulting report, *Enhancing the Effectiveness of Team Science*, was the third most downloaded National Academies Press report in 2015. Dr. Hall also serves to advance dissemination and implementation science, the use, testing, and development of health behavior theory in cancer control research, systems science approaches and teams/groups in health and healthcare.

Danilo Romeu Streck, *Universidade do Vale do Rio dos Sinos, Brazil*

Danilo R. Streck. Doctor of Education from Rutgers University. Visiting scholar at the Latin American Center, UCLA, and at Max Plank Institute for Human Development in Berlin. Professor at the Graduate School of Education of the Unisinos University in Brazil. Recent research projects focus on popular education, Latin American pedagogy, pedagogical mediations in participatory social processes, and participatory research methodologies. Author of *A New Social Contract in a Latin American Educational Context* (Palgrave/McMillan), co-editor of *Paulo Freire Encyclopedia* (Rowman & Littlefield); co-editor of *Fontes da Pedagogia latino-americana* (Autêntica). Editor in chief of the *International Journal of Action Research*. Member of the Consultant Committee for Education of the Brazilian National Research Agency.

Roderick J. Lawrence, *td-net Advisory Board and University of Geneva, Switzerland*

Roderick J. Lawrence (B.Arch., MA, D.Sc) was nominated Professor in the Faculty of Economic and Social Sciences at the University of Geneva in 1999. He was promoted to Honorary Professor at the Geneva School of Social Sciences (G3S) in October 2015. He is also Honorary Adjunct Professor at the School of Architecture and the Built Environment, University of Adelaide, Australia (2017-2020), and he has been Adjunct Professor at the Institute for Environment and Development (LESTARI) at the Universiti Kebangsaan Malaysia (UKM), in Malaysia since July 2011. He has been a member of the Scientific Advisory Board for Interdisciplinary and Transdisciplinary Research at the Swiss Academy of Sciences since 2009. He was the founding director of the Certificate of Advanced Studies in Sustainable Development at the University of Geneva (2003-2015).

Gabriele Bammer is developing the new discipline of Integration and Implementation Sciences (I2S) to improve research strengths for tackling complex real-world problems through synthesis of disciplinary and stakeholder knowledge, understanding and managing diverse unknowns and providing integrated research support for policy and practice change (see i2s.anu.edu.au, <http://I2Insights.org> and *Disciplining Interdisciplinarity: Integration and Implementation Sciences for Researching Complex Real-World Problems*). She looks at applications in a wide range of areas including population health, environment and security. She is a professor in the Research School of Population Health at The Australian National University (ANU). She is an ANU Public Policy Fellow, an inaugural Fulbright New Century Scholar alumna and has held visiting appointments at Harvard University's John F. Kennedy School of Government (2001-2014), ETH-Zurich and the Universität fuer Bodenkultur in Vienna. Since 2015 she co-convenes (with Michael Smithson) an edX Massive Open Online Course (MOOC) on 'Ignorance!'.

PANEL ON TEACHING AND LEARNING IN TRANSDISCIPLINARY ENVIRONMENTS: PREPARING THE NEXT GENERATION FOR NAVIGATING BETWEEN DIFFERENT ENVIRONMENTS

Coordination & Moderation: Machiel Keestra, *Association of Interdisciplinary Studies (AIS) and Institute for Interdisciplinary Studies, University of Amsterdam, The Netherlands*

Thursday, 14.09.2017, 9:15 – 11h

[Audi-Max]

As if the challenge of crossing disciplinary borders in interdisciplinary education is not enough, transdisciplinary education aims in addition to prepare our students for their involvement in real world problems and situations. Taking into account the still omnipresent disciplinary structure of academia, transdisciplinary education challenges obstacles both internal and external to our higher education systems. Integrating different disciplinary perspectives may already be a difficult task, yet more difficult is the navigation of transdisciplinary environments for student and teachers, as these provide a place for stakeholder perspectives, experiential knowledge, and the norms and motivations associated with these. In addition to the challenge posed by interdisciplinary education, transdisciplinary education presents two special challenges as it requires a bi-directional engagement with such environments: 1) we have to equip our students with personal and interpersonal skills and competencies to function optimally in these extra-academic environments which are characterized by far greater diversity on several dimensions; 2) in order to do this, we probably need to draw on these environments in order to provide teaching and learning opportunities that are not only realistic but offer an opportunity for students to develop and experience their own agency for creating change. An important feature of such transdisciplinary environments is that they are much more diverse on multiple dimensions than monodisciplinary or interdisciplinary environments. Obviously, engaging in interdisciplinary projects in order to tackle complex problems offers already some opportunities to integrate different perspectives and to (re)consider the limitations of our disciplines. However, as soon as we leave the confinements of academia, we have to cope with a much broader diversity and perhaps even inconsistency, and navigate the historical and cultural specificities we're in. In addition, given that transdisciplinary teaching and learning is only a relatively recent phenomenon, we do appreciate that teachers and learners are often developing their own ways of coping with all these challenges. Indeed, it may be that the current generation of students will operate in transdisciplinary environments that their teachers have not experienced themselves before – which implies another challenge to such education. Brief statements of the invited panellists, bringing different perspectives and experiences to the fore, will spark a further discussion with conference participants on how we can foster the necessary interdisciplinary engagements as well as the bi-directional engagements between transdisciplinary environments and our academic education. Indeed, how do we learn as students and teachers to step out of our separate rooms and down from our ivory academic tower and admit that knowledge can be co-produced through transdisciplinary practices?

Panelists:**Marcel Bursztyn**, *University of Brasília, Brasil*

Marcel Bursztyn is a full professor in the Center for Sustainable Development (University of Brasília) and currently president of the Brazilian Association of Graduate Programs on Environment and Society. He is affiliated a.o. to the Ecole des Hautes Etudes en Sciences Sociales (Paris) and the Sustainability Science Program of the Harvard Kennedy School of Government and a member of the French Ethics Committee for the Agrarian Research. Along his professional life Marcel has also been involved in governmental institutions aiming at cross-sectorial public initiatives to tackle complex issues, such as urban and regional development, climate change, social inclusion, environmental impacts of major projects, and development agendas. Doing so, he has been concerned with establishing hubs where the disciplinarily fragmented academic community can meet and interact, and bridges to connect with the real world.

Dena Fam, *University of Technology Sydney, Australia*

Dena Fam is a research director at the Institute for Sustainable Futures at the University of Technology Sydney. Over the last decade Dena has been involved in working with industry, government and community groups to collaboratively design, research and trial alternative waste and sanitation systems with the view of collectively learning how to more sustainably manage and recover waste streams for beneficial reuse. She is passionate about integrating her research, consultancy and teaching experiences through on-campus 'living labs' collaborating with staff, students and partners, hand-in-hand, to improve sustainability outcomes on-campus and more broadly within local communities. Dena is keen on unraveling how we as a community of academic game changers, intent on creating a better world, might develop more inspiring educational spaces, and standardize inter- and transdisciplinary methods, practices and learning experiences as a norm rather than an exception to the rule.

Christian Pohl, *ETH Zurich, Switzerland*

Christian holds a PhD in environmental sciences and a habilitation at the University of Bern, is co-director of the Transdisciplinarity Lab of the Department of Environmental Systems Science at ETH Zürich, which is in charge of the Department's transdisciplinary case study teaching. (www.tdlab.usys.ethz.ch). He studied environmental sciences, followed by a doctoral thesis on uncertainty in environmental assessments. As a post-doc he moved to the field of science studies and analysed inter- and transdisciplinary research. Over the last decade Christian has contributed to the development of theory and practice of transdisciplinary research, specifically in the field of sustainable development (cf. Principles for Designing Transdisciplinary Research, Handbook of Transdisciplinary Research, Methods for Transdisciplinary Research). Together with td-net of the Swiss Academies of Arts and Science he furthermore has developed a compilation of methods for coproducing knowledge.

Esther Meyer, *Leuphana University of Lüneburg, Germany*

Esther is a doctoral researcher in the interfaculty research project Complexity or Control? Paradigms for Sustainable Development (CCP) at Leuphana University. In her doctorate project she is analyzing understandings of problems in publications in the fields of sustainability sciences. In doing so she is interested in the discourse-analytical question how the understandings of sustainability related societal problems might, theoretically and methodologically, affect transdisciplinary sustainability research. In her former work at the Center for Methods and Institute for Ethics and Transdisciplinary Sustainability Research at Leuphana University Lüneburg Esther engaged in transdisciplinary research, teaching and learning in sustainability science. She studied inter- and transdisciplinary programs of Philosophy & Economics in Bayreuth, and Sustainability Science in Lüneburg.

Daniel J. Lang, *Leuphana University of Lüneburg, Germany*

Daniel is professor for Transdisciplinary Sustainability Research at Leuphana University of Lüneburg at the Faculty of Sustainability. He has been dean of this faculty and has been dean for study affairs of the Leuphana Semester and Complementary Studies. Since 2016 he is President's Special Advisor for Sustainability at Leuphana. Furthermore he is one of the academic directors of the Double Degree Masters Program Global Sustainability Science of Leuphana University and Arizona State University. Before his employment at Leuphana, Daniel was researcher and later senior researcher at ETH Zürich in the Institute for Environmental Decisions, professorship for Environmental Natural and Social Sciences. The main focus of his work revolves around the further development of the theoretical, methodological as well as process-related foundations of Sustainability Science.

Machiel Keestra, *University of Amsterdam, The Netherlands*

Machiel is assistant professor at the Institute for Interdisciplinary Studies of the University of Amsterdam, where he teaches philosophy of science and interdisciplinary research methods in the interdisciplinary Natural & Social Sciences bachelor's program and the Brain and Cognitive Sciences master's program. He is research fellow at the Institute for Logic, Language and Computa-

tion and member of the research group Neurocultures & Neuroaesthetics, focusing on philosophical and methodological perspectives of inter- and transdisciplinary research. In multiple roles Machiel has been engaged in student social entrepreneurial projects and community service projects. He is past former president of the Association for Interdisciplinary Studies and has advised nationally and internationally on interdisciplinary education and research.

FORUM FOR YOUNG RESEARCHERS – ENGAGING WITH TRANSDISCIPLINARITY

Organizers: Esther Meyer, Judith Kahle and Stephanie V. Jahn, *Leuphana University of Lüneburg, Germany*

Tuesday, 12.09.2017, 18 – 19:30h (open to public)

[C40.704]

The Forum for Young Researchers – Engaging with Transdisciplinarity is organized by PhD students and young researchers coming from various disciplinary backgrounds (e.g. sociology, biology, economics, sustainability science and human ecology) and who are doing research in the field of transdisciplinary sustainability sciences at the Leuphana University of Lüneburg, Germany. This forum aims to create an open learning space for networking, exchanging information, experience for young researchers, practitioners, activists, artists, and PhD students of transdisciplinary research. Junior researchers who investigate transdisciplinarity from a meta-perspective are also included. Using the interactive format of a Knowledge Café, participants work together in small and alternating groups so that everybody has the chance to discuss four core topics:

- The transdisciplinary self – exploring scarcely established academic avenues // hosted by Gertrude Hirsch Hadorn
- Opportunities, boundaries and innovations to get transdisciplinary research funded // hosted by Marco Sonnberger
- Opportunities, boundaries and innovations to get transdisciplinary research published // hosted by Daniel J. Lang
- Transdisciplinary qualifications within institutional boundaries // hosted by Maria Helena Guimarães

Experts on the core topics will be involved in the discussions as experienced and knowledgeable contact people. Additionally we provide a structured collection of existing networks, relevant links, helpful resources and upcoming events, to spur mutual exchange among participants and to jointly complement the collection. We will conclude the forum with a plenary session to synthesise the outcomes of our discussions and to generate both our joint and individual take-home messages, including outcomes from workshops related to the issue that will have taken place during the first day of the conference. We are looking forward to an exciting exchange of experiences, expertise and perspectives on transdisciplinary research, as well as fruitful debates among junior and senior researchers from various academic, geographic and cultural backgrounds. Further ideas and modes of collaboration are welcome to be discussed, pursued and developed in a subsequent joint visit of a pub in Lüneburg.

Experts:

Marco Sonnberger, *Center for Interdisciplinary Risk and Innovation Studies at University of Stuttgart, Germany*

Marco studied Sociology and Political Science at the Universities of Stuttgart and Heidelberg. Since April 2009 he is a researcher at the Stuttgart Research Center for Interdisciplinary Risk and Innovation Studies (ZIRIUS, University of Stuttgart). In 2011 he spent two months at the Center for Climate and Energy Decision Making, Carnegie Mellon University (USA), conducting research on the issue of rebound effects. In July 2014 he gained his Ph.D. in Sociology. Since 2016 he is speaker of the Research Field “Sustainability and Transition Research” at ZIRIUS and co-leader of the junior research group DynaMo (Mobility-Energy-Dynamics in Urban Areas) funded by the German Ministry of Research and Education.

Maria Helena Guimarães, *Institute for Mediterranean Agrarian and Environmental Sciences at Évora University, Portugal*

has a postdoctoral fellow at the Institute for Mediterranean Agrarian and Environmental Sciences in Évora University, Portugal. Her individual project is designated Share Path: Transdisciplinarity as a shared path to handle landscape management: How far can we go? She is trying to understand how co-construction of knowledge happens, trying to dig in the details of formal and informal transdisciplinary processes within the issues of natural resource management. She has always worked with empirical case studies, from fisheries to agricultural issues. Hence, what she likes to do is a mixture between trying to put co-construction in practice and reflecting about it. Within the reflection part, she is lucky to be participating in INTREPID cost action that gathers thinkers (of all over the world) on inter- and transdisciplinarity. They have been working together on a holistic understanding of how can inter- and transdisciplinarity be put into practice in a manner that is genuine and fair.

Daniel J. Lang, *Professor for Transdisciplinary Sustainability Research at Leuphana University, Germany*

Daniel is professor for Transdisciplinary Sustainability Research at Leuphana University of Lüneburg at the Faculty of Sustainability. He has been dean of this faculty and has been dean for study affairs of the Leuphana Semester and Complementary Studies. Since 2016 he is President's Special Advisor for Sustainability at Leuphana. Furthermore he is one of the academic directors of the Double Degree Masters Program Global Sustainability Science of Leuphana University and Arizona State University. Before his employment at Leuphana, Daniel was researcher and later senior researcher at ETH Zürich in the Institute for Environmental Decisions, professorship for Environmental Natural and Social Sciences. The main focus of his work revolves around the further development of the theoretical, methodological as well as process-related foundations of Sustainability Science.

Gertrude Hirsch Hadorn, *Professor in the Environmental Philosophy Group at ETH Zürich, Switzerland*

Gertrude has acted as the first president of the Network for Transdisciplinary Research td-net of the Swiss Academies of Arts and Sciences. She is an adjunct professor at the Department of Environmental Systems Science, Swiss Federal Institute of Technology ETH, Zurich. Her research topics include the philosophy of environmental and sustainability research, environmental ethics, and decisions under deep uncertainty, with case studies in the fields of climate change and ecology. She has contributed to the methodology of transdisciplinary research as a lead editor of the "Handbook of Transdisciplinary Research" (Springer 2008) and as a co-editor of "The Argumentative Turn in Policy Analysis: Reasoning about Uncertainty" (with Sven Ove Hansson, Springer 2016).

Catherine Lyall, *Professor of Science and Public Policy, University of Edinburgh, United Kingdom*

Catherine is Professor of Science and Public Policy, University of Edinburgh. An experienced science policy researcher and evaluator of knowledge exchange and interdisciplinary research activities, she has consulted with public bodies including the UK Economic and Social Research Council (ESRC), Scottish Funding Council, and European Commission. Head of Science, Technology and Innovation Studies, she has contributed to the university's interdisciplinarity strategy and also led a study for the UK Higher Education Academy on interdisciplinary educational provision. Publications include *Interdisciplinary Research Journeys* and a Futures paper exploring the UK research community's engagement with 'transdisciplinarity'. In 2013, she completed a consultancy project for RCUK on International good practice in the peer review of interdisciplinary research. On Monday, sponsored by EU COST Action Intrepid, Catherine Lyall and Laura Meagher will co-organise a workshop for young (and perhaps not so young!) researchers and teachers to explore rewards and challenges of interdisciplinary career paths.

Laura Meagher, *Technology Development Group, United Kingdom*

Laura has spent over 30 years working in the US and the UK, primarily with research and education institutions, facilitating and evaluating strategic change. She has catalysed novel initiatives, often multi-sector, inter-institutional and/or interdisciplinary, so is keenly aware of challenges, issues and practicalities. Following her (interdisciplinary) PhD from Duke University, Meagher's roles have included co-founding/serving as first vice president of a pioneering statewide biotechnology center, developing new initiatives as a Rutgers University research dean, holding a Fulbright Fellowship in institutional change at Edinburgh University and, since 1999, leading her Scotland-based consultancy, Technology Development Group. She has conducted evaluations of interdisciplinary capacity-building schemes, research programmes and reviewing. With Catherine Lyall, she analysed UK interdisciplinary education and has disseminated understanding about interdisciplinarity through published articles, briefing notes, a book and masterclasses. Their workshop on Monday will explore rewards and challenges of interdisciplinary career paths.

Organizers:

Esther Meyer, *Methodology Center and Center for Global Sustainability and Cultural Transformation, Leuphana University of Lüneburg, Germany*

Esther is a doctoral researcher in the interfaculty research project Complexity or Control? Paradigms for Sustainable Development (CCP) at Leuphana University. In her doctorate project she is analyzing understandings of problems in publications in the fields of sustainability sciences. In doing so she is interested in the discourse-analytical question how the understandings of sustainability related societal problems might, theoretically and methodologically, affect transdisciplinary sustainability research. In her former work at the Center for Methods and Institute for Ethics and Transdisciplinary Sustainability Research at Leuphana University Lüneburg Esther engaged in transdisciplinary research, teaching and learning in sustainability science. She studied inter- and transdisciplinary programs of Philosophy & Economics in Bayreuth, and Sustainability Science in Lüneburg.

Judith Kahle, *Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University Lüneburg, Germany*

Judith is a research associate at the Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University. With a focus on qualitative empirical methods, she explores inter- and transdisciplinary research practices in sustainability science. In the research project MONA she focuses on third-party funded sustainability-related research projects and in the research project HOCH-N her work focuses on good practices of sustainability-oriented research at both German universities and universities of applied sciences. Her research interest is focused on power relations at science-society-interfaces, their opportunities, risks and limitations.

Stephanie V. Jahn, *Institute for Ethics and Transdisciplinary Sustainability Research & Research Group Governance and Sustainability, Leuphana University of Lüneburg*

Stephanie is working as a research associate in the Working Group for Governance and Sustainability and at the Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University Lüneburg. From a sociological perspective, her work investigates inter- and transdisciplinary practices in sustainability-related research projects (project MONA) and institutional requirements for the implementation of sustainability research in higher education institutions (project HOCH-N). In her PhD, she focuses on the role of social sciences in inter- and transdisciplinary sustainability research.

NETWORK MEETING

BUILDING ALLIANCES BEYOND TRANSDISCIPLINARITY

Coordination & Moderation: Gabriele Bammer, Australian National University, Australia and National Socio-Environmental Synthesis Center USA, Australia

Thursday, 14.09.2017, 18 – 19.30h (open to all conference participants)

[C40.704]

The aim of this networking event will be to bring together members of the various communities represented at the conference to discuss possible alliances to strengthen influence with funders and with research and higher education policy makers, as well as to strengthen our research and teaching. Relevant communities include transdisciplinarity, interdisciplinarity, systems thinking, action research, team science, sustainability science, Integration and Implementation Sciences (I2S) and more. The event will build on the Wednesday plenary panel “Research integration and implementation. Commonalities and differences among diverse communities”.

PARALLEL SESSIONS

SESSION 1: PHILOSOPHICAL PERSPECTIVES ON THE ‘PROBLEMS’ OF TRANSDISCIPLINARITY

Wednesday, 13.09.2017, 14 – 15:30h

[C40.108]

Moderation: Michael O'Rourke, *Michigan State University, USA*

As Klein (2014) has noted, the “discourse of problem solving” is a time-honored way of characterizing transdisciplinary research and practice; however, the notion of problem can all too easily be taken for granted. This session focuses on investigating what it means to talk about problems within transdisciplinarity. Using philosophical tools of diagnoses, analysis, and critique, the contributors in this session evaluate the notions of problem and problematic, offering insights that emphasize epistemology and reflexivity and recommendations that respect the complexity of transdisciplinarity.

PROBLEMS WITH "PROBLEMS"? TOWARDS A PHILOSOPHY OF PROBLEM-ORIENTED INTER- AND TRANSDISCIPLINARITY

Jan C. Schmidt, *Darmstadt University of Applied Sciences, Department of Social Sciences, Unit of Social, Culture and Technology Studies, Germany*

Keywords: Problem-oriented interdisciplinarity, transdisciplinarity, epistemology, philosophy of interdisciplinarity, concepts of interdisciplinarity, knowledge integration, theory discourse

Among others, the term “problem” plays a major role in the various attempts to characterize interdisciplinarity or transdisciplinarity, as used synonymously in this paper. Interdisciplinarity (ID)—in particular, what is often considered as transdisciplinarity (TD)—is regarded as “problem solving among science, technology and society”, and as “problem orientation beyond disciplinary constraints.” The point of departure of this paper is that the discourse and practice of ID/TD have problems with the “problem”. The objective here is to shed some light on the vague notion of “problem” in order to advocate a specific type of ID: problem-oriented interdisciplinarity. The outline is as follows: Taking an *ex negativo* approach, I will then show what problem-oriented ID does not mean. Drawing to well-established distinctions in philosophy of science, I will show three other types of ID that should not be placed under the umbrella term “problem-oriented ID”: object-oriented ID (“ontology?”), theory-oriented ID (“epistemology”), and method-oriented ID (“methodology”). Different philosophical thought traditions can be related to these distinguishable meanings. I will then clarify the notion of “problem” by looking at three systematic elements: an undesired (initial) state, a desired (goal) state, the barriers in getting from the one to the other. These three elements include three related kinds of knowledge: systems, target and transformation knowledge. This paper elaborates further epistemological elements of problem-oriented ID (or TD). It concludes by stressing that problem-oriented ID (or TD) is the most needed as well as the most challenging type of ID.

PROBLEMS OF TRANSDISCIPLINARY SUSTAINABILITY SCIENCES: AN APPROACH TO DIAGNOSES

Esther Meyer, *Leuphana University of Lüneburg, Faculty of Sustainability, CGSC, Germany*

Keywords: Transdisciplinary sustainability research, problems, problematic

Transdisciplinary (td) Sustainability Sciences are an emergent mode of research aiming at plurality of knowledge combined with a normative orientation towards sustainability or sustainable development. It is criticising modern institutionalized demarcations and understandings of research, such as of scientific objectivity and progress, by crystallizing new ones but still adhering to modern ways and logics of thinking. Problem-orientation has an identifying moment for td Sustainability Sciences: people inside and outside academia identify societal problems and co-produce solution oriented knowledge. At the same time I argue that td Sustainability Sciences have problems with their (comprehension of) ‘problems’. The presentation will provide an approach to diagnoses that aim to explicate reproducing patterns of transdisciplinarity (with)holding and constraining its transformative and interventionist energies. The diagnoses are intermediate results of a PhD project based on a computational discourse analysis of the constitution of problems in td Sustainability Sciences. For sound diagnoses the entanglements of td Sustainability Sciences with a hegemonic modern discourse of sustainable development, constituted by economic theories, methodologies and politics will be analyzed. Its mechanistic and dualistic methodology of solution search for alleged problems, such as lack of knowledge or uncontrollability of social and ecological “conditions”, takes a perfect world of complete information as implicit benchmark. In getting as close as possible to the benchmark discrimination, a permanent violation of human rights is externalized, repressions are accepted and a fragile, reductionist ideological construct is built. Action-guiding theories might suppress the subversive potential of radical other – transdisciplinary – logics and comprehensions of problems. The purpose of this presentation is to contribute to a re-invention and reconfiguration of the foundations of td Sustainability research engaged with the problematic, as elaborated in certain traditions of European philosophy, that can be a promising way to shape transdisciplinarity as such: Respecting complex matters on its ontological level, dilemmas, asymmetries, differences, manifold and conflicting epistemologies or moral principles and norms.

A PHILOSOPHICAL PERSPECTIVE ON REFLEXIVE PROBLEM SOLVING AND TRANSDISCIPLINARITY

Gregor Schmieg, *Leuphana University of Lüneburg, CCP, Germany*

Keywords: reflexivity, ontology, problem solution, transdisciplinarity

According to Klein (2014) the “imperative of problem solving” defines one of the most prevalent discourses in transdisciplinary (td) research. It is largely focused on the solution of problems in the science-society interface. Popa (2015) points out that the understanding, designing, and enacting of this crucial interface is related to a “complex systems approach” to td research. The legitimacy of adopting such an approach lays in its adequate response to the complexity of the problems related to sustainability. Complex problems are defined through “conditions of uncertainty and plurality of values and perspectives” (Popa 2015, 46). Addressing these problems in td research practices therefore requires a reflexive element. Reflexivity generates a critical awareness of the norms and values involved in the td research process on the individual, social, and institutional level. Popa argues further that reflexivity is the core feature of a complex multi-level research process that is explicitly geared towards the td practice of problem solving. These diagnostics of transdisciplinarity relate to a fundamental shift in the landscape of science (Funtowicz and Ravetz 1993). The key notions of reflexivity and problem orientation, however, can be associated with an earlier discourse in French philosophy about the concept of “the problematic” discussed by e.g. Althusser (1971) and Deleuze (1992). This discourse arose in the dawn of new scientific fields and science-society interfaces in the early 20th century. Developments in e.g. psychoanalysis, biology, and the science of history were controversially discussed at the time. In particular I will show that the concept of “the problematic” responds to the discovery of the historicity of scientific knowledge and its normative and value laden function in society and culture. That is to say, also the philosophy of “the problematic” radically stresses reflexivity. My contribution will compare the pragmatist and complexity thinking based approach of Popa and others with the reflexive philosophy of “the problematic”. This comparison will add a fifth dimension to Popa’s “typology of transdisciplinary approaches”. I will ask for the philosophical implications of Popa’s relation of the “descriptive-analytical”, the “transformational”, the “epistemic”, and the “social” approaches to td research in an ideal typical model. The additional type of transdisciplinary approach I will sketch out is the ontology of reflexivity. For philosophy, the ontological perspective makes clear that reflexivity and complexity is not only an issue for the philosophy of science. Rather ontology asks for the concrete and yet abstract structure of reflexivity as a dynamic process in a complex system. As an example of this Nicolescu introduces an “ontological axiom” (Nicolescu 2010) at the basis of transdisciplinary method. However, my presentation will not go into details with Nicolescu’s approach. I will merely use it to suggest, that the understanding of the ontology of reflexive problem solving potentially contributes to the understanding of the challenge of transdisciplinarity with regard to complex systems thinking and normativity.

SESSION 2: DE-RE-IDENTIFICATION: ARTFUL PARTICIPATORY DOING

Wednesday, 13.09.2017, 14 – 15:30h

[C40.152]

Moderation: Sacha Kagan, *Leuphana University of Lüneburg, Germany*

Transdisciplinarity understood as an inter- and transcultural challenge implies exploring difference, instead of imposing a consensus upon a ‘diversity’ of others; engaging in de-re-identifying processes instead of defining fixed identities; and working with ambiguities, vulnerabilities and undisciplined heterogeneity – re-assembled through participatory and/or arts-based research. Through practices and theories in the fields of performance art, photography, education and childhood studies, this session highlights productive (re)configurations of a reflective practice of transdisciplinarity through artful doing.

PHOTOGRAPHY’S TRANSDISCIPLINARY SPACES

Harri Laakso, *Professor of Visual Culture and Art, Aalto University, Finland*

Keywords: photography, photography teaching, photographic medium

This presentation explores the particular features that emerge when photography is explored and taught in a transdisciplinary setting. It is well known that, as a medium, photography already has, from its invention been something that exists between many discursive spaces as Rosalind Krauss famously explored in her essay “Photography’s Discursive Spaces: Landscape/View” (Art Journal, 1982). This presentation alludes in its name particularly to Krauss’s essay, but acknowledges that the essay is but one instance of trying to pin down photography’s persistent heterogeneity as a medium. Early practitioners as well as contemporary key thinkers of photography have puzzle over the ethos of photography. Photographs have been seen to exist in the aesthetic

realm just as well as they have been seen as parts of topographical research. They exist somewhere between art, science and technology, somewhere between the physical and the social. These tensions (between discourses, genres, art/technology) have marked all of photography's history and colored much of its theorization. Recently there has been much interest in seeing the alternative histories of photography, also from the side of photographic art. For example Jan Dibbetts curated the exhibition "Pandora's Box - On another Photography" (Paris 2016) where much of the canonical photography history is omitted in favor of a thinking that springs from early (and later) scientific experimentation. Dibbetts found that this technological strain was eclipsed by an urge to orient photography as an artistic practice. Given the innate heterogeneity of photographic practice it is particularly interesting to think how teaching photography (and our understanding of photography) can change when done in a transdisciplinary setting. This presentation explores these questions via the case study of the course "Social/Physical Landscape Photography" that was taught at Aalto University in the Spring of 2017 as part of the University Wide Art Studies (UWAS). The UWAS studies are art studies geared towards students from all disciplines - technology, science and business students alongside those coming from the arts. The course was devised from the onset taking into account, or rather using as a starting point, photography's heterogeneity, opening onto the possibilities and viewpoints of technology and economics, for example, in addition to those more customary in photography teaching. Given the "problem" that photography poses (its diverse uses and contexts as well as its varying technological and social roles) it is a subject particularly disposed to transdisciplinary approaches, but those approaches only become productive when aligned with photography's inherent heterogeneity and when letting go of the want to create clearly defined and distinct photographic trajectories and histories (which are easily formed because of varying needs for legitimation, i.e. those needing to see photography as an art, as an ethnographic tool, as a technology, as a means of communication...). This presentation explains some of the promises and challenges involved in such courses devised for students from different disciplines, as well as the productive vulnerabilities that, at best, can forge a new understanding of photography for both the teachers and the students involved.

SCIENTIFIC AND SOCIAL INTERCULTURALITY: FROM MONODISCIPLINARITY TO TRANSDISCIPLINARITY

Frédéric Darbellay, *Inter- and Transdisciplinarity Unit, Center for Children's Rights Studies, University of Geneva, Switzerland*,
Zoe Moody, *University of Teacher Education Valais & Inter- and Transdisciplinarity Unit, Center for Children's Rights Studies, University of Geneva, Switzerland*, **Philip D. Jaffé**, *Center for Children's Rights Studies, University of Geneva, Switzerland*

Keywords: Inter- and Transculturality, Inter- and Transdisciplinarity, Childhood and Children's Rights Studies

If the social and political closure identity of monoculturalism is relativized in multiculturalism, which recognizes the plurality of communities that constitute the social fabric at the local, national and international levels, it is the concept of interculturality or transculturality that makes it possible to open a constructive dialogue between and across different heterogeneous groups. Intercultural dialogue allows each group to exchange their points of view while preserving their respective identities and territories. This dialogical report is intensified in transcultural exchanges, which, as the prefix "trans-" indicates, allows a translation from one community language into another and vice versa. There is then a transformation of group identities, cross-fertilization in the co-creation of new community identities, mixed and hybrid. This dynamic from mono- to inter- and transcultural operates not only within the socio-political-cultural space, but also within the scientific space. Although it is based on disciplinary mono-cultures, inter- and transdisciplinary dialogue and integration between disciplines is increasingly on the agenda in research and teaching. By highlighting the different conceptions and schools of thought of the field of interdisciplinarity and interdisciplinary studies, we will show in this contribution how inter- and transculturality between scientific disciplines and epistemic communities that organize them are likely to create transformative, innovative and creative research practices (theories, concepts and methods). To do this, we will rely on the theoretical framework, concepts and methods set up in an ongoing research project, financed by the Swiss National Science Foundation. This inter- and transdisciplinary project ("Exploring the way to and from school with children: an interdisciplinary approach of children's experiences of the third place?") aims to study children's actual experiences of their daily journey to and from school, within a larger network that brings together adults of local communities and education policies. Empirical studies of children's experiences in different intercultural, plurilingual and geographical contexts, conceptions and perceptions of their way to and from school is undertaken to better understand the interconnexions and the transversality that come into play when one cracks open the binary between the child's two main educational spheres by analysing the time and space in-between. The journey to school as a third place (an interdisciplinary concept) is a theoretical standpoint allowing for further exploration of the ways children evolve (e.g. live, socialize, learn, etc.) in interstitial and non-entirely adult-governed spaces. It also emphasizes children's creativity with regard to finding new modes of interaction, social organisation and ways of dealing with their different socio-cultural environments. Based on an inter- and transdisciplinary approach and rooted in the

interdisciplinary fields of Childhood and Children's Rights Studies, this project proposes three interlinked goals integrating various disciplinary views as well as those of the relevant stakeholders. Its first ambition is to build a theoretical and interdisciplinary model of children's explorations of their direct environment on the basis of an empirical study on children's daily journey to and from school. Its second goal is to actively involve children in the research process (data collection and data analysis), in order to provide an empirically based and ethical contribution to the flourishing literature on research with children as well as that on transdisciplinary participatory research. Its third impact-oriented aim is to provide the civil society with a series of recommendations theoretically and empirically grounded in order to allow families, communities and schools to reflect on and envision child-friendly journeys to school for and with communities of children.

Readings:

Darbellay, F. (2015). Rethinking inter- and transdisciplinarity: undisciplined knowledge and the emergence of a new thought style. *Transdisciplinarity revisited*. *Futures*, 65, 163-174.

Lemay, V. & Darbellay, F. (2014). *L'interdisciplinarité racontée. Chercher hors frontières, vivre l'interculturalité*. Bern: Peter Lang.

Moody, Z., Hirschi, C. & Jaffé, Ph.D. (2016). *Le chemin de l'école en Valais (1900-2015) : la négociation communautaire des espaces éducatifs*. S. Cantinotti, J.-H. Papilloud, Ch. Boulé, Ph.D. Jaffé, Z. Moody, P. Riva Gapany, & J. Zermatten, *L'enfant en Valais 1815-2015*. (Vol. 1, pp. 301-315). Martigny (Valais), Suisse: Société d'histoire du Valais Romand.

BHABHA'S DIFFERENCE AND FREIRE'S PRAXIS - A TRANSDISCIPLINARY BOUNDARY CONCEPT

Vera Rosamaria Brandner, *Leuphana University Lüneburg (D), Universität Wien (AT), ipsum (AT)*

Keywords: cultural difference, praxis, boundary concept, third space

In this contribution, transdisciplinary research is considered as an integrative practice constituted by cultural difference. It emerges in between societal fields, different ways of knowing, thinking, acting and being. Still, cultural difference is mostly perceived as a hurdle impossible to be overcome, impeding any exchange on the existing wealth of knowledges and practices. Thus, the major challenge of transdisciplinary research lies in reflectively developing a common research interest for people from different backgrounds and in carrying out a collective research process that is sensitive with regards to existing power structures. In order to find ways of bearing that challenge, I suggest merging the concepts of Bhabha's difference and Freire's praxis and, in doing so, to develop a transdisciplinary boundary concept. According to Homi Bhabha, specifically those situations of cultural difference offer the opportunity of perceiving and negotiating social discrepancies and contradictions rather than ignoring them. Elaborating on the impact of the concept of cultural difference rather than cultural diversity, Bhabha examines the boundaries of preexisting myths of progress and the related supremacy of hegemonic cultural norms. For Bhabha, the concept of cultural diversity implies that there are the Ones deciding who is different, who belongs and who does not, who may contact whom, by which means and for how long. The Ones are fixing the Others in their position of the culturally alien. Such universalistic attempts are merely dissimulating and reproducing ethnocentric values, interests, norms and racisms. The transformation processes in which people are constantly involved cannot be adequately taken into account. This is an important indication for challenges in transdisciplinary and transformative research: The better and more bravely difference is allowed to be explored, articulated and negotiated, the broader a horizon for tackling shared tasks becomes. The aim of such processes is not to force consensus, but rather to highlight the problematics of prioritizing consensus by obscuring difference. Thus, exploring cultural difference represents a major potential for transdisciplinary research. But: How can we really work with cultural difference? An answer can be found in Paulo Freire's concept of praxis, a form of transformative education and research that is based on action, reflection and dialogue. It leads back to his literacy campaigns that were primarily implemented in Brazil during the 1960s. In these campaigns, people learned how to write and read within 30-40 hours; beyond that they were involved in emancipatory awareness raising processes. In these programs, the experience and articulation of difference facilitated the renegotiation of identity. The people involved could recognize themselves as subjects and take action. What Freire achieved in literacy programs from the 1960 onwards, his concept of praxis, can serve as a useful model for transdisciplinary research. It allows for a participative and process-oriented exploration and analysis of a given situation that is marked by shared problems and shaped by certain asymmetrical power relations. By consciously using the ambiguity of cultural difference through action, reflection and dialogue in transdisciplinary research, a third space, according to Homi Bhabha, can be created. In this space the own, the uncertain and the difference can perpetually be articulated, interpreted and negotiated. The concept of a separating line between and within social spaces loses its one-dimensional, exclusive character. Boundaries that represent the outer limits of a certain culture, political stance or epistemology, move into the center of interest.

Readings:

Bhabha, Homi K. (2004) [1994]: *The location of culture*. London: Routledge.

Freire, Paulo (2000) [1970]: *Pedagogy of the Oppressed*. New York: Continuum.

Freire, Paulo (1974): *Education: The Practice of Freedom*. Translated and edited by Myra Bergman Ramos. London.

PARASITES AS LANDMARKS: SOUND AND OBJECT DESIGN IN PUBLIC SPACES

Marcelo Tramontano, Luciana Roça, Gabriele Landim, Diego Digiandomenico and Anja Pratschke, *Architect and Urbanist Nomads.usp - University of Sao Paulo, Brazil*

Keywords: Sound; Object Design; Parametric modelling; Community; Cultural Actions.

Part of a broader project called Urban Cartographies, the Parasites action gathers three disciplinary fields: Sound Studies, Object Design and Cultural Actions. The common ground among them is the use of digital media, which allows the accomplishment of all steps to the fruition of the results by the final interator. The research produced physical landmarks of memories for actions in communities, exploring the design and production of objects from sound inputs. Sounds were obtained with the interest of identifying and registering specific sonorities of a neighbourhood, establishing transdisciplinary relations among soundmarks, parametric modelling and digital fabrication, and the involvement of communities in cultural actions. The research's challenge was to make perceptible the fleeting sound ambience from an urban fragment, inviting its users to revisit these sonorities in a lasting form and relating them to the physical space where they were produced. Furthermore, the research allows the construction of an information layer in urban physical space by the production of a mapping of sonorities in this certain space, composed by a system of hybrid landmarks. Each landmark is constituted by a physical object whose form derives from recorded sounds, available on the internet and accessible via QR Code; as well as it has an information totem containing a location map of the landmarks in the neighbourhood, the project goals and the QR Code. The new cartographic layer can be viewed on the project website (<http://bit.ly/2njHBhG>), and in the information totem of each object. Visits were made to the neighbourhood with the purpose of observation and recognition of essential characteristics that formed the daily life of the site. So, it was possible to identify occasions and places that formed the neighbourhood's own characteristics according to the categories of intensity of use of the location by people, site's singularity and the relation between predominance and distinction of the sounds. The selection criteria of the audios for serving as input to the objects construction were the location of sound source, intensity (dB) and frequencies (Hz). Regarding the design of the objects starting from this audio input, an algorithm was written through the graphic editor Grasshopper with the CAD (Computer Aided Design) platform Rhinoceros and also using Firefly plugin for extracting data of peak frequencies in Hertz from a frequency spectrum graph. Audio clips were chosen by the researchers intending a better representation of the objects, then transformed by the algorithm written in visual programming into numerical data linked to parameters which generated three-dimensional geometries. Thus, the data related to audio were transduced to guide the object geometry in the parametric modelling of the form and then fulfil its production by digital fabrication with laser cutting. Thereby, physical locations where marked by these objects Parasites where selected sounds were captured, establishing conditions for the user to access recorded sounds and, in turn, become a concrete landmark of memories. The sounds that once were linked to their sources and received through collective listening are dislocated and brought again to the interator's present due to the Internet and QR Codes in an individual and intimate listening. The results bring diverse research perspectives regarding the three areas involved. From a transdisciplinary viewpoint, and also aiming at cultural actions in public spaces, the created Parasites system present a structure capable of receiving different contents regarding the objects form, its location and fabrication processes, as well as the types of sounds and its ways to recording - if recorded by researchers or by the community, as examples. Thus, the research proposes different levels and scopes of communitary participation and interaction among university, community and public space. We thank FAPESP (State of Sao Paulo Research Foundation) for financial support. Processes: Luciana Roça 2015 / 13785-1, Gabriele Landim process 2016/ 05427-0 and Dyego Digiandomenico 2016 / 05720-0.

SESSION 3: MAKING IMPLICIT HETEROGENEITIES VISIBLE

Wednesday, 13.09.2017, 14 – 15:30h

[C40.154]

Moderation: Moritz Engbers, *Leuphana University of Lüneburg, Germany*

The session focusses on addressing heterogeneities that are unknown or implicit in the beginning of a transdisciplinary process. Implicit heterogeneities are ranging from needs, interests, and desires to interpretations, thought-styles, and epistemologies. Approaches and experiences how to address such heterogeneities before and during a project will be discussed. Projects from the

fields of public transportation, climate change adaptation, and the development of electric grid infrastructures will be presented in the session.

DEALING WITH HETEROGENIC NEEDS, REQUIREMENTS, AND DESIRES: PROVIDING PUBLIC TRANSPORTATION IN TERMS OF DEVELOPMENT INFRASTRUCTURES

Alexander Brandies, Mandy Dotzauer, German Aerospace Center (DLR), Institute of Transportation Systems, Germany

Keywords: Transdisciplinarity, Public transportation, Stakeholder participation, Service-system evolution, Design Thinking

Capturing and addressing the complexity of and conflicts of interests among all needs, requirements, and desires in general and in all specific use situations in a development process of a product or service is at least in some fields challenging. In different markets, such as mobility and communication, different stakeholder groups as well as stakeholders within a single stakeholder group, even within one culture, are characterized by a wide variety of needs, requirements, and desires. This effect is even stronger in multicultural settings, such as urban areas, or when the success of products or service depends on global success. The particular field of public transportation faces this challenge as well and has furthermore the potential for a change towards novel concepts, leading to a shift towards more sustainability. The research project aims for designing a transdisciplinary development method, enhancing possibilities to solve described challenges, leading to products and services satisfying heterogenic needs, requirements, and desires. In the project the method is applied to public transportation, due to the described potential of this field. Designing the method is inspired by the development of the smartphone. The development process of a smartphone is based on cooperation of developers and stakeholders. A smartphone is a development infrastructure, adaptable by stakeholders according to their individual needs and use situations. As part of an abductive research process, it is assumed, that the solution for the field of communication can be transferred to other heterogenic markets – here investigated for public transportation. Based on this, the research project contains: (1) designing a transdisciplinary method for developing and implementing products and services in terms of development infrastructure instead of finished products or services, (2) applying the designed method, and (3) evaluating the method. In order to determine the success of the developed method, the method will be compared to currently used methods. For comparison, required time and money as well as need, requirement and desire satisfaction by developed products and services will be analyzed. The designed method is subdivided into four iterating steps: (1) disruption, (2) integration, (3) adaptation and evolution, and (4) evaluation. Step one has been included for two reasons. On the one hand, it leads to ideas how products or services as development infrastructure could look like. On the other hand, in accordance with the S-curve model and evolution theory, it adds disruption to the evolution in step three. Step two develops the outcome of step one – ideas – further into concepts, being integrated into the existing system and realizable in the reality. Step three represents the essential concept of stakeholders adapting and further developing products and services in terms of a development infrastructure. Finally step four shows how and to what extent arisen products or services successfully satisfy needs, requirements, and desires of stakeholders. In the contribution for the ITD Conference 2017, the concept of developing products and services as development infrastructures instead of finished products or services is illustrated, by means of the designed method, as a potential solution for methodically unsolved challenges of product and service development. The method and its four steps are described in detail, containing specific methods, tools, and approaches used in the process. Methodological considerations leading to the design of the method are shown. First results and analysis of the execution of the method, at least of step one, are presented.

WHEN UNTOLD AIMS AND PERSPECTIVES BETWEEN SCIENTISTS AND PRACTITIONERS COLLIDE: EXPERIENCES FROM A EUROPEAN PROJECT

Leonhard Späth, Swiss Federal Institute for Technology Zürich (ETH Zürich), Institute for Environmental Decisions, Climate Policy Group, Andrzej Ceglarsz, Potsdam Institute for Climate Impact Research (PIK), Research Domain IV: Transdisciplinary Concepts & Methods, Potsdam, Germany; Technical University Munich, Bavarian School of Public Policy, Munich, Germany

Keywords: Thought-styles, toolbox approach, most significant change, project design, INSPIRE-Grid

A transition toward a more sustainable society requires deep collaboration between scientists and practitioners to solve complex problems related to the environment, society and economy. While there are several pathways to co-produce knowledge among different actors, little is known about how to address the different thought-styles that different participants within a project might have. We therefore inquired these aspects during the INSPIRE-Grid project, a European research project on stakeholder participation in transmission line development processes. The research in INSPIRE-Grid has been designed as a 'multidisciplinary approach'. The project-consortium was composed of six partner-institutions from the academic field, with different scien-

tific backgrounds going from engineering to social sciences, and four practitioners' groups, mostly electricity transmission companies and actors involved in the field of stakeholder participation. Although the high diversity of actors involved in the project, relatively little room has been planned for activities necessary to address the transdisciplinary aspects of the project, especially the interfaces between different disciplines and fields. To address this issue, we carried out two workshops to i. make the different thought styles and approaches of the participants explicit, and ii. to identify the most relevant points related to the collaboration that the participants took home from that project. For this, we used two methods: the Toolbox Approach and the Most Significant Change. We selected these two methods by their usefulness for the advanced state of the project and the problem that we wanted to address. Our results show a lack of coordinated interaction between scientists and practitioners about the expected results of the project. While practitioners aimed to co-develop ready-to-use solutions, scientists either were interested in experimenting with stakeholder participation methods that were still at an early stage of development, or focused on the empirically-driven development of theoretical approaches. These two different aims between scientists and practitioners made it difficult to summarize the findings in a coherent synthesis at the end of the project, influencing one of its objectives: delivering a 'European good-practice guide'. This shows the importance of investing capacities into communication activities inside of the project team, in order to mutually understand different participants' standpoints and interpretations. Both groups of participants (researchers and practitioners) acknowledged the results of both workshops and methods used: Toolbox Approach and Most Significant Change, but criticized their use as coming too late in the project. Our results suggest that transdisciplinary projects at a European scale may gain from methods and resources allocated for discussing and evaluating the way participants work together, and from experiences or good practices shared by other research consortia. These additional resources can reduce tensions coming from non-stated perspectives and expectancies by improving mutual learning among project partners. Therefore, while transdisciplinary methods can improve the interactions between researchers and stakeholders, these methods are also useful to manage the increasing complexity of projects involving many disciplines and practitioners at different levels with different aims and agendas.

Key reading: http://www.inspire-grid.eu/wp-content/uploads/2017/01/IG_Report_web.pdf

INSIGHTS INTO A TRANSDISCIPLINARY CASE STUDY IN AN INTERCULTURAL CONTEXT: THE EXPERIENCE OF THE BRAZILIAN RESEARCH NETWORK ON CLIMATE CHANGE (REDE CLIMA)

Gabriela Litre, Marcel Bursztn, Saulo Rodrigues-Filho, Diego Lindoso, *Center for Sustainable Development, University of Brasilia, Brazil*

Key words: climate change, adaptation, vulnerability, transdisciplinarity, policy-driven research

How can you move a team of economists, geologists, climatologists, geographers, anthropologists, biologists, sociologists, journalists, chemical engineers, architects, environmental engineers and lawyers out of their comfort zone and towards genuine integration and collaboration? This was the challenge that faced a project concerning the climate change perceptions of smallholder farmers from four Brazilian biomes (Amazonia, Cerrado, Pantanal and Semiarid). These Brazilian low capital smallholders are exposed to both natural and socioeconomic risks and are greatly vulnerable to extreme climatic events in a country of continental dimensions, huge inequality and rich cultural diversity. The large-scale interdisciplinary, collaborative effort led to completion of 1,708 survey questionnaires by smallholder farmers, policy makers and stakeholders, in ten field studies from the four biomes. Three basic elements guided the research design: i) the urgent demand, by the Brazilian federal administration, who fostered the creation of the Brazilian Research Network on Climate Change (Rede CLIMA), to conduct policy oriented research for effective adaptation; ii) the need to create tools suitable for the analysis of the complex phenomena of climate change and socio-ecological systems; iii) the aim of obtaining comparable research results to identify particularities and similarities of climatic impacts on different Brazilian biomes, going from rainforests to deserts, that host communities with a high diversity of values, practices, norms and beliefs. Interdisciplinary clashes among scientists went well beyond semantics and reached the core of concepts such as perception, resilience, vulnerability, adaptive capacity and even climate change. Challenges included thinking collectively about the problem with so much ambiguous and contradictory knowledge, conflicting interests, and diverging epistemologies. Even if the design of a research protocol, which was collectively designed to act as conceptual roadmap, was successful in helping to define the common scope and purpose of the research integration and implementation, each case study ended by including ad-hoc consultation and knowledge co-production methods to integrate culturally diverse partners in different phases of the projects. This case study confirmed that there is no blueprint for transdisciplinary climate change research projects, as well as the clear need for project-specific and context-sensitive research strategies. Critical factors going into successful interdisciplinary and transdisciplinary integration included the early involvement of the different groups (such as researchers, decision makers,

and local actors and stakeholders) as essential for finding common objectives and priorities. In spite of the lengthy, energy consuming and sometimes frustrating experience, interdisciplinary efforts paid off in terms of communicative and integrative competencies, which prove to be very beneficial for effective science-policy interaction. Potential users are more likely to overcome cultural and cognitive barriers and to trust knowledge, and may therefore be willing to act on it, when from their perspective it meets three criteria: saliency (relevancy), credibility, and legitimacy. The experience of Rede CLIMA confirmed that the barriers to successful climate change adaptation (such as the mutual incomprehension or distrust between scientists themselves, and between scientist and end-users) could be overcome by creating collaborative, transdisciplinary enterprises. The co-creation of science, which included switching roles between knowledge producers and end-users, facilitated horizontal work and the identification of climate-related risks among family farmers.

SESSION 4: EVALUATION OF CASE STUDIES AND RESEARCH PROGRAMS

Thursday, 14.09.2017, 14 – 15:30h

[C40.108]

Moderation: *Jana Zscheischler (Berlin, D) & Thomas Weith (Potsdam, D)*

Evaluation has become one of the main issues in the discourse on transdisciplinarity. On the one hand, there is an ongoing discussion about the development of adequate quality criteria. This appears not only important due to questions about legitimization and control. It also supports the consolidation of the often vague concept of “transdisciplinarity” and provides orientation for its adoption also counteracting a “rhetorical mainstreaming”. On the other hand, formative self-evaluation may enhance process quality and support project coordination. This learning and development function of evaluation is also supportive for understanding main challenges, to identify “best practice” approaches and to develop recommendations for successful transdisciplinary research processes. In the course of this session three approaches with different functions and aspects of evaluation will be presented.

TOWARDS A FRAMEWORK TO EVALUATE TRANSDISCIPLINARY PRODUCTS WITHIN CLIMATE AND COASTAL RESEARCH

Susanne Schuck-Zöller¹, Holger Brix², Christian Buschbaum³, Jörg Cortekar¹, Christiane Eschenbach², Irene Fischer-Bruns¹, Stephan Frickenhaus³, Klaus Grosfeld³, Lars Gutow³, Wolfgang Hiller³, Daniela Jacob¹, Elke Keup-Thiel¹, Gesche Krause¹, Elke Meyer², Insa Meinke², Lars Nerger³, Diana Rechid¹, Johannes Schulz-Stellenfleth², Emil Stanev², Renate Treffeisen³; ¹*Climate Service Center Germany (GERICS), Helmholtz-Zentrum Geesthacht, Germany;* ²*Institute for Coastal Research, Helmholtz-Zentrum Geesthacht, Germany;* ³*Alfred Wegener Institute Helmholtz Center for Polar and Marine Research (AWI), Bremerhaven, Germany*

Keywords: Transdisciplinarity, evaluation, co-creation, research processes, impact

Climate, polar, marine and coastal research and related services rely on multi- and transdisciplinary research processes: Most of the projects and products in the field of climate or coastal service and knowledge transfer are being managed and developed in close collaboration between scientists, practitioners, decision-makers, and further stakeholder groups. Indeed, the identification and formulation of the central needs which are of relevance to administration, economy or politics in coping with climate change, foster the co-creation between the different realms of knowledge. Next to the question of how this co-creation of knowledge can be realized, the overriding question is what are good and successful dialogue processes and how these can be evaluated. This challenge is currently tackled in cooperation by several Helmholtz Centres within the Helmholtz research field of Earth and Environment. Findings from this line of research shall act as one building block in the effort to develop common quality criteria and operational evaluation indices which could be applied for the next research institution evaluation phase. The ongoing working process will be described in the conference presentation. Starting with long-term experiences in the process of stakeholder dialogues, literature reviews to acquire knowledge on the field of transdisciplinarity were conducted to gain an overview on the epistemic state-of-the-art discussion. A succession of workshops collected experiences on appropriate quality criteria, working intensely on definitions to enhance common understanding, and creating a framework of a common shared set of terminology. Overarching evaluation criteria and indices for the different fields of transferable and transdisciplinary research are currently in the stage of being formulated and negotiated in the Helmholtz research field of Earth and Environment. The latter appears to be most challenging, since different scientific disciplines and research traditions have to be integrated: Research for application in the different fields of coastal, polar, marine and climate studies as well as dialogue-oriented or transdisciplinary research ap-

proaches. The presentation will highlight the acquirement of precedent work in the field of epistemology. References to very different research fields, like i.e. public health, supported our understanding of the special research mode of transdisciplinarity, and pinpointed towards some guiding ideas that could be harnessed for evaluating processes of co-creation of knowledge. At this stage of knowledge, the authors aim to discuss the preliminary status of evaluation criteria and indices found so far with the conference audience. We believe that this discussion will reveal important feedback for the process of finalizing the set of evaluation criteria and indices that might be connectable to other fields of transdisciplinary research.

Readings:

Brinkmann C, Bergmann M, Huang-Lachmann JT, Rödder S, Schuck-Zöller S (2015) Zur Integration von Wissenschaft und Praxis als Forschungsmodus - Ein Literaturüberblick. Report 23, Climate Service Center, Hamburg

Klein, JT (2008) Evaluation of interdisciplinary and transdisciplinary research. In: *American Journal of Preventive Medicine* (35/2): S116–S123

Mausser W, Klepper G, Rice M, Schmalzbauer BS, Hackmann H, Leemans R, Moore H (2013) Transdisciplinary global change research: the co-creation of knowledge for sustainability. In: *Current Opinion in Environmental Sustainability* (5): 420–431

HOW TO ASSESS PROCESS QUALITY AND PRODUCT QUALITY OF TRANSDISCIPLINARY RESEARCH PROJECTS? – AN EVALUATION CONCEPT FOR A SELF-REFLECTION AND LEARNING PROCESS

Lukas Wortmann, Bettina König, Anett Kuntosch, *Humboldt Universität zu Berlin/IRI THESys, Germany*

Keywords: transdisciplinarity, process quality, product quality

Transdisciplinary (TD) research projects aim to provide knowledge that mutually connects to scientific and practice communities and thus, enhances the projects' overall performance and outreach. Quality assurance is one task assigned to the management of td consortia facing the challenge to design it in a way to support collaboration and outcomes rather than fostering conflicts through control. Conventional approaches of external evaluation that focus on quantitative outcome indicators would normally not cover the "intangible" qualitative impacts which are created through transdisciplinary collaboration. A major intention of an internal evaluation would be to reveal if high process quality is a necessary condition for high-value scientific and practical products. And if so; it would support consortium and its management to find the balance between "blind trust" and "over-control". Starting point for this contribution is the assumption that an internal evaluation of transdisciplinary research projects can enable both: the project management and consortium to consider not only research results and indicators, but also process quality in the overall assessment by detecting needed re-adjustments in the process management and the products-to-be from the beginning. We present a concept for a process-accompanying internal evaluation. The approach focuses on the transdisciplinary project process including practical and scientific outputs and their anticipated use in relation to each other. The evaluation concept was developed in the inter- and transdisciplinary research project "ginkoo" which is funded by the German Federal Ministry for Education and Research under the new funding scheme "Research for Sustainable Development" (FONA). We developed our internal evaluation concept based on three steps. 1) Understanding usefulness of envisioned products (tools) to practitioners through interviews, 2) Assessing usefulness in relation to the main objectives of practitioners and scientists with an iterating checklist 3) Conceptualizing intermediary characteristics of processes and products as extension to the principles of td processes and project management. The presented evaluation concept consists of four modules. The first looks at the research process including the entire research consortium. It queries involved scientific and practical partners about the issues of knowledge exchange and knowledge integration with regard to the planned and emerging product ideas. In the second module, scientists are iteratively asked about the tool development progress and anticipated use for practitioners. Next, module three would consider the users' perspective during first testing of tools. Here, the interest is to learn about their experiences and assessments regarding the use within a specific context. Module four discusses and reflects the products' appropriateness with regard to the practical partner's general aims. The four modules enable the project management and the project consortium to conceptualize and assess in a self-reflection and learning process a) the development process of research results regarding practice oriented products and b) the usefulness of the products for practitioners in relation to their objectives.

EXPLORING TRANSDISCIPLINARY INTEGRATION: EMPIRICAL LESSONS FROM FOUR THEMATIC SYNTHESIS PROCESSES

Sabine Hoffmann, *Eawag, Swiss Federal Institute of Aquatic Science and Technology, Switzerland*, **Christian Pohl**, *USYS TdLab, ETH Zurich, Switzerland*, **Janet G. Hering**, *Eawag, Swiss Federal Institute of Aquatic Science and Technology, Switzerland*, **IBP, ETH Zurich, Switzerland**, **ENAC, Swiss Federal Institute of Technology Lausanne (EPFL), Switzerland**

Keywords: knowledge integration, actor involvement, transdisciplinary research, synthesis, sustainability, program management

How are synthesis processes structured, who is involved and to what extent? What challenges do synthesis processes pose in terms of knowledge integration and actor involvement? What recommendations can we derive for future synthesis processes? We address these questions by exploring transdisciplinary integration within four thematic synthesis processes of the Swiss National Research Programme (NRP 61) on Sustainable Water Management. We adapt an existing analytical framework to compare the four synthesis processes across different synthesis stages with respect to: different types of generated knowledge (systems, target and transformation knowledge); different groups of involved actors (core team, steering committee, advisory board, scientific experts and practice experts); and different levels of actor involvement (information, consultation and collaboration). We also use the framework to structure the ex-post self-evaluation of the four synthesis processes in order to identify core challenges of transdisciplinary integration as perceived by leaders of the four synthesis processes and formulate empirically derived recommendations for designing and implementing future synthesis processes. We suggest that, in the context of large research programs, future synthesis processes should be conceptualized and initiated concurrently with all other individual research projects. This involves a phasing-in stage where transdisciplinary integration is conceptualized, an intermediate stage of intense knowledge integration where all relevant actor groups are involved in a functional and dynamic way, and a final phasing out stage, where synthesis results are consolidated within the research program, validated by different actor groups and diffused to the target audiences. We argue that leaders of transdisciplinary integration require both professional competences and management skills, including the abilities to: design, conduct, and evaluate synthesis processes; identify and manage multiple interests and expectations; monitor project budgets and time schedules; and determine and resolve potential conflicts. Finally, we suggest nurturing Communities of Practice (COP) of committed leaders that share an interest for transdisciplinary integration, practice it and learn from each other how to do it better. This will allow for mutual learning processes beyond the boundaries of individual synthesis projects and for co-developing new approaches to transdisciplinary integration within large research programs.

SESSION 5: IMPACT, EFFECTIVENESS AND SUCCESS OF TRANSDISCIPLINARY RESEARCH IN THE FIELD OF SUSTAINABILITY

Tuesday, 12.09.2017, 14 – 15:30h

[C40.108]

Moderation: Martina Schäfer, *Center for Technology and Society, Technische Universität Berlin, Germany*

In the field of sustainability science, transdisciplinary research is aiming at contributing to a shift towards a more sustainable future. The session will elucidate under which conditions transdisciplinary sustainability research becomes impactful, efficient and successful. Each of the three presentations will present an extensive framework to operationalize both, characteristics of transdisciplinary research processes and outcomes of these processes. But this session will not remain on a conceptual, theoretical level – all frameworks were tested empirically – either against a set of case studies or against case material of up to 30 projects.

Thus, this session will offer a comparison of different approaches and enable a discussion about quality criteria of transdisciplinary research from an impact perspective.

SUCCESS IN TRANSDISCIPLINARY SUSTAINABILITY RESEARCH

Tobias Luthe, *ETH Zurich, Engineering Design and Computing Laboratory, Systemic Design for Sustainability; Department Living Environment, University of Applied Sciences HTW Chur, Switzerland; MonViso Institute, Ostana, Italy*

The complexity of sustainable development and societal transitions require both analytical understandings of how coupled human-environment systems function and transdisciplinary science-to-practice approaches. The academic discourse has advanced in developing a framework for defining success in transdisciplinary research (TDR). Further empirical evidence is needed to validate the proposed concepts with TDR case studies. This paper applies a widely used TDR framework to test and critically evaluate its design principles and criteria of success with five TDR case studies the author is intimately familiar with. Overall, the design

principles of the framework are validated for the five cases. Additional design principles are derived from the case analysis and proposed to complement the applied framework: (1) A project origin from society as opposed to with and for society; (2) Quickly available initiation funding; (3) Flexibility in time, objectives and methods throughout the research process; (4) Acceptance of process vs. project results; (5) Inclusion of public science communication; and (6) A demand-driven transition to a prolonged or new project partnership. The complementing principles are proposed for integration in the applied framework and are subject to further empirical testing. The reflexive empirical approach I have taken in this paper offers a key step towards removing institutional barriers for successful TDR, demonstrating how conceptual frameworks can be applied.

HOW DO PARTICIPATION OF PRACTICE PARTNERS AND SOCIETAL IMPACTS INTERRELATE? PERSPECTIVES FROM SCIENCE AND PRACTICE ACTORS IN TRANSDISCIPLINARY SUSTAINABILITY RESEARCH PROJECTS

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Keywords: Participation; societal impact; sustainability research

In this contribution, we put the spotlight on the interlinkages between participatory knowledge production and sustainability transformations by proposing an empirical enquiry into transdisciplinary (TD) research projects. With regard to (un)sustainable development the limitations of knowledge production within the exclusive realms of science have become manifest in malfunctioning feedback between science and political action. In reaction, claims have been made that scientific inquiry along clear-cut boundaries between scientific knowledge production and the societal usage thereof is not sufficient for tackling complex sustainability problems. TD, which aims at integrating heterogeneous actors and diverse forms of expertise, has emerged as a key notion in this quest for more “robust?” and responsive knowledge. One core assumption in the literature is that the participation of a wider set of societal actors enhances the societal impact of research and facilitates transformations. In this presentation, we juxtapose this assumption with meta-level reflections on real-world TD sustainability research cases. We investigate (i) which factors constitute different practices of participation, (ii) how actors in TD projects establish the link between participation practices and intended societal impact of their projects and (iii) which other influence factors they perceive as relevant for their intended societal impacts. In doing so, we look at a sample of sustainability research projects funded by the program “Science for Sustainable Development (WfNE)” of the Ministry for Science and Culture of Lower Saxony and the Volkswagen Foundation. These projects represent a broad variety of topics and research designs including diverse participatory approaches and intended societal effects. Our results are based on a series of qualitative analyses: We performed a document analysis of the project proposals and two rounds of interviews with project leaders and scientists. Furthermore, we included the practice perspective in our analysis by conducting interviews with non-scientific actors involved in the projects. This procedure allows us to provide findings on how both scientific and non-scientific actors in TD projects in the field of sustainability research conceive of and perceive (i) participation processes in the project, (ii) participation as an influence factor for societal impacts, and (iii) further project- or context-based influence factors for the intended societal effects. Finally, we present a tentative analytical framework sensitive to diverse participatory processes and different types of potential impacts they are associated with.

GOVERNANCE OF SUSTAINABILITY PROBLEMS THROUGH TRANSDISCIPLINARY RESEARCH: PATHWAYS TO IMPACT IN AGRICULTURAL SYSTEMS

Theresa Tribaldos, Flurina Schneider, Christoph Oberlack, Stephan Rist, *Centre for Development and Environment CDE, Bern, Switzerland*

Keywords: Transdisciplinary research approaches, Sustainable development, Diagnostic framework, Meta-analysis, Agricultural systems

Transdisciplinary approaches are often praised for being effective when addressing sustainability problems that usually involve a substantial amount of complexity, uncertainty, and conflicting values. The adaptive and integrative character of transdisciplinary approaches aims at engaging various scientific and non-scientific actors in collective knowledge production processes and is recommended for the development of strategies in sustainability problem solving. An interactive integration of diverse groups of actors into these processes enables the combination of available knowledge in multiple epistemic communities on the topic. In order to become transformative, collective learning processes must turn into collective action. In recent years, we have witnessed a proliferation of transdisciplinary approaches and methods to address problems of collective action located within and spanning across policy fields from local to international levels. However, it is still rather unclear why specific approaches of transdisciplinary processes and methods, for example different timings in the collective knowledge production process, are actually effective for more sustainable development under given context conditions while others are not. Hence, generally applicable guidelines for

contextually tailored transdisciplinary approaches and methods are difficult to make. Our paper addresses this knowledge gap in two steps. First, the paper introduces a diagnostic framework that structures the multiple links between goals for sustainability impacts, transdisciplinary methods and approaches, conditions that apply to specific situations, and sustainability outcomes in a generic way. Hence, the framework allows for its application in varying settings of sustainability problems. In the second step, the diagnostic framework is used to analyse variations in the effectiveness of different transdisciplinary approaches and methods. The aim is to explain these variations, to recognise salient patterns and mechanisms, and to outline effective pathways to sustainability through transdisciplinary approaches. To this end, we conduct a meta-analysis of 30 case studies that apply transdisciplinary approaches, following systematic case selection, coding and data analysis through formal concept analysis. The thematic focus of this paper lies on case study research in different agricultural settings around the world, from tropical banana production to pastoral landscapes. However, the framework can also be used to address sustainability problems with other thematic foci. The findings of this paper provide insights into successful transdisciplinary approaches and inform about relevant considerations, for example the importance of creating responsibility and ownership for the sustainability outcome among involved actors, when addressing sustainability problems. Thus, they support the understanding of complex relations in transdisciplinary projects and build a useful base for further analysis.

SESSION 6: CLIMATE CHANGE AND TRANSDISCIPLINARITY

Tuesday, 12.09.2017, 14 – 15:30h

[C40.153]

Moderation: Isabell Schrickel, *Leuphana University of Lüneburg, Germany*

The contributions of this panel explore the application of transdisciplinary methods to the challenges posed by a changing climate. In the light of a global problem of such kind a fundamental challenge lies in the formulation of responses to a highly uneven distribution of local and regional impacts with a broad range of stakeholders involved. The panelists will present case studies from European contexts both with regard to mitigation and adaptation policies. They will share their experiences with methodologies like multi-stakeholder visioning, formative scenario analysis, institutional fit analysis, local participatory foresight exercises, participatory process design. We would like to discuss and compare these methods and think about ways of integrating them in order to meet the multi-scale challenges posed by a changing climate. In particular we will emphasize the potential of uncertainty as an operational concept. Overarching research questions of this panel are: how can useful responses to the global climate change scenario on societal, national, regional and urban scales be formulated and implemented and what is the epistemic potential of transdisciplinarity here? How can we bridge the natural science, the social science and cultural contexts in coherent, realistic and meaningful ways? How can we raise awareness of and differentiate uncertainties and how is it possible to apply transdisciplinary methodologies across such a broad spectrum of temporal and spatial scales?

EMBRACING UNCERTAINTY IN PARTICIPATORY CLIMATE CHANGE RISK MANAGEMENT

Petra Döll, *Institute of Physical Geography, Goethe University Frankfurt, Germany*

Keywords: participatory process design, uncertainty, climate change adaptation, roadmap

Manifold uncertainties hamper the management of the diverse and complex risks of climate change. It is state-of-the-art to assume that transdisciplinary knowledge integration processes are therefore best suited for achieving risk reduction by adaptation and mitigation. But how can these uncertainties be taken into account and embraced in participatory processes that aim at climate change risk management? Based on experience with quantitative climate impact studies, vulnerability studies, methods for inter- and transdisciplinary knowledge integration and as co-authors of IPCC reports, a hydrologist and a sociologist presented a roadmap for designing participatory climate change risk management processes (PRMPs) where relevant uncertainties (including ambiguity) and ways to address them are described for each of six typical process phases (Döll and Romero-Lankao 2016). As the term uncertainty is rather imprecise and can have different meanings to different people, an uncertainty framework was proposed that helps characterizing each uncertainty. Each uncertainty is described by its position in the problem field (e.g. a hazard-related uncertainty due to differences in how climate models translate greenhouse gas emissions scenarios into climate change scenarios), its nature (substantive and participatory process-related epistemic uncertainties, ontological uncertainty, linguistic uncertainty as well as ambiguity) and its level (e.g. shallow uncertainty or recognized ignorance). The roadmap suggests what type of knowledge input from natural and social scientists as well as from the participatory process experts is useful at which phase of the transdisciplinary knowledge integration. It specifies communicative and modelling methods that support social learning as well as the development of risk management strategies. The aim of the roadmap is to support the many local

PRMPs that will be necessary to reduce climate change risks. To achieve a locally adapted and context-specific PRMP, a good overall understanding of climate change and its uncertain risks as well as of risk management options must come together with an understanding of the local situation, in particular the institutions. Further research is required to better understand which of the participatory integrative risk modeling methods is suitable given local knowledge and data.

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TRANSDISCIPLINARY RESEARCH FOR LOCAL CLIMATE CHANGE INITIATIVES. COMBINING FORMATIVE SCENARIO ANALYSIS AND INSTITUTIONAL FIT ANALYSIS IN MULTI-STAKEHOLDER FORESIGHT

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Key-words: formative scenarios, institutional fit, social and ecological transition

The political culture in advanced industrial democracies has witnessed a significant shift since the 1980s: decision-making today is less top-down, and it is less based on strict separation between norm formulation and norm application, than thirty years ago. This transformation has been particularly visible in environmental policy-making. The result of this “down-shifting” has been, in particular, that municipalities and other local authorities now act more autonomously than in the past. In this context, various “climate-conscious” measures have been adopted at the local level through local regulations, public service delivery, property management and convening of local stakeholders (Richardson, 2012). The key hypothesis of the paper is that the governance of transdisciplinary partnerships for local ecological transitions would benefit from embedding the partnerships in so-called sub-political organisational, sectorial or territorial democratic processes. Through this embedding, scientists and societal actors reach beyond the immediate benefits of mobilizing local knowledge for improved societal problem solving. Instead, they articulate research to learning processes that increase the capacity of practitioners and scientists to jointly anticipate and understand transformation dynamics oriented towards collective purposes. The analysis in this paper proposes to extend the conventional opposition between interpretative and critical approaches to such learning processes by introducing a fourth category which is interpretative learning based on a forward looking reflective equilibrium between theoretical and practitioners’ knowledge. Indeed, since combating climate change requires the transformation of complex socio-ecological systems, it requires linking social sciences to the natural sciences; and since it requires lifestyle changes in addition to technical innovations, it calls for involving addressees in policy-making and basing reforms on their motivations and understandings of the challenges societies face (Scholz and Binder 2011). Indeed, many local initiatives fail because they treat scientific analysis and public deliberation in isolation from each other, as documented for instance in the 2008 report of the US National Research Council on Environmental assessment and decision making (NRC, 2008). Multi-stakeholder visioning processes have been proposed in this context as a useful method for achieving a better convergence of visions across levels of decision making and to mobilize knowledge and expertise from various stakeholder groups (Grin et al., 2010). Nevertheless, although these visioning methods often use the best available scientific knowledge as an input, they can result in strategies for sustainability transitions that are not optimal for the specific regional context. Major difficulties are the lack of integration of the visioning process with policy analysis (as documented for instance in the Netherlands, cf. Kern and Smith, 2008) and the lack of collective learning on feasible implementation pathways in the given territory (Rotmans and Fischer-Kowalsk, 2009; Coenen et al., 2012). In response to these insufficiencies, this paper analyzes and builds upon two sets of advances in local scenario analyses that are especially well suited to be combined with such multi-stakeholder visioning processes. The first set of advances are based on “formative scenario analysis” (Brand et al., 2013). It aims to confront the intuitively developed future visions in local multi-stakeholder planning with the analysis of the expected impacts of multiple resource use scenarios and various technological pathways. The second set of advances are related to the integration of “institutional fit analysis” (Young, 2002) into the visioning processes. This second family of analytical tools is based on the qualitative comparative analysis (Rihoux and Ragin, 2009) of various policy models, with a view to assessing to what degree these support the proposed transition pathways that have been elaborated in the multi-stakeholder visioning process.

ADAPTATION TO CLIMATE CHANGES: AN ITERATIVE TRANSDISCIPLINARY PROCEDURE FOR CONNECTING SCIENCE AND SOCIETY IN THE CASE OF ATTRIBUTION OF EXTREME WEATHER EVENTS

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Keywords: adaptation to climate changes, science-society relations, attribution of extreme weather events, EUCLEIA project, *DIKAR_process* procedure

The idea that successful transition to sustainability requires a better relation between science and society – a new social contract for science (as called by Jane Lubchenco in 1997, president of the American Association for the Advancement of Science; Lubchenco 1998) – is already two decades old. But a major change towards that goal has not happened, in spite of numerous advances in sustainability-related studies, notably the recognition of sustainability as a field in its own right (Clark 2007), and in spite of numerous changes that happened in society in general. A growing number of scientists and science-related professionals recognize that problem solving-oriented science is the way forward and that this needs not be opposed but rather quite complementary to disciplinary and interdisciplinary approaches. However, we need unifying methods and tools so that transdisciplinary science becomes more widespread, and indeed mainstream. The main difficulty is bridging natural and social sciences in coherent, realistic, testable and scalable knowledge-action models. Hereby we use the results of the European project EUCLEIA (2013-2016) on attribution of extreme climate events in France (heat waves / cold spells in the Greater Paris Area) and Germany (storm surges on the Baltic Sea Coast) to run a newly developed procedure of knowledge management called *DIKAR_process* (Ciomasu 2017): a double representation using the Data-Information-Knowledge-Action-Result (D.I.K.A.R.) framework and a process-based framework that simulates the logical stages of scientific investigation: (1) Question → (2) Reflection → (3) Problem → (4) Knowledge → (5) Information search → (6) Data research → (7) Data obtained → (8) Information obtained → (9) Solutions potential → (10) Knowledge updated → (11) Use of chosen solutions in real-life → (12) Outcome → cycle re-iteration starting with new questions on the outcome. Steps 1, 2, 3 pertain to process stage (A) Multi-disciplinary and integrated Formulation of Problem. Steps 4, 5, 6, 10, 11, 12 pertain to stage (B) Request / Use of Solutions. Steps 7, 8, 9 pertain to stage (C) Generation of Solutions. There is also a Step 9bis New Un-Knowns branching out from step 8, pertaining to stage (D) Further Discovery and which closes the loop separately with step 1 (Question) for a new iteration. We show that the development of a common body of methods, techniques and data-information-knowledge can be achieved by successive iterations of the process, which comprises a full taxonomy of possible project loops. Of these, most important are two: the (left hand side) loop represented by typical scientific research covering the Data-Information-Knowledge part; and the (right hand side) loop represented by the Knowledge-Action-Result part of the DIKAR framework. The two are connected by the Knowledge Column, with steps 3 (Problem), 4 (Knowledge), 9 (Solutions potential), 9bis (New Unknowns) and 10 (Knowledge updated). This corresponds to the job description of “knowledge brokers” which connect actors and stakeholders from across the science-society spectrum. The practical relevance of this procedure is discussed in the case of adaptation to climate changes as resulting from the EUCLEIA project. Thus, the Grounded Theory (Touili et al. 2014) approach used in EUCLEIA is understood in the *DIKAR_process* procedure as one of the possible reasonable start approaches that can trigger a cycle of realistic formulations of real-world problems and functional solutions for effective and useful attribution of climate extreme events. Identified through EUCLEIA are the work and communication requirements for knowledge brokers, the methods and the real-world knowledge-action contradictions. Then, these are logically represented, formalized and streamlined with the *DIKAR_process* procedure.

Key references/readings:

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SESSION 7: TRANSFORMATIONAL LEARNING IN TD PROCESSES

Tuesday, 12.09.2017, 11:30 – 13h

[C40.154]

Moderation: Daniel J. Lang, *Leuphana University Lüneburg, Germany*

This session focuses on processes of learning in transdisciplinary research where diversity and uncertainty prevail. The presenters, basing their insights on practice in a wide variety of geographical locations, pay attention to the more invisible and sometimes uncomfortable qualities of knowledge co-creation. They emphasise the value of connecting meaningfully at multiple levels: around real societal needs, on an emotional level, and across widely diverse paradigms. Reflexive learning is seen as key, whether conducted through a systematic methodology of mutual learning, or deepening cycles of reflexivity.

SHARING KNOWLEDGE, FEELINGS AND EMOTIONS FOR A MUTUAL LEARNING AND TRANSFORMATIVE KNOWLEDGE CO-CREATION

Adriana Moreno Cely, Tom Vanwing, Vrije Universiteit Brussel, Department of Educational Science, Belgium

Keywords: Mutual learning, transdisciplinary process, outreach university

Mutual learning and knowledge integration are key fundamental aspects of transdisciplinary research/process. We understand transdisciplinarity as a knowledge co-creation process between academic and non-academic actors, producing integrated knowledge to construct socially robust orientations. In the literature, we can find a proliferation of contributions mainly from developed countries about concepts, frameworks and principles, building up a theory of transdisciplinary processes. However, to build such theoretical foundations, only few cases in developing countries have been considered. To address this issue, we want to contribute to the discussion by exploring the concept and practice of university outreach in Colombia. This contribution is based on the reflections and reports of the experiences of some of the Colombian students who participated in a successful programme, called Opcion Colombia. The programme consisted of carrying out internships during six months in a municipality of the country. Generally, the internships are based in poor remote areas, difficult to access and characterized by the presence of guerrilla, paramilitary forces and/or coca cultivation. We suggest that the Opcion Colombia programme and a transdisciplinary process have the fundamentals of mutual learning and knowledge integration in common. Some of the achievements of Opcion Colombia programme was connecting the education and research to the Colombian reality, contributing to the construction of a better society. This was done through an active multi-stakeholder participation, bringing together scientific knowledge and local knowledge to find suitable solutions for the most pressing problems affecting the communities. Analysing the data through the student lens, our analysis shows that during the internship most of the students established solid relationships with their communities, creating a keen sense of belongingness and promoting in the students' self-esteem and self-transcendence. The students report emphasized the importance of social connectedness in their experiences. This was expressed through the active involvement after the internships and later, by becoming multipliers of the programme in their universities. In most of the experiences belongingness, esteem and transcendence may explain the strong connection of the students with their communities and therefore the success in building spaces for dialogue and construction together. Correspondingly, findings may suggest that constructing robust social orientations in decision making process in those complex contexts is possible. However, further research is needed in reporting on empirical evidence to elucidate how the sense of belongingness and other emotions like self-esteem and self-transcendence could help in constructing robust social orientations, and comparing the emotions and motivations among different stakeholders in transdisciplinary process.

THE PRACTICE OF TRANSDISCIPLINARY RESEARCH: PRINCIPLES AND PATTERNS FOR TRANSFORMATIONAL LEARNING AND KNOWLEDGE CO-PRODUCTION

Elizabeth Clarke, Leuphana Universität Lüneburg, Germany

Keywords: Knowledge coproduction, research practice, transformational learning, pattern sets, wicked problems

Transformational learning and knowledge co-production in transdisciplinary research is ambitious and difficult to put into practice. What is knowledge? And how can it be transformative? And what kind of research practice is needed to make this a reality? Through the study of the lived experience of researchers in a series of transdisciplinary research projects co-informed by theory, I propose a set of five core principles for transdisciplinary research practice for knowledge coproduction. Here I define practice (or praxis) as the process of interaction between reflection and action (Freire, 1996) or, by extension, the interaction between theory and action, or research and application. Put very simply, it is what we as researchers DO. The first principle is that knowledge co-

production is a human and social process, which is fundamental to all of us, even though our worldviews may differ dramatically. Creating novel thinking and ideas requires bringing ‘pluriverses’ (or multiple worldviews) together, based on the premise that ‘people learn more from each other when they are confronted by different realities’ (Chaves et al., 2017, p. 21). To create a shared language to connect potentially incommensurable ‘pluriverses’, and create a shared coherence, I identify a provisional series of universal pattern sets. For example, the pattern set for the first principle is the domains of human understanding, which include the material, cultural, ethical, relational and aesthetic ways of understanding. The concept of pattern sets derives from the work of architect, Christopher Alexander, who proposed a set of universal repeating patterns in physical design, which he called the pattern language (Alexander, 1964). Similarly, here I propose the use of pattern sets as a means to bridge seemingly incommensurable views of reality (without resorting to consensus). The focus on patterns is not new to science, with the search for and discovery of patterns sitting at the heart of scientific practice (Brown & Harris, 2014; Crutchfield, 2003). This bringing together of different realities, with the potential for incoherence, can create tension. This is the subject of the second principle: that working constructively with tension is a catalyst and foundation for transformational learning and change. Sources of tension can include false dichotomies, dualistic (or Cartesian) thinking, paradox, double binds and sheer incommensurability. In order to constructively and creatively engage with these tensions requires an iterative or recursive research process where theory and practice inform each other, which is the third principle. This should be coupled with reflection and reflexivity to enable researchers to capture transformational knowledge (the fourth principle). The pattern set here is a typology that reflects increasing depth of reflection, from practical reflection (which we all do) through to instrumental reflection, then theoretical-conceptual and then onto-epistemological reflexivity that is neither commonly practiced nor habitual. Sustainability transformation deals with complexity and focuses primarily on wicked problems, defined as ‘complex issue(s) that defy complete definition, for which there can be no final solution, but the best that can be done at the time’ (Brown et al., 2010, p. 4). The fifth and final principle is that a collective, inclusive approach to context-based problem framing is essential, where multiple conceptualisations of the problem are brought together to combine the knowledge, experience, assumptions and preferences of the many ‘pluriverses’. Here the shared language or pattern set to bring these conceptualisations together is the wicked problem dimensions, which include diversity, intractability, ambiguity, instability and uncertainty, complexity and confounding factors. In this way, we can create richer possibilities and potentials for tackling wicked problems, where there is no right or wrong only better or worse, where limiting the definition of the problem limits the scope for solutions.

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LEARNING FROM REFLEXIVE MONITORING IN TRANSDISCIPLINARY SUSTAINABILITY RESEARCH? A CASE STUDY IN THE DUTCH NATURAL CAPITAL PROGRAM

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Keywords: Reflexivity, learning, transdisciplinarity, sustainability, research methods

Mutual learning among academic and non-academic stakeholders is a key characteristic of transdisciplinary research addressing sustainability issues (Lang et al., 2012). Because these stakeholders work from diverse paradigms and perspectives and have different competencies, mutual learning can help to combine differences research practices in problem analyzing and problem-solving to design effective intervention strategies (Lang et al., 2012). Mutual learning in transdisciplinary sustainability projects can be supported by reflexive evaluations or reflexive monitoring in action (Arkesteijn, Mierlo, & Leeuwis, 2015; Mierlo et al., 2010). In the policy-research program Natural Capital Netherlands we applied and evaluated a systematic methodology based on reflexive monitoring in action to support learning processes among researchers of various disciplines and non-academic stakeholders. The research program Natural Capital Netherlands, consisting of several case studies, aimed to develop innovative sustainable solutions that contribute to a win-win situation between economy and the natural environment. Because innovative sustainable solutions ask for an innovative paradigm concerning the relation between nature and economy, the out-

comes of the research projects and also the mix of methodologies required were unknown at the start. Therefore, we used a learning-by-doing approach: an approach that could be adapted during the projects based on what was learned in the projects. We supported the learning by reflexive monitoring in action. Learning during this research was thus closely monitored. We reported the lessons learned concerning the research process, the research outcomes and new insights gained by the participants involved. We categorized the lessons and interpreted them in relation to the research approach and methodology. We argue that a systematic methodology that enables mutual learning among academic and non-academic stakeholders in transdisciplinary research helps to improve the relevance and value of the research for both society and the scientific world.

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SESSION 8: DEALING WITH CULTURAL DIFFERENCE

Thursday, 14.09.2017, 14 – 15:30h

[C40.146]

Moderation: Hans Dieleman, *Autonomous University of Mexico City, College of Science and Humanities, Mexico*

The session explores the challenge of dealing with cultural differences in transdisciplinary research. The first presentation explores cultural differentiations as an analytical perspective for the design and implementation of transdisciplinary learning in sustainability research. The second focuses on a methodology of intercultural collaboration, communication and team building. The third concerns a research that aims at building spaces for intercultural dialogues among heterogeneous communities in the city of Medellín, Colombia. The fourth draws on ten years of teaching and joint problem solving based on ancient Māori epistemology within Māori communities in New Zealand.

CULTURAL DIFFERENTIATION IN TRANSDISCIPLINARY SUSTAINABILITY RESEARCH

Moritz Engbers, *Methodology Center and Leverage Points for Sustainability Transformation, Leuphana University of Lüneburg, Germany*

Keywords: transdisciplinary research, sustainability, cultural difference, transdisciplinary research and learning projects, interculturality, practices of differentiation

Transdisciplinary sustainability research is developing as a cooperative, problem and solution oriented form of research in which heterogeneous actors are involved. A premise is that knowledge, values, interests and perspectives of these actors should be included in the research in order to generate knowledge that is socially robust, that improves a given “unsustainable” situation, or that stimulates mutual learning processes. It parallels a discussion about interculturality that is based not only on ethnicity or nationality, but on different groups and sub-groups within a society and their diverse ways of knowing, being, acting, and reflecting. Concepts such as “culture” or “interculturality” are increasingly being taken up in the discussion about transdisciplinary sustainability research. They address, for instance, culture as a factor to be included in the research, transdisciplinary research as knowledge culture, or as socio-cultural contexts of transdisciplinary sustainability research. However, these conceptualizations are often not clearly differentiated or utilized in their analytical potential. Furthermore, some concepts essentialize culture with problematic implications for the research process. In order to avoid such implications, I develop cultural differentiations as an analytical perspective that is applied to the design and implementation of transdisciplinary research and learning projects in sustainability research. The results are based on a PhD thesis in which conceptual literature of transdisciplinary research and learning projects and empirical research on two transdisciplinary learning projects were conducted. The findings show that certain conceptualizations of integration, consensus, or context are based on a dichotomous, essentialist, and science-centric thinking. Thus, a more extensive exploration of differences concerning social or disciplinary backgrounds, positions, and perspectives of the involved actors in the research process is prevented. Furthermore, dominant lines of difference give preference to specific actors in the research processes while others are neglected. Difference is often based on sectorial perspectives, incentive logics, or a functional understanding of knowledge while differentiations such as class, race, gender, and age are excluded. A conclusion is that (implicit) premises and priorities are leading to the inclusion or exclusion of specific actors, practices, or approaches

and thus reproducing societal power relations. By taking practices of cultural differentiation into account, assumptions, premises and self-understandings in the research can be reflected and appreciated for their epistemological and social potential.

METHODS AND METHODOLOGIES REVISITED – RECOMMENDATIONS FROM AN INTERCULTURAL TRANSDISCIPLINARY RESEARCH PROJECT ON SUSTAINABLE LAND USE IN EASTERN EUROPE

Hubert R. Schübel, *Consultoria Wissenschafts- und Unternehmensberatung, Stuttgart, Germany*, **Evelyn Rusdea**, *Department of Computer Science, Albert-Ludwigs-Universität, Freiburg, Germany*, **Florin Păcurar**, *Facultatea de Agricultură, Universitatea de Științe Agricole Și Medicină Veterinară, Cluj-Napoca, Romania*, **Albert Reif**, *Chair of Site Classification and Vegetation Science, Albert-Ludwigs-Universität, Freiburg, Germany*

Keywords: interdisciplinary and transdisciplinary methodology, intercultural collaboration, process support, formative evaluation

PROIECT APUSENI* (2000–2004) was a transdisciplinary research project on sustainable land use in a traditional cultural landscape in the Apuseni Mountains, Romania, with focus on the extraordinary biodiversity and sustainable development in the region. The organizational and methodological concept had been developed initially in a project in Germany (MODELLVORHABEN KULTURLANDSCHAFT HOHENLOHE, 1997–2003) and was transferred to PROIECT APUSENI; INadditional specific methods were established to master the intercultural challenges. In this project Romanian and German researchers from a wide spectrum of disciplines collaborated interdisciplinarily. Intercultural competencies had to be developed not only for the collaboration within the research group, but also to prepare the researchers for the encounters with the local stakeholders. A stakeholder analysis provided the base for the transdisciplinary integration of local, regional and national actors (local population, politicians, decision makers, etc.) and institutions in participatory format (“action research”) to analyze the ecological, economic and social conditions and develop sustainable perspectives for the region. Local projects had been carried out in the fields of tourism, agriculture (crop farming, manure processing, fertilisation, hay harvesting), water supply, medical plants, and forest use/wood processing. The results of PROIECT APUSENI led to subsequent activities in the region, including the implementation of a sustainable system for the collection of *Arnica montana* flowers, which is established in the region. A particular feature of both projects was the continuous process support based on organizational and intercultural psychology. Purpose of this function was the improvement of the social, methodical and methodological aspects in the collaboration process. This support consisted of (1) preparing measures (e. g. training of intercultural communication skills; team building), (2) continuous participatory (formative) process evaluation within the research group, and derived (3) interventions. By the end of PROIECT APUSENI the research group conducted a (summative) evaluation of the intercultural collaboration process, reflecting the methodological and organizational experiences as well as social and emotional impressions. Result of this evaluation were recommendations for intercultural, inter- and transdisciplinary projects. Which are the long-term effects of transdisciplinary research? What are the opportunities given by transdisciplinary research and which are their limitations? Are the recommendations elaborated more than ten years ago still valid from the former project members’ viewpoint? The results of reflections on these questions within a reunion of former project members of PROIECT APUSENI in 2017 will be presented and discussed.

*gefördert vom Bundesministerium für Bildung und Forschung der Bundesrepublik Deutschland (BMBF, FKZ 0339720/5)

Key Readings:

Rusdea, E., Reif, A., Povar?, I.; Konold, W. (2005): Perspektiven für eine traditionelle Kulturlandschaft in Osteuropa. Ergebnisse eines inter- und transdisziplinären, partizipativen Forschungsprojekts im Apuseni-Gebirge in Rumänien. Freiburg i. Br: Inst. für Landespflege der Univ. (Culterra, 34).

Schübel, Hubert R. (2007): Interdisziplinäre Kooperation in transdisziplinärer Forschung besser machen? Prozessbegleitung als formative Evaluation. In: Christian Pohl, Susanne Stoll-Kleemann (Hrsg.): Evaluation inter- und transdisziplinärer Forschung. Humanökologie und Nachhaltigkeitsforschung auf dem Prüfstand. Humanökologie Band 5. München: oekom-Verlag.

NGĀ KETE E TORU: AN INDIGENOUS (MĀORI) TRANSDISCIPLINARITY

Anthony O. Cole me ōna Tūpuna, *iPansophy Limited, New Zealand*

Keywords: Indigenous transdisciplinarity, Māori culture, methodology, sustainability, Western science

Tainui is my canoe. Tararua is my mountain. Ōtaki is my river. Ngāti koroki is my hapū. Ngāti Raukawa ki te Tonga is my iwi. Anthony is my name and I am a descendent of the Māori peoples who travelled the South Pacific ocean in canoes and settled in Aotearoa (tr. New Zealand) approximately 1000 years ago. My tūpuna (tr. ancestors) maintained the survival and wellbeing of our people, and the natural world on these islands for approximately 900 years before the arrival of tauiwi (tr. European settlers).

This presentation draws on ten years of teaching in Whare Wānanga (tr. Māori educational institutions) and kaitiaki activities (tr. caring, guardianship) with whānau (tr. extended Māori families) and hapū (tr. Māori communities). I started this journey with a

desire to better understand the methodology of knowledge development that made it possible for my tūpuna (tr. ancestors) to maintain their own survival/wellbeing and that of the natural world for approximately 900 years. In answer to this question, I seek to describe and characterise an 'indigenous (Māori) transdisciplinarity' that is compared and contrasted with the paper 'Transdisciplinarity, past, present and future' presented by Basarab Nicolescu at the 2nd World Congress on Transdisciplinarity in Brazil (2005). This investigation indicates that the methodology of knowledge development of my tūpuna (tr. ancestors), at the time of European settlement of Aotearoa (tr. New Zealand), in the years following 1840, was at least 150 years ahead of comparative methodological developments in Western and transdisciplinary science. Given their capacity for achieving ecological–human survival and wellbeing outcomes over such a long period of time (ca. 900 years), this study indicates that the survival of Māori and other indigenous cultures; their worldviews, languages and systems of knowledge development, is inextricably linked with achieving the goal of global, ecological sustainability. Given this understanding, it may well be time to make a place for 'indigenous transdisciplinarity' in the Western Academy.

Key readings

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SESSION 9: SOCIAL DEPENDENCIES IN TRANSFORMATIVE TRANSDISCIPLINARY RESEARCH

Thursday, 14.09.2017, 14 – 15:30h

[C40.154]

Moderation: Esther Meyer, *Leuphana University of Lüneburg, Germany*

Many approaches towards transdisciplinary (td) research question the functional relationalities within changing societies.

This session focuses in particular on material dependencies. To which legitimacies and resources do we refer to in the design of td research? Who participates how in collaborative knowledge creation? Is social equity an adequate normative orientation in td research? What are the relationalities of theoretical development and societal or even social transformativity in td research? The presentations tackle these and many more questions to investigate how transdisciplinary research can affect societal changes as well as instigate a new culture of knowledge creation.

INVOLVING STAKEHOLDERS, CIVIL SOCIETY, PRACTITIONERS, CITIZENS, OR UNCERTIFIED EXPERTS: JUST A BABYLONIAN CONFUSION OR IS THERE MORE TO IT?

Antonietta Di Giulio, Rico Defila, *Research Group Inter-/Transdisciplinarity, University of Basel, Switzerland*

Keywords: Participation; scientific policy advice; societal impact of research; legitimacy

In recent debate, some new questions concerning transdisciplinary research arose: How do we relate transdisciplinarity to real world laboratories, citizen science, transformative research, and civic science? To what extent are transdisciplinary researchers legitimised or even obligated to initiate societal change? Is the primary aim of transdisciplinary research the production of new knowledge or the attainment of societal goals? The paper is a conceptual paper. It wants to contribute to advancing the theoretical foundations of transdisciplinarity by considering findings from the field of scientific policy advice and combining such findings with our own empirical results on how transdisciplinary research is perceived and framed by researchers and participating practitioners. The paper explores the confusing diversity of expressions used in describing participation and participating actors in transdisciplinary research and the impact of these different terms on our understanding of what transdisciplinary research is about and on how we frame the relation of research and societal change. We want, firstly, to draw attention to the necessity of distinguishing different formats of participation in terms of goals of participation and of criteria to identify those who should participate. Secondly, we want to show why it makes sense to distinguish different forms of legitimacy in talking about transdisciplinary research. We will explain why the terms we choose to denote those to involve in transdisciplinary research might impact the salience, credibility and legitimacy of the results of research and why we should distinguish scientific legitimacy, practical legitimacy, and political legitimacy in talking about the goals of participation. Finally, we will discuss whether transdisciplinary research should focus on research instead of social change in order to enhance its societal impact.

RETHINKING TRUTH TO POWER: THE ROLE ACADEMICS AND NON-ACADEMICS HAVE IN CHANGING THE CULTURE OF KNOWLEDGE CREATION IN THE CONTEXT OF URBAN SUSTAINABILITY

Kareem Buyana, *Urban Action Lab, Makerere University Uganda, Uganda*

Since urban sustainability has posed multiple and interconnected layers of planetary and complex questions, collaborative knowledge creation (knowledge co-creation) is necessary. It is a mechanism for solution-focused interfaces between academics and non-academics (industry, policy-makers and society). The key principle that has defined knowledge co-creation globally, is that non-academics and academics should have an equal chance to contribute to the framing of research questions; and co-design methodologies for finding and experimenting options for urban sustainability. This means a dent to the power structures that characterize many research processes, where academics in consultation with a particular funding agency, frame the research agenda and use pre-determined methodologies to broaden the understanding of urban sustainability, for rather than with non-academics. By viewing knowledge co-creation as a change maker in the relations and rules of the game, scientists can be positioned to offer an open hand that invites non-academics as co-producers rather than end-users of knowledge. But who then would be responsible for what in the process of changing the culture of knowledge creation? Is it the academics, non-academics, or both? I explore this with three synchronized layers of empowerment: (i) individual; (ii) institutional; and (iii) the empowerment of collaborations. The analysis is both a normative and applied, while pointing to the merits and demerits of changing the culture of knowledge creation.

SOCIAL RELATIONSHIPS ACROSS SPATIAL SCALES MATTER IN ECOSYSTEM SERVICES RESEARCH

María Felipe-Lucia, *University of Bern, Switzerland*, **Berta Martín-López**, *Leuphana University of Lüneburg, Germany*, **Elena Bennett**, *McGill University, Canada*, **Tobias Plieninger**, *University of Copenhagen, Denmark*, **Marina García-Lorente**, *Instituto Madrileño de Investigación y Desarrollo Rural, Agrario y Alimentario (IMIDRA), Spain*, **Christina Hicks**, *Center for Ocean Solutions, Stanford University, USA*, **Sander Jacobs**, *Institute of Nature and Forest Research, Belgium*, **Bruno Locatelli**, *CIRAD-CIFOR, France*, **Albert Nostrom**, *Stockholm Resilience Centre, Stockholm University, Sweden*, **Garry Peterson**, *Stockholm Resilience Centre, Stockholm University, Sweden*, **Francis Turkelboom**, *Institute of Nature and Forest Research, Belgium*

Keywords: ecosystem services, power relations, social-ecological systems, cross-scale interactions

The ecosystem services framework is increasingly incorporating a 'social-ecological' approach, fully integrating the dynamics between ecosystems and social systems and address multiple spatial scales. Not only do provision, use, and valuation of ecosystem services occur at different scales, but also power relations happen across scales. Recent research has highlighted the importance of social-ecological interconnections and power relations among social actors to understand how people access over, use and manage ecosystem services. However, the field still struggles to disentangle cross-scale social relationships and their impact on distribution of benefits, largely due to the lack of a methodological framework. This paper presents a conceptual 'cross-scale dependence-influence' framework and a set of methods to uncover power relations among social actors across scales. Through the application of this framework in a place-based assessment of ecosystem services, we illustrate how social relationships across scales influence the distribution of ecosystem services benefits and discuss how the application of the framework can aid ecosystem services research to incorporate equity as a basic sustainability principle. The cross-scale dependence-influence framework is based on the characterization of social actors (groups of people, individuals, organizations or corporations) who have the power to influence decisions or who may be affected by them. We apply this concept to the use and management of a particular set of ecosystem services. The framework includes four stages: (1) identification of ecosystem services and the relevant social actors at each spatial scale, (2) assessment of actors' dependence on the ecosystem services at different scales, (3) analysis of actors' influence on the management of ecosystem services at different scales, (4) identification and assessment of the strengths of cross- and within-scale interactions among social actors in the management of ecosystem services. The application of this framework to a case study of traditional farming in Southern Spain demonstrates that dependence on ecosystem services decreases when upscaling from the local to the regional and European scales. In our case study, traditional farmers were the social group most dependent on ecosystem services at the local scale, although the broader rural community was also highly dependent. Moreover, nature tourists depended on ecosystem services at the regional scale, because they highly valued the associated multifunctional landscapes. Contrastingly, the ability of social actors to influence decision-making regarding ecosystem services shifted from a shared (though unbalanced) influence of most social actors at the local scale, to be concentrated in external decision-makers when upscaling. The cross-scale dependence-influence framework was also applied in other three different case studies, resulting in similar findings: small scale coral reef fishing and tourism along the Southern Kenyan coastline, nature-based tourism in rural areas in central Spain and pasture dominated landscape in Eastern Belgium.

Our contribution presents a methodological framework to undertake transdisciplinary research in social-ecological systems across spatial scales. Our framework enables to link ecological knowledge based on the analysis of ecosystem services and social information based on the information regarding social actors, and especially, the power relationships established among them. Analysing cross-scale social relationships matters because power relationships determine who benefit from ecosystem services and at which scale, placing social actors in or out a vulnerable situation. This type of research is highly transdisciplinary and contributes to sustainability transitions aiming at supporting procedural and distributive equity. Ongoing sustainability science-policy interface initiatives, such as the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), might benefit from the application of the presented framework (and methodological tools) in order to show the close association between governance processes, ecosystem services and the quality of life of multiple social actors across spatial scales and to contribute in the assessment of equity in relation to ecosystem services.

Readings:

Felipe-Lucia M.R., B. Martín-López, S. Lavorel, L. Berraquero-Díaz, J. Escalera-Reyes, and F.A. Comín. 2015. Ecosystem services flows: why stakeholders? power relationships matter. *Plos One*. 10(7): e0132232. doi:10.1371/journal.pone.0132232.

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SESSION 12: ENHANCE, TRANSFER, TRANSCEND. CHALLENGES FOR THE FUTURE OF TRANSDISCIPLINARY RESEARCH

Thursday, 14.09.2017, 11:30 – 13h

[C40.108]

Moderation: Coleen Vogel, University of Witwatersrand, Johannesburg, South Africa

This session is about pressing challenges of TD research in relation to (a) its enhancement in new institutional settings (e.g. Future Earth or Conservation), (b) its transferability from one context to a new one and (c) its transcendence of local constraints in relation to intercultural differences. All four contributions propose strategies that researchers in TD can use in addressing such challenges. The strategies deal with institutional and organization aspects as well as with epistemological and methodological aspects of TD research. The contributors will address the challenges and propose strategies focusing on specific issues, such as mutual learning (Enhancing transformative research for sustainable development), institutional restructuring (Productive irritation? Institutional dynamics in nature conservation); knowledge transfer across cases (What type of knowledge is transferred across transdisciplinary case studies?) as well as intercultural dialogue supporting local innovation in intercultural settings (Taking account of interculturality). The wide variety of topics and examples addressed in the session will benefit researchers and practitioners working in different fields, from sustainability to intercultural organization, who are interested in how to embed TD research in institutional settings as well as how to deal with challenges of transfer and intercultural contexts.

ENHANCING TRANSFORMATIVE RESEARCH FOR SUSTAINABLE DEVELOPMENT: MUTUAL LEARNING WITHIN THE FUTURE EARTH RESEARCH PLATFORM

Flurina Schneider, Theresa Tribaldos, Centre for Development and Environment, University of Bern, Switzerland

Keywords: Implementing transdisciplinarity, research networks, mutual learning

In recent years, transdisciplinary research has been buoyed by a tailwind from the international Future Earth research platform, which stresses that knowledge for sustainability transformations should be co-produced in transdisciplinary ways. Future Earth is an emerging network on an international as well as on regional and national levels. It tries to push transdisciplinary research by encouraging the research community to implement transdisciplinary approaches and by providing training, as well as through their Knowledge Action Networks (KANs) that are meant to bridge gaps between disciplines and societal actors in sustainability transformations. However, representatives and members of Future Earth are highly challenged to implement transdisciplinary approaches within their own structures and creating conditions which are truly favorable for transdisciplinarity. A major reason for this challenge is that, to date, very little documented experience exists in implementing transdisciplinary research at the level of entire international research networks. In order to address this gap and advance the potential of Future Earth to foster sustainability transformations via transdisciplinary research, we have started to implement a research project aiming to facilitate broader learning processes about how Future Earth and its members can integrate transdisciplinarity in their structures. These

learning processes are facilitated through joint reflection between representatives of Future Earth, its members, transdisciplinary experts, and societal actors. Discussions between these actors are nurtured by their own experiences and insights from new research which will be jointly defined with the participants. In this presentation, we like to present the project and first experiences with its implementation.

WHAT TYPE OF KNOWLEDGE IS TRANSFERRED ACROSS TRANSDISCIPLINARY CASE STUDIES? PRELIMINARY RESULTS FROM A STUDY ON TRANSFERABILITY IN TRANSDISCIPLINARY RESEARCH

Carolina Adler, Gertrude Hirsch Hadorn, Gabriela Wuelser, Christian Pohl, *ETH Zurich, Switzerland*

Keywords: Transdisciplinary research, Transferability, Case studies, Arguments by analogy, Quality

In transdisciplinary research, researchers work with actors from civil society, the public and private sectors. Together they investigate a socially relevant problem in a concrete case. On the one hand, it is important to learn from each of these cases in their unique context. On the other hand, however, it is unclear under what conditions the knowledge gained from a specific case on a given problem can be transferred to another case. In this study, we investigate how researchers and stakeholders think about this transferability of knowledge. First, we ask if considerations for knowledge transfer are present, and if so, which specific findings or research outcomes are considered transferable by researchers and stakeholders involved in the project. In this presentation, we outline preliminary results and analyses to identify and reveal the types of knowledge considered transferable, and considerations that researchers and stakeholders make for transferability across cases. Overall, the social significance of this research is a critical view on how co-production of knowledge about a problem in a specific case applies to another case. This research aims to show whether researchers and stakeholders make such claims on knowledge transfer, and if they do what considerations they apply. For transdisciplinarity, we expect that these results contribute to an ongoing discussion of quality in transdisciplinary research results, specifically on the question of conditions under which results can be applied to other cases.

Key readings:

Adler, C., Hirsch Hadorn, G., Brey, T., Wiesmann, U., Pohl, C. (2017). Conceptualizing the transfer of knowledge across cases in transdisciplinary research. *Sustainability Science*. <https://doi.org/10.1007/s11625-017-0444-2>

PRODUCTIVE IRRITATION – INSTITUTIONAL DYNAMICS IN NATURE CONSERVATION

Martina Ukowitz, Christina Pichler-Koban, Michael Jungmeier, *University of Klagenfurt, Faculty of Interdisciplinary Studies, Austria*

Keywords: transdisciplinarity, institutional theory, nature conservation

Managing differences and dealing with heterogeneity is a core element in td-research. As we know, it is both, a chance and a risk. Plurality and diversity might cause fragmented processes and difficulties in reaching common goals, but it also entails a productive form of irritation and the opportunity for fruitful collective learning. Especially in the context of sustainability research and intervention the variety of perspectives, interwoven interests and influencing factors is enormous. Research is facing wicked problems. The differences that hold the chance of productive irritation and collective learning can be observed in the different problem descriptions, different stocks of knowledge, different interests, goals and the ways to reach them. Not least the different system logics have to be mentioned, which are brought into td-processes by the actor groups. Continuing the scientific discourse on heterogeneity, which mostly addresses the question of integration, against the background of a transdisciplinary research project on processes of institutionalization in nature conservation in this contribution the systems logics themselves are focused on and a closer look is taken to the (inter-)institutional dynamics and their consequences in the field of nature conservation and the administrative and legal processes going along with it. The main focus of the research project lies on Red Lists. It deals with the societal and institutional processes, which have the effect that endangered animal and plant species are included in Red Lists, it is analyzed how the lists are maintained and what the significance and practical consequences of Red Lists are. The analysis is carried out on the example of the *Vertigo moulinsiana* (Desmoulin's Whorl Snail), a snail, which is only a few millimeters in size and still has the potential to strongly influence the implementation of construction projects. The species is anchored in national Red Lists, it is listed in Annex II of the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora and the IUCN Red List and it is protected by various legislations. The topic is analyzed and discussed from the point of view of several relevant subject areas and public institutions. The starting hypothesis is that Red Lists have the character of values and norms. They derive from the need for standards in administrative and legal procedures and in political

decision making. Referring to institutional theory the following research questions are focused on:

- What are the societal and institutional processes that lead to the high significance of a specific animal species?
- Which societal and institutional processes are represented in the declaration of a species as vulnerable or protected?
- What are the societal and institutional consequences of the declaration as vulnerable or protected?
- Which general conclusions can be drawn from the results of the analysis for theory and practice of nature conservation work and for political, administrative and legal processes on an international, national and a regional level?

The contribution first focuses on the project design, in which the organization of transdisciplinary cooperation is part of the research process. Secondly it gives insight into intermediate results of the research concerning institutional logics and their consequences (for transdisciplinary processes and beyond). As so often the science system reveals as an important player and the question of interface management between the various spheres of acting still seems to be a hot topic.

TRANSCENDING THE LOCAL AND ALTERNATIVE FEATURES OF GRASSROOTS INNOVATIONS. WHAT CAN TRANSDISCIPLINARY RESEARCH CONTRIBUTE TO DIFFUSION OF SUSTAINABLE INNOVATIONS?

Willington Ortiz, Wuppertal Institute, Leuphana University of Lüneburg, Germany

Keywords: grassroots innovations, innovation diffusion, mutual learning sessions, transdisciplinary research formats

Grassroots innovations are discussed as spaces in which community-level action for sustainability take stake in the creation and diffusion of novel ways to cope with sustainability challenges. The strengths as well as the challenges of grassroots innovations appears to rest on two of their main features: A) They rely on the utilization of contextualized knowledge, which implies better fit to local conditions of the communities involved; yet it also hampers wide scale diffusion and influence. B) They emerge as alternative ways of advancing solutions in civil society motivated by social justice or environmental concerns (in contrast to rent-seeking market base innovations), which allow for practicing stronger understandings of sustainability. Though, this often leads to critical demands for wider structural change that are beyond influence of single grassroots initiatives. The aim of the study is to explore how transdisciplinary (Td) formats that promote mutual learning can contribute to overcome the difficulties emerging from the local and alternative features of grassroots innovations. For this aim I elaborate on processes of mutual learning to transfer and extrapolate case-based experiences that are conceptualized as Td methodologies. Further the focus is on one specific Td format (*case-based* Mutual Learning Session, *cbMLS*) and conceptualize how it can promote the generation and flow of knowledge beyond the spatial and structural restrictions of grassroots innovations. The implementation of a *cbMLS* is presented, which aimed at strengthening the transformative capacity of civil society initiatives advancing sustainable family farming practices in Colombia. On the transfer axis, the research facilitated the reinterpretation and transfer of lessons from/to different cases, i.e. among the diverse types of organizations involved in the *cbMLS*. Moreover, it contributed to the consolidation of knowledge on a couple of aspects which had received - until then - little attention by existing knowledge exchange and systematization processes in the community of initiatives. On the extrapolation axis the results were more modest. Critical issues were jointly articulated in two directions: 1) Specific topics by which formalized networks supporting the work of single initiatives can better contribute to the common aim of strengthening family farming. 2) The rather low ability to engage and influence relevant political processes at different administrative levels. Reflecting on the methodological implications of the example two indications can be highlighted. First, the composition of the team for the *cbMLS* is of crucial relevance and challenging. For the Td research described, it was not possible to engage actors from any relevant administrative level, although extrapolation in that direction was considered during the preparation process. One central difficulty was the rather low level of trust in public officials and politicians among the civil society actors involved in the grassroots initiatives. However, one outcome of the research was that it induced greater awareness and openness among the participants about the importance to tackle the interaction with administrative and political actors. Second, the Td research comprised only one *cbMLS*. This arguably reduces the possibility to achieve greater contribution to the diffusion dynamics, e.g., to capitalize on the mentioned rise of awareness and openness towards further work on the extrapolation axis. Moreover, additional and more focused discussions turned out to be of importance in order to tackle more deeply those aspects identified as still scarcely consolidated.

SESSION 13: WATER POLITICS

Wednesday, 13.09.2017, 11:30 – 13h

[C40.108]

Moderation: Beate Littig, *Institute for Advanced Studies, Vienna, Austria*

The session focuses on transdisciplinary approaches in water research, management, and governance. Challenges and opportunities of transdisciplinary processes are highlighted in which a range of societal actors like NGOs, users, researchers, civil society, and government officials are included. The presentations draw from experiences from Ethiopia, Indonesia, and Uruguay. Furthermore, larger issues with regard to transdisciplinary are addressed, such as historical perspectives, the role of institutions, and linking research and action.

WATER INSTITUTIONS IN THE AWASH BASIN OF ETHIOPIA: THE DISCREPANCIES BETWEEN RHETORIC AND REALITIES

Reta Hailu, Degefa Tolossa, Getnet Alemu, *Centre for Rural Development, Addis Ababa University, Ethiopia*

Keywords: Awash basin, Ethiopia, water institution, water insecurity

This paper strives to understand the features of water institutions to achieve water security in the Awash basin from a historical perspective. The data for this paper employed multiple techniques. It is based on in-depth interviews with several stakeholders, review of secondary data and literature, survey of key institutions, participant observation, attending workshops and water policy debates. In order to obtain high-quality data, snowball techniques were employed to select the respondents. We found out that over the past 50 years, institutional changes passed through three politically antagonistic regimes: viz. the Feudal landlord system or the Imperial period (1929-1974), the Socialist regime (1974-1991), and the current regime, the so called Developmental State (Since 1991). The regimes were not unable to build strong and dynamic basin level water institution as the successor shattered the endeavour of its predecessor. The new institutional arrangements were not drawing lessons from the old one. We realised that four overarching issues were not properly addressed by the particular water institutions to achieve water security in the basin. First, groundwater administration has received little consideration. This was mainly attributed to the fact that the link between the groundwater administration and land is insufficiently addressed in Ethiopian water law and policy. In addition, the institutional arrangements failed to govern the agricultural intensification activities that increased pesticide use that increased toxic substances in the groundwater. Consequently, groundwater resource was misused and/or abused, which calls for proper institutional means to administer and make use of groundwater resources in the basin. Second, historically there is a systematic exclusion of the voiceless and the poor pastoralists, ago-pastoralists, and the peasantry. They have been excluded from fair and equitable access to riparian water points and grazing areas in favour of the powerful actors such as foreign and domestic investors. Besides, efficient water bureaucracy was non-existing to negotiate among different water resource user groups. For example, the local community could not negotiate with large-scale farms due to power asymmetry, diversities in interest and priorities, and weak mediation. Third, the basin has been constrained by lack of skilled manpower and database management for effective resource allocation and distribution. As a result, institutional aspects were underinvested. Resources skewed towards infrastructure than institutional development. It is important to balance the 'hard option'- the infrastructure such as dams, and 'soft option'- such as strong and dynamic public and private institutions. Thus, water resources managements were neither efficient nor equitable. Unless proactive water institutions are in place, it would be difficult to keep up with a burst of population, urbanization, and economic growth in the basin as these change the lifestyle of citizens towards more water demands. Therefore, a systematic and transdisciplinary approach ranging from socio-economist to hydrologist area is required. It should enforce formal water institution (revise if needed), recognize the role of customary practices, and involve the key stakeholders. Attention should be geared towards financial, human, and institutional capacity building to minimize water insecurity in the basin.

Key Readings

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SHAPING TRANSDISCIPLINARY RESEARCH IN WATER MANAGEMENT PAVED THE PATHWAYS TO POVERTY REDUCTION

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Key words: poverty, developing countries, water resources management, action research, future earth

This paper introduces the efforts to apply transdisciplinary research in irrigation water management co-design with water users association and related stakeholders in Bili-bili irrigation system of Jeneberang watershed in Sulawesi, Indonesia. The study is conducted in-line with the idea of Future Earth which promotes transdisciplinary research to ensure the tangible contribution of research in problem solving. In designing local framework for integrated water resources management, a research team involving natural scientist, sociologist and anthropologist is developed and collaborated with local researchers and local NGO. Research is designed carefully to ensure the roles of water users association as the main actor. The discussion focused on the process of stakeholder involvement and linking research and action. Stakeholders' legitimacy and collaborative action are important key points in the co-creation processes, and vigorous emphasis is put into the efforts in developing better water resources management. As the result, not only was the irrigation management improved, the degree and quality of mutual discussion have markedly increased, resulting in new communication and relationship among the stakeholders. Various self-initiative activities are carried out, and extended to funding sourcing and management as well as opening access for support from the government.

BARRIERS AND OPPORTUNITIES FOR TRANSDISCIPLINARITY IN WATER MANAGEMENT: FINDINGS FROM A CASE STUDY IN A MULTI-STAKEHOLDER WATERSHED COMMITTEE IN LAGUNA DEL SAUCE, URUGUAY

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Keywords: Transdisciplinarity, Adaptive Water Management, Governance, Uruguay

Traditionally treated with disdain because of its perceived abundance and quality, water has recently emerged in Uruguay as a politically and culturally relevant subject. This has happened especially since 2004, when a referendum fostered the review of the conceptual framework that inspired water public management. It placed it in the Constitution as essential for life; promoting access and sanitation services to the level of a human right. In Uruguay, almost 90% of water resources are used for irrigation in agriculture, whereas drinking water supply systems do not reach 10%. Even though systematic, continuous assessments about water quality are not available, several sources consider that pressure over the resource is on the raise and in the way of becoming critical. As in the rest of the globe, the most persistent obstacles for the sustainable management of water resources lie in the realm of water governance. Amongst others, they include the need to manage problem sources, increasing integration of issues and sectors, open information sources, incorporation of iterative learning cycles, decentralized and more flexible management; participatory approaches and collaborative decision-making processes. In this sense, and as a part of its recent policy and institutional changes, water governance regime in Uruguay has incorporated watershed committees that guarantee participation of users, civil society and government officials. Building from an approach of transdisciplinarity in water research and management, this paper focuses on the knowledge co-production process developed in the context of the watershed committees planning process in Laguna del Sauce in eastern Uruguay. More specifically, on the design of water quality protection plans and communication strategies, in which researchers from different backgrounds, technicians from different institutions and citizens representing civil society involve themselves in deliberative processes that seek to address priority issues for the socio – ecological system under consideration. Methodologically, this paper emphasizes the barriers and opportunities for the development and deepening of transdisciplinary research of water management in Uruguay. It does so by analyzing the process of knowledge production that led to different types of knowledge(s), methods and instruments, degrees of interaction among field domains and inhibitory and promotional factors of inter- and transdisciplinary cooperation. These lines of enquiry are pursued on the context of a broader project that looks at inter- and transdisciplinary knowledge production at universities by focusing on the role that institutions, cultures and communities have in promoting this kind of approach (ICC for its acronym in English where the Universidad de la República in Uruguay collaborates with the Leuphana University of Lüneburg (Germany)). Considering the recent literature on the subject, we know that the ability to respond to complex challenges is strongly related to polycentric governance and innovative ways for dealing with uncertainty. Transdisciplinary research has addressed this issue from different perspectives to analyze the best way to work with unknowns in complex and multidimensional problems. There are several ways of knowing about water, and all of these must come together in order to cope with multifaceted issues around water research (i.e. interdisciplinary

approach) and beyond, to water management (i.e. transdisciplinary approach). To deepen our understanding of these processes and the challenges and opportunities they enclose; will enable us to reflect on the way knowledge production occurs in sustainability science in the Uruguayan context (specifically in terms of water related issues). At the same time, it will provide new insights that may enhance water management and researchers education on the long term. This is the main outcome the authors envision, as well as giving a systematized analysis of a process which is new in our country.

SESSION 14: TRANSDISCIPLINARY CLIMATE RESEARCH AND STAKEHOLDER DIALOGUE

Tuesday, 12.09.2017, 11:30 – 13h

[C40.153]

Moderation: Cecilia Hidalgo, *Facultad de Filosofía y Letras, Universidad de Buenos Aires, Argentina*

Co-production of knowledge is currently considered essential to render climate information usable and actionable. This implies not only a wide range of transdisciplinarity (td) research but a renewed mode of interaction with stakeholders, now seen not as informants but as peers contributing on equal grounds with scientists to the provision of climate services and to the formulation of adaptation responses to climate change. Experiences and insights gained in climate knowledge co-production settings in Europe, South America and Africa are discussed; questions such as what can td research realistically contribute to enrich stakeholder dialogue are posed.

CAN TD RESEARCH AND CLIMATE MODELLING BE COMBINED? PRELIMINARY RESULTS OF THE STAKEHOLDER DIALOGUE OF THE NEW SWISS CLIMATE SCENARIOS CH2018

Maurice Skelton, *Institute for Environmental Decisions, Department of Environmental Systems Sciences, ETH Zurich*, **Michiko Hama**, *Swiss Federal Office for Meteorology and Climatology MeteoSwiss*, **Christian E. Pohl**, *USYS TdLab, Department of Environmental Systems Sciences, ETH Zurich*, **David N. Bresch**, *Institute for Environmental Decisions, Department of Environmental Systems Sciences, ETH Zurich, Switzerland*

In the emerging field of climate services, the dominant view is that co-production of knowledge is essential to render these services usable and actionable. So far, inclusion of a diverse array of stakeholders is increasing, but most of the participants are the usual suspects: stakeholders with similar backgrounds, interests and capacities as the climate scientists themselves. The rich experiences, insights and principles gained from transdisciplinarity (td) research could contribute to fruitful stakeholder engagement. But often these climate services operate in a political-scientific setting in which td principles, such as involving stakeholders from the start, cannot be adequately adhered to. The stakeholder dialogue in the context of the upcoming Swiss climate scenarios CH2018 provides opportunities to discuss and pilot this challenge. So far, the new Swiss climate scenarios have focused mainly on physical parameters. Admittedly late to influence the results in a big way, we have taken on the climate scientists' wish to start conversations with and between a wide set of stakeholders targeted by the Swiss National Adaptation Strategy. With these circumstances influencing the design options of the dialogue, what can td research realistically contribute? Which td principles can be transferred and applied into the context of climate services? And how are these insights applied to start conversations, remove barriers and enable stakeholders' voices to be listened to? In this interactive presentation, we will present and discuss our preliminary insights, challenges and results from the CH2018 stakeholder dialogue.

INITIATIVES FOR THE DEVELOPMENT OF THE RELATIONSHIP BETWEEN CLIMATE KNOWLEDGE AND THE AGRICULTURAL SECTOR IN THE RÍO DE LA PLATA: EXPLORATION OF THE CONCEPTS OF KNOWLEDGE CO-PRODUCTION AND TRANSFERENCE

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Keywords: Knowledge co-production, useful science, post normal science, climate knowledge, science-policy interface

During the last decades, the production of useful climate information has become a topic on the agenda of the international scientific and operational community. The advance of robust knowledge requires rethinking new ways of transmitting information and the generation of new links between institutions and different types of information users. In this article, we will focus on two research projects that address this complexity, both financed by the Interamerican Institute for Global Change Research. The first one is of a regional scale, centered in the south-east of South America called "Towards usable climate science: Informing decisions and provision of climate services to the agriculture and water sectors of southeastern South America", (CRN3035). It aims to collaborate in the construction of useful climate science, which will inform the decision-making of sectors sensitive to climate

such as agriculture and the water sector. The second is a national project, developed in Uruguay (CRN3106), entitled “Transferring climate knowledge in the science-policy interface for adaptation to drought in Uruguay”. Which has the objective to analyze how the climatic information generated by the local institutions is used in the decision-making process and how these affect the agricultural sector. In general terms, both projects fall within the paradigm of post-normal science, based on a transdisciplinary and cross-sectoral approach. In this sense, (1) we analyzed the differences and similarities between the projects, as well as the connections at both the scientific and thematic levels. Likewise, (2) we focused on the methodology implemented by each of them to address the link with the various users. Moreover, (3) we compared the concepts of co-production and transference of knowledge, from a historical point of view as they are the main concepts of the described projects. We concluded by (4) proposing how these new participatory / knowledge co-production approaches can collaborate in improving communication mechanisms between climate science and society. To do this we used a qualitative methodology of ethnography in both projects, a historical review of the uses of the different concepts, and semi-structured interviews.

CO-CREATING CLIMATE CHANGE ADAPTATION TOOLS IN THE CITY OF JOHANNESBURG

Coleen Vogel, *Global Change Institute, GCI, University of the Witwatersrand, Johannesburg*, **Mzukisi Gwata**, **EISD, City of Johannesburg**, **Kaera Coetser**, *GCI Global Change Institute, GCI, University of the Witwatersrand, Johannesburg*, **Mutizwa Mukute**, *Visiting scholar, GCI, University of the Witwatersrand, Johannesburg, and Rhodes University Senior Research Associate, South Africa*
Keywords: City of Johannesburg, adaptive capacity, expansive learning, mediation

Climate change is one of the multiple stressors facing African Cities. Consequently, the City of Johannesburg and the University of Witwatersrand in Johannesburg have entered in an agreement to create adaptation strategies and responses to climate change in the city. The two actors are using social learning and transdisciplinary approaches to examine how a range of narratives, engagements and processes can frame an inclusive, empowering and multilevel planning process. One of the processes being used to try and develop the City of Johannesburg’s climate change adaptation plan is the expansive learning process that was developed in Cultural Historical Activity Theory (CHAT). Mediation formed a central part of the collaborative work, climate change impact analysis and co-development of strategies on adaptive capacity development. The challenges, opportunities and lessons learnt in this case will be explored in this paper.

SESSION 15: CLARIFYING ROLES AND EXPECTATIONS

Thursday, 14.09.2017, 11:30 – 13h
[C40.147]

Moderation: Christian Erik Pohl, *ETH Zurich, Switzerland*

Entering a collaborative transdisciplinary project means entering an unstructured social microcosm full of expectations about who is expert for what and what will be achieved by the coproduced knowledge. In this session, we discuss these roles and expectations using case studies of transformative sustainability science from Samothraki (Greece), Wuppertal (Germany) as well as from a science-artist-community collaboration.

DETERMINANTS OF RESEARCHERS’ ROLES IN REAL-WORLD LABORATORIES: THE CASE OF WUPPERTAL

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Keywords: real-world laboratories, transformative research, researchers’ roles, RWL flowchart, Wuppertal

Transdisciplinary and transformative research projects often put researchers in highly demanding research contexts regarding their roles and self-conceptions. In this paper, we search for and reflect the factors that determine which roles researchers take in different situations in so-called real-world laboratories. There is only little research on the different roles of researchers in transformative research projects. According to related literature, scientists may not only observe, describe and analyse sustainability transformations, but may also initiate or catalyse them, acting, for example, as knowledge brokers, process facilitators or even change agents (see Wittmayer/Schäpke 2014). Even less research has been done regarding researchers’ roles in real-world laboratories. Real-world laboratories are particularly challenging: Starting from a real-world problem, real-world laboratories go explicitly beyond the generation of theoretical knowledge. In contrast to conventional transdisciplinary processes, the transdisciplinary team will also engage in real-world action in the chosen field of intervention. The first so-called co-design phase provides room to identify and clarify the basic rules for cooperation. Researchers then enter – mainly in the second, the co-production

phase – a cyclical process of learning through “experimentation”, reflection and calibration. Here, the demands relating to the real-world intervention endanger the researcher to lose balance, i.e. to either withdraw to safe areas of academic research or to be overwhelmed by project management tasks and real-world activities. This may result in a dysfunctional real-world laboratory process and unsatisfactory outcomes for research and/or practice. Hence it is crucial to determine the factors that contribute to the conscious or unconscious choice of the specific role researchers take in different situations. This may help both to adjust real-world laboratory processes that have gone astray in a self-reflexive way and to consciously pick and shape the factors that turn out to determine researchers’ roles when establishing new real-world laboratories. For this, we employ a research design unique in current real-world laboratory research: After a short literature review, our empirical study starts out from three district real-world laboratories in the city of Wuppertal, which are characterised by diverging settings, resulting in varying roles. Each diachronic within-case comparison is organised along a flowchart that has been proposed as a guiding structure for RWL recently (Wanner et al., submitted) in order to examine a possible process stage effect on researchers’ roles. These diachronic within-case comparisons are complemented by targeted between-case comparisons, which allows for tentative evidence regarding the context dependence of the identified determinants. We employ qualitative content analysis based on observation protocols, interviews with collaborating actors, research diaries and secondary data. As a preliminary finding, in one case, the scarce resources of the collaborating district development agency push the researcher into a more active, change agent-like role, causing her to bear a large share of responsibility for the operational development and implementation. This is contrasted by another local real-world laboratory, where the operational real-world transformations depend to a lesser extent on the researchers, allowing for rather indirect contributions like reflection and knowledge inputs. Altogether, first results reveal that the roles of the researchers vary considerably across both real-world laboratory settings and over process stages. Regarding the latter, findings suggest that this may be due to the changing demands of the different sub-stages of the real-world laboratory process. Regarding the former, for example the type of practice partner, the type of real-world problem, the specific initial situation, and the scope of civic participation seem to influence which roles the researchers adopt.

Readings:

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VOICES FROM WITHIN, VOICES FROM WITHOUT: TRANS-DISCIPLINARY CLIMATE CHANGE ADAPTATION RESEARCH, ART AND COASTAL COMMUNITIES

Jean-Paul Vanderlinden, Juan Baztan, Ioan M. Ciomasu, *CEARC research Center, Université de Versailles Saint-Quentin-en-Yvelines (UVSQ), France*

Keywords: Climate change adaptation; art and science integration; community centered research; coastal zone

The "Adaptation Research a Transdisciplinary community and policy centered approach" (ARTisticc) project had as a goal to apply innovative standardized transdisciplinary art and science integrative approaches to foster robust, socially, culturally and scientifically, community centered adaptation to climate change. Fieldwork has been implemented in coastal communities in France (Brest, Brittany), Senegal (Mbour, Petite Côte), India (Kochi, Kerala and Kanyakumari, Tamil nadu), Russia (Tiksi, Yakutia), Greenland (Uummannaq), the United States (Wainwright, Alaska), and Canada (Cocagne and Grande Digue, New Brunswick). It involved transdisciplinary teams of scientists, community members and artists. Key results of the project will be presented. These pertain to two dimensions: a substantive dimension, i.e. better understanding of the role of knowledge and knowledge systems in adaptation, and a procedural dimension, i.e. better understanding of the implementation of transdisciplinary approaches to adaptation science. On the substantive front, we will focus on presenting how, within such a high diversity of contexts, regularities were identifiable and why these are relevant to policy making. We are focusing this analysis on: scale, agents involved in the adaptation dynamics, dominant paradigm that are being mobilized and the drivers and enablers of local actions - all in relationship with knowledge use. These specifics are engaged in an interplay that calls for attention before any local level actions can be implemented. On the procedural front, we will highlight the challenges, discovered along the way, of dovetailing science and art as a way to better apprehend and share the knowledge base on adaptation to climate change. What is the role of science, as perceived by local communities? What is the role of local communities? What is the role of art? Can the joint implementation of artistic research and scientific research both facilitate or hinder an adaptation process? The answer to these questions is again

conditional to the nature of the teams that are involved and to local narratives and historical dimension that may allow for the joint practice of art and science.

THE ROLE OF SCIENTIFIC RESEARCH IN GUIDING AN ISLAND'S SUSTAINABILITY TRANSITION

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Keywords: transdisciplinary socioecological research, sustainability transition, citizen science

The current contribution will present lessons from ongoing transdisciplinary socioecological research that aims at outlining a sustainable future for the Greek island of Samothraki. Samothraki is a mountainous island with a significant natural and cultural heritage. However, insistent social and ecological challenges, as well as impacts of the recent Greek socioeconomic and governance crisis have jeopardized the viability of local services and the island community finds itself at the crossroads of development pathways. Acknowledging the challenges and potential solutions, since about ten years, a group of scientists started deliberating with local residents about the present and future state of the island. The point of departure was a wish to preserve the character of the island from potentially destructive pathways and conventional tourism development as observed in other Greek islands and come up with an alternative development model. This led to the preparation of a feasibility study on whether a vision for a sustainable Samothraki could be achieved via its inclusion in UNESCO's World Network of Biosphere Reserves. The road to designation has been conceptualised as a transdisciplinary and open-ended process, in which ownership has gradually shifted from scientists to local actors. What started as a response to environmental degradation by concerned citizens, has developed into an ambitious and evolving research program, informing and informed by an alternative vision of local development from the bottom-up. This contribution will shortly introduce a socioecological approach in co-designing research priorities, and then focus on the role of scientific research in analysing and catalysing a sustainability transition, discussing the application of 'transdisciplinary principles' on Samothraki, main empirically derived challenges and response strategies pursued. Insights and lessons from transdisciplinary research will be presented as a series of 'transdisciplinary balances'.

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SESSION 16: FACILITATING INSTITUTIONAL CHANGE THROUGH INTER- AND TRANS-DISCIPLINARITY

Tuesday, 12.09.2017, 14 – 15:30h

[C40.154]

Moderation: Catherine Lyall, *University of Edinburgh, United Kingdom*

As a community, we tend to share the belief that inter- and trans-disciplinary (ITD) approaches can be used within our institutions as a way of tackling multidimensional problems. Yet those of us who work within universities often find that we are struggling to teach and conduct research across cultural and institutional boundaries. The three papers in this session will examine how we might mobilise our intellectual resources in order to more successfully pursue ITD practices within our research and teaching. The papers will draw on case study material from Northern Europe (Germany, Sweden, Finland) and Latin America (Uruguay), which should provide some thought-provoking points of contrast and comparison for our discussions. We will learn about the role of design as both a sensitising concept and a host for transdisciplinary collaborations, recognising that projects that span art, science and technology, in particular, can offer much but also prove challenging within the institutional context of academia. ITD work requires culture change at various levels within our institutions, both intellectual and administrative. We hope to share some guidelines on how ITD work can be successful and how specific instruments and methods might be developed further in the future, including the influence that this approach can have on curriculum based teaching. This session will consider current theory and practice and, significantly, will also address some of the changes in structures and routines that might enable academic managers to promote ITD practices more effectively.

MANAGING HYBRIDITY IN ACADEMIA: HETEROGENEITY AND DIFFERENCES IN TRANSDISCIPLINARY WORK ACROSS ART, SCIENCE AND TECHNOLOGY

Nina Horstmann, *Hybrid Plattform – University of the Arts Berlin and Technische Universität Berlin, Germany*, **Juuso Tervo**, *University Wide Art Studies (UWAS), Aalto University, Finland*

Keywords: Art, Science & Technology, Cross-, inter- and transdisciplinary Education, Case studies, Intercultural analysis

Nina Horstmann and Juuso Tervo are looking at transdisciplinary work across art, science and technology within academic and institutional settings. They will present case studies from Germany and Finland, investigating their common characteristics and possible differences: Why and how were these projects initiated; how have they been developed and what kind of successes or failures have they faced? And – most importantly – what are the lessons learned? Both cultural and institutional aspects will also be discussed. Inter- and transdisciplinary project and research work is gaining popularity within universities, private-public partnerships and funding schemes. It can be conducted across disciplines, across sectors or both, aiming to create new insights and innovative results. Alongside the proliferation of such projects, the number of books on inter- and transdisciplinary work and methods has also increased. And yet, there is a conspicuous lack of information on how to conduct inter- and transdisciplinary work across art, science and technology and how do such projects find their place within the institutional context of academia. Within an increasingly complex world, problems need to be tackled jointly and a pluralistic knowledge base need to be part of any solution-oriented endeavour. This requires some guidelines as to how cross-, inter- and transdisciplinary work can be successful and how it can be developed further in the future. Keeping this in mind, the presenters discuss their personal experiences and insights they have gained when realizing their transdisciplinary projects. Both presenters have worked with a set of theoretical frameworks and methods, ranging from business strategy tools and design thinking to art education and curriculum studies. They also draw on the evaluations of former projects which highlight issues around transdisciplinary work. By illustrating the complexities of cross-, inter- and transdisciplinary work between scientists, designers, and artists, the presenters argue for the provision of an infrastructure in support of hybrid project work as well as of a new culture of knowledge-production in academia. Transdisciplinary project work requires specific instruments and methods that need to be further developed. A new set of structures both administrative as well as institutional is required to make innovative and progressive work with partners across disciplines possible. Tools, methods and knowledge sharing approaches need to be adapted to the new hybridity of work. The presenters show that the success of any transdisciplinary work lies in the commitment of the participants as well as in having a moderator to interact between those involved. The irritations and divergences specifically appearing in transdisciplinary contexts develop their creative potential only if the irritations and divergences – stemming from a big heterogeneity – are transformed into an innovative project work.

CULTIVATING AESTHESIA IN AND THROUGH TRANSDISCIPLINARY COLLABORATIONS FOR SUSTAINABILITY

Mathilda Tham, *Department of Design, Linnaeus University, Sweden and Department of Design, Goldsmiths, University of London, UK*, **Ola Ståhl**, *Department of Design, Linnaeus University, Sweden*

Keywords: Aesthetics, Anthropocene, Ethics, Sustainability, Transversality

The overarching context of this paper is the sustainability imperative, and specifically the concept of the Anthropocene and the understanding that human activities are now driving vital earth systems across critical threshold, jeopardizing life on earth. (See e.g. Crutzen et al. 2007; Rockström et al. 2009; IPCC, 2013). Despite the, by now, broad awareness of this predicament, the general direction is still negative, as can be exemplified by the UNs prediction that resource use and consumption will have tripled by 2050. (UNEP, 2011) It is our contention, that the scale and complexity of the challenges we now stand before, which interweave ecological, economic, socio-political and cultural dimensions, require comprehensive and timely transdisciplinary efforts and a diverse epistemology, where, for example, factual knowledge can meet powers of imagination. The latter, and particularly that pertaining to the arts, has yet to be fully integrated in the sustainability discourse and associated strategies and practices. In this paper, we offer a creative-critical reading of the gap between the awareness of this predicament and sufficient action as a cultural anaesthesia. Commonly known as a medical procedure to remove sensation, we argue that anaesthesia can also be understood as a cultural practice of a multitude of insensitivities in our engagement with the universes we inhabit. The intra- and interpersonal insensitivity that characterise these cultural practices, along with an insensitivity to other species and an insensitivity to past and future life conditions, we argue, is interdependently both a requisite for and a result of the current era of unsustainability. In light of this notion of anaesthesia, we argue for a new aesthesia – a set of awarenesses and agencies with and in our world. Although design has most certainly contributed to culture of anaesthesia, and, indeed, continues to do so, we propose that design as a discipline and a set of practices can effectively be re-designed in order to facilitate such sensitivities to infuse

transdisciplinary collaborations in the remit of sustainability. This is supported by design's intrinsically broad epistemology, rich range of methods for engagement in the lifeworld and its divergent and exploratory approach to problem solving or problem making. (Se e.g. Haraway, 2016) The paper discusses theoretical points of departure for this aesthesia and the adjacent and supportive concept of transversality, drawing on, for example, the works of Guattari and Haraway. In terms of concrete examples, the paper draws on the development of two intertwined transdisciplinary research and development platforms, both hosted by the Department of Design, Linnaeus University. The platform Småland Living Lab is a regional living lab that mobilizes diverse knowledge and knowledge holders in the remit of sustainability - citizens, researchers, educators, and representatives from industry and governance - with the aim of accelerating the region's realization of the UN Sustainable Development Goals. The platform Transdisciplinary Practice and Sustainability currently mobilises researchers from five different faculties at Linnaeus University, covering the fields of design, economy, gender studies, archaeology, literature studies, sociology and environmental science. The platform is currently developing a transdisciplinary master's programme. The paper traces the eighteen-month long process of developing these platforms and how different ways of knowing has come into play. It pays particular attention to the turn to aesthesia in orienting stakeholders in the collaborations to sustainability, which has yielded insights at both pragmatic and paradigmatic levels. The paper also shares insights into the role of design as host for transdisciplinary collaborations. The insights are summarised in a manifesto for further work in this remit.

Readings

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INTER- AND TRANSDISCIPLINARY KNOWLEDGE PRODUCTION AT UNIVERSITIES: INSTITUTIONS, CULTURES AND COMMUNITIES (ICC)

Bianca Vienni Baptista, *Leuphana University of Lüneburg, Germany and Universidad de la República, Uruguay*, **Andrés Carvajales**, **Ana Egaña**, **Florencia Ferrigno**, **María Nohelia Lorda**, **Claudia Simón**, *Universidad de la República, Uruguay*

Keywords: Interdisciplinarity, transdisciplinarity, institutions, cultures and communities, Uruguay

There is emerging agreement that interdisciplinarity and transdisciplinarity are suitable ways of knowledge production to address multidimensional problems that humanity is facing nowadays. The overall objective of this project is to analyze inter- and transdisciplinary knowledge production at universities. One of the case studies is the Universidad de la República in Uruguay (South America). The research aims to generate a more profound understanding of political, communicational, organizational and educational perspectives regarding what inter- and transdisciplinarity imply at institutions as a way of coping with multidimensional problems. The dimensions of analysis included: (i) the historical analysis of the background of interdisciplinary and transdisciplinary knowledge production and the societal context, (ii) the study of the current state of interdisciplinary and transdisciplinary knowledge production and (iii) the design of processes to strengthen future university policies and to develop transformative strategies that enable inter- and transdisciplinary development beyond structural barriers with a particular focus on key stakeholders and relevant actors. Four side by side research subprojects are being developed by Master students at the Universidad de la República, addressing the following issues: (i) Interdisciplinary Higher Education, a case study dealing with an interdisciplinary bachelor's degree (ii) Culture and research practices at four interdisciplinary centres at this university (iii) the historical process of institutionalization of interdisciplinarity considering the university structure, academic communities and political guidelines and (iv) transdisciplinary research in sustainability science. These subprojects have their counterpart projects at Leuphana University of Lüneburg (Germany). They involve contributions from anthropologists, sociologists, political scientists and biologists with a science, technology and society (STS) background. More specifically, the subproject (i) deals with labor insertion and employability of an interdisciplinary curriculum in Human Biology. These are analyzed, taking into account regional contexts where the Universidad de la República has recently established new academic centres and interdisciplinary study programs. Another subproject (ii) works on understanding students, faculty and stakeholders perceptions on interdisciplinary knowledge production in projects funded by Universidad de la República. Their approach has been called *integralidad* (Spanish for comprehensiveness) of the university missions (historically teaching, doing research and performing outreach oriented activities). In the case of the historical analysis of the institutionalization of interdisciplinarity at the Universidad de la República (iii), the purpose is to study the institutional background identifying milestones, formal rules, and how these influenced interdisciplinary research and teaching at this university. This process focuses on the period from 1985 to 2006. Finally, the fourth subproject (iv) studies the way different modes of knowledge are being used to tackle the diverse challenges that transdisciplinary and participatory,

multi-stakeholder water management entail. Watershed committees (consisting of different kinds of experts, government officials and lay-citizens) in Uruguay offer great opportunities to observe and analyze expanding knowledge about complex issues and how, when and where it is being used to transform reality. By integrating and jointly analyzing these different approaches to institutions, epistemic cultures and communities at the Universidad de la República, we expect to offer a new set of data and contributions keeping two goals in mind. On the one hand, to improve theory about inter- and transdisciplinary research in a small peripheral country, where the issue of development is of the utmost importance; and on the other to continue providing access to key information that allows academic managers to promote inter- and transdisciplinary research practices in a more effective and satisfactory manner.

SESSION 17: TRANSDISCIPLINARY RESEARCH IN SITUATIONS OF MARGINALIZATION

Tuesday, 12.09.2017, 14 – 15:30h

[C40.146]

Moderation: Willington Ortiz, *Wuppertal Institute and Leuphana University of Lüneburg, Germany*

Tackling sustainability issues under situations of marginalization exacerbates one of the main challenges of transdisciplinary research, i.e. how to build spaces where people from different positionings (e.g. cultures of knowledge, sociocultural, political) can mutually create knowledge. This session will present and discuss research approaches aiming at integrating the perspectives of stakeholders whose positionings can be described as marginalized: situated far from geopolitical (in the “Global South”) and socioeconomic centralities (rural households).

SUSTAINABLE AND EFFICIENT WOODFUEL SYSTEMS IN SUB-SAHARAN AFRICA: APPLICATION OF A TRANSDISCIPLINARY RESEARCH AND DEVELOPMENT APPROACH

Mary Njenga, *Management of Agroecosystems and Environment, Post Doctorate in Bioenergy, Bioenergy Scientist at World Agroforestry Centre, (ICRAF), Visiting Lecturer at Wangari Maathai Institute for Peace and Environmental Studies, University of Nairobi, Kenya*, **Cecilia Sundberg**, *Department of Sustainable Development, Environmental Science and Engineering (SEED), School of Architecture and the Built Environment (ABE. KTH - Royal Institute of Technology, Stockholm, Sweden*, **Ruth Mendum**, *Rural Sociology and Women's Studies, Associate Director for Gender Initiatives, Office of International Programs, College of Agricultural Sciences, Penn State University, USA*

Key words: multidisciplinary collaboration, participatory technology development, gender integration.

For decades the public health experts, development donors, governments and NGOs have struggled to address what is characterized as the “problem of woodfuel use” in significant portions of the Global South including most of Sub-Saharan Africa. Woodfuels have positive impacts on human wellbeing as an affordable and convenient cooking and heating energy and at the same time negative impacts on human health through indoor air pollution, women and children’s workload in firewood collection, land degradation and contributions to climate change. Despite substantial investment, the majority of SSA households in both rural and urban areas continue to use woodfuels in inefficient cooking appliances and most of wood and charcoal production is unsustainable. Some concerned critics have suggested that woodfuels should be abandoned entirely and replaced with fossil fuel (LPG) or renewable options (solar). From a policy, scholarly and global development perspective do woodfuels as the most common source of home energy in Sub-Saharan Africa (SSA) undermine the wellbeing of people and sustainable development? This complex question can only be addressed by a group of people from different disciplines working together to understand the context, identify and develop interventions and technologies, engage in implementation, assess impacts and communicate lessons. The presentation will describe the approach being taken by a research team lead by a female Kenyan environmental and bioenergy scientist who grew up in a rural village where firewood collected from local national forests remains the norm. The team includes an environmental engineer, an agricultural economist, a sociologist integrating gender and local farmer/researchers all working together along the whole project cycle. This multidisplinality approach also addresses woodfuel issues from a nexus perspective with links to food and nutrition security, health and environmental management. The team applies participatory methods and approaches, laboratory and cooking assessment, training and education for farmers and post-graduate students, reflective monitoring and impact assessment and communication. The team is working on technologies that include growing firewood on-farm in agroforestry systems, briquette technology for recovery of energy from organic residues/waste and cookstoves that improve efficiency in woodfuel use. The team believes that the resistance that previous technological solutions have encountered may have resulted from a failure to understand the cultural investments that women, who do the majority of cooking and woodfuel

sourcing, have in their traditional modes of energy use. Thus, in a series of studies, the team is devising a means to investigate user's needs and preferences and how those desires may impact what changes to their woodfuel and cooking practices that individuals and communities are willing to consider. The work combines transdisciplinary processes which blend natural science and social science methods, with an explicit commitment to prioritize African women's experience and expertise both in terms of the research team's make-up and leadership, as well as including woodfuel-using rural women in the research process. Because resistance to adoption of sustainable woodfuel technologies has cost millions over decades, we believe that the best solutions will emerge from a rigorous inclusion of women's lived experience in the investigative process itself. In the presentation, we illustrate the legitimate scientific research outcomes and cross-culturally respectful exchanges between all parties, in particular across the considerable physical, educational and socio-cultural distances between researchers and research subjects, natural and social scientists, Africans and non-Africans and those who have advanced training and those who do not.

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INTEGRATED PEST MANAGEMENT TO ACHIEVE ON-FARM QUALITY IMPROVEMENT: A TRANSDISCIPLINARY APPROACH

Lauren Rosenberg, Mark Swilling, Stellenbosch University, South-Africa, Walter Vermeulen, Utrecht University, The Netherlands

The role of higher education and the types of knowledge production that researchers engage in have come under scrutiny in terms of the transformative capabilities that are being developed within sustainability focused teaching and learning. Transdisciplinary (TD) research is a methodology that seeks to transcend disciplinary boundaries in order to solve problems in the real world. However, to date, the majority of TD case studies and models have been specifically designed and evaluated within a developed world context and the literature on doing individual transdisciplinary research work within a developing world context is almost non-existent. In this article I aim to contribute towards this emerging area of knowledge production using a case study from rural Burundi with a research approach called Emergent Transformation Design (ETD). The ETD was solution-focused and, unexpectedly, led to the creation of an Integrated Pest Management (IPM) programme for coffee that has to date created 26 full time jobs for Burundian youth. Using this case study I focus on how TD research can be done in a developing world context by individual researchers and raise critical points for consideration for supporting individual TD researchers working within developing world contexts.

TRANSDISCIPLINARY STUDY OF NATURAL RESOURCE MANAGEMENT UNDER POVERTY CONDITIONS COLLABORATING WITH VULNERABLE SECTORS

Tetsu Sato, Ehime University, Faculty of Collaborative Regional Innovation, Japan

Key words: poverty, developing countries, autonomous innovations, pluriactivity of livelihood, resource sustainability

Vulnerable sectors under poverty in developing countries depend on various natural resources to sustain and improve their livelihood in complex social-ecological systems. They also play critical roles to provide affordable food resources for local residents under poverty. However, these marginalized sectors have been rarely regarded as a partner of transdisciplinary research to co-design research agenda and co-produce knowledge to cope with societal challenges. In order to support autonomous decisions and actions among these stakeholders to promote co-management of natural resources for their well-being, we designed theory and methodologies of transdisciplinary approach partnering with vulnerable sectors in poverty in Malawi, Africa since 2013, and expanded their applications in five other countries in Africa and Asia Pacific. The methodologies focused on promoting dialogue and collaborative thinking among vulnerable stakeholders and scientists by removing paternalism of scientists to build trust, reducing gaps of knowledge and values caused by deficit models, and coping with constraints of decisions and actions among marginalized sectors. We were successful in building mutual trust between the stakeholders in poverty and scientists, and co-designing research agenda by visualizing imminent challenges facing these vulnerable and marginalized stakeholders. We also identified and co-produced meaning of innovative and autonomous actions emerging among them, including autonomous seasonal protected areas for fisheries operated under strong leadership of a traditional authority, innovative smoking and value-added supply systems of fisheries products, small-scale irrigation using limited water resources in dry season, and creation of a local tour-guide association with a potential of community-based tourism. Importance of co-creating shared knowledge and tools

by stakeholders under poverty and transdisciplinary scientists to co-produce autonomous innovations to contribute to plural livelihood activities and sustainable resource uses are discussed in relation to improvement of well-being and adaptive societal transformation toward sustainable futures driven by vulnerable sectors under poverty themselves.

SESSION 18: SOUTH-NORTH CONTEXT

Wednesday, 13.09.2017, 14 – 15:30h

[C40.146]

Moderation: Rebecca Freeth, Leuphana University of Lüneburg, Germany

The four presentations in this session all dig beneath the surface of transdisciplinary truisms and address deeper, stickier questions of structural inequalities and asymmetrical power. What does this mean for meaningful engagement across the boundaries that transdisciplinary research seeks to transcend? This has particular import for knowledge collaborations between actors in the global south and north. These presenters ground their inquiry within lived, often-vexing experiences spanning sustainable land management in Southern Africa to health research in Guatemala.

FROM TRANSDISCIPLINARY RESEARCH TO INTERCULTURAL DIALOGUES – PRACTICAL, CONCEPTUAL AND METHODOLOGICAL EXPERIENCES

Stephan Rist, Karl Herweg, Johanna Jacobi, Centre for Development and Environment/CDE and Institute of Geography, University of Bern, Switzerland

While the concept of transdisciplinarity is clearly defined as a communicative process of co-creation of knowledge between members of the scientific and non-scientific communities, its relation with interculturality is not yet systematically explored. This is mainly due to the misbalance regarding the conceptual precision of two sides of the transdisciplinary actor-configuration. While the notion of members of the scientific communities denotes a diverse, but nevertheless concrete set of people producing knowledge according to the main formal epistemic procedures underpinning humanities, natural and social sciences, the notion of “non-scientific actors” is completely vague. Are we referring to these actors as people forming part of a class, an ethnic group, a political party, a religious group or as members of social movements or NGOs? According to the theory of transdisciplinarity the definition of the characteristics of the non-scientific actors is depending on the specific context in which transdisciplinary knowledge production happens; moreover, equal participation of these actors in the joint production of system, target and transformation knowledge is crucial. However, even if the non-scientific actors are known and their participation is assured we still do not know to what degree their core values, cultural backgrounds, and orientations are integrated in the process of transdisciplinary knowledge co-production. We can only answer this question if we consider actors not only as people representing organizational diversity or societal hierarchies. They also represent different forms of knowledge that are embedded in culturally shaped epistemological procedures and ontological assumptions which are framing their claims on truth, rightness and objectivity. In other words, the challenge here is to find out how the transdisciplinary knowledge co-creation can be enhanced so that it can integrate different epistemological procedures and ontological assumptions, i.e. the cultural foundations and orientations. This results in a truly inter-cultural dialogue between members of the scientific and non-scientific communities involved in process of communicative interaction. Based on many years of inter- and transdisciplinary research and education the authors of this paper will show that transdisciplinary research provides an interesting basis for expanding the process of co-creation of knowledge shifting from a multicultural context to an intercultural dialogue. We start by demonstrating that transdisciplinary research:

1. implies the construction of common epistemological grounds between the theories of cognition represented by natural and social sciences, i.e. realism, materialism, constructivism, idealism.
2. means recognizing that the resulting new common epistemology, often called “mode 2” knowledge production, can be understood as the result of enhanced reflexivity about the epistemic foundations underlying different scientific traditions of knowledge production.
3. provides a basis for further transformation if its new epistemology is confronted with the basic values represented by non-scientific actors participating in a transdisciplinary research initiative.
4. and thus allows us to reflect on epistemological procedures and ontological assumptions of non-scientific actors related to truth, rightness and objectivity; this, in turn, enables us to integrate several epistemologies and ontologies to start a truly inter-cultural dialogue.

Based on case studies we will show the strengths and weaknesses that such an intercultural process of transdisciplinary knowledge co-creation encounters if it is promoted on the level of an international graduate school.

ACKNOWLEDGING MULTICULTURAL AGENDAS IN HEALTH RESEARCH: TRANSDISCIPLINARITY AS A TOOL FOR COLLECTIVE VOICING AMONG THE MAYA OF GUATEMALA

Mónica Berger-González^{1,2}, Brigit Obrist¹, Jakob Zinsstag¹, Danilo Álvarez², John McCracken² and Celia Cordón²; ¹*Swiss Tropical and Public Health Institute, Department of Epidemiology and Public Health*; ²*Universidad del Valle de Guatemala, Center for Health Studies*

Access to healthcare by indigenous populations in Central America has been addressed by policy makers in the region from a predominantly hegemonic discourse, where cultural pertinence succumbs to the goal of extending coverage of a dominant biomedical paradigm. In Guatemala, the traditional Maya medical system exists in inequity and ostracism amidst medical pluralism, leaving little room or mechanisms for the collective voicing of emic concerns and demands. In an attempt to encourage Maya self-representation in an equitable discourse with Academia, the first transdisciplinary health research project was launched in Guatemala from 2011-2015 around the topic of cancer. Councils of Maya Elders from five ethnolinguistic groups co-directed the project, leaving behind important lessons on what it takes to engage in reflexive, participatory research. Their views on the main obstacles and opportunities to engage with the biomedical and public health system are summarized here. A key finding was that the transdisciplinary process was capable of agglutinating indigenous leaders to formulate a unified discourse aimed at national self-representation, making use of the open spaces created by foreign co-leaders. Transdisciplinary methods also exposed sociocultural determinants of health not visible before, while the process emphasized the need to include other societal actors to effectively change the public health landscape. In response to these demands, a new transdisciplinary project was initiated in 2016 in the Maya Q'eqchi' region of Poptún, focusing on zoonotic diseases suspected of taking a severe toll on the health of local populations. The organization of this research project operating under the OneHealth paradigm is presented here, carefully examining the ways in which the transdisciplinary approach catalyzes emic representations of the Maya medical knowledge system, builds a bridge to better understand social and cultural determinants of health, empowers local populations to sustain effective dialogue with government authorities and other societal actors, and overall provides a platform for a pluri-voicing of community concerns aimed at increasing the cultural pertinence and efficacy of health interventions.

INTERFACES IN TRANSDISCIPLINARY DEVELOPMENT RESEARCH: THE FINE LINE IN COMPLEX FIELD REALITIES

Girma Kelboro, Till Stellmacher, *Center for Development Research (ZEF), University of Bonn, Germany*

Key words: boundary-work, participatory methods, science-development interfaces

Scientific work on development-related problems passes through multiple boundaries and cultures when applying transdisciplinary methodologies. The requirements for scientific rigor have to find organized pathways through negotiation processes with many players including 'local communities', development workers, and state agents. The participatory processes followed to engage with these players tend to be more informal and dynamic. The interests and incentives of partners involved vary from researchers and policy makers to community groups. Therefore, scientists are required to exercise their ability to gear the complex interaction processes to addressing research questions. At the same time, they have to balance between scientific disciplinary rigor and applied participatory work. Based on experiences in Ethiopia, Ghana and Nigeria with the "Follow the Innovation" approach within the framework of the BMBF-funded project BiomassWeb (Improving food security in Africa through increased system productivity of biomass-based value webs), we will share the processes, challenges and lessons learned using Mollinga's concept of "boundary-work." We will show cultural interfaces and the challenges social scientists face as development researchers to find a conceptually and methodologically justified fine line, as well as to strike their balance between applied development research and science based development.

TRACING INTER- AND TRANSDISCIPLINARY RESEARCH IN THE POST-COLONIAL MAKING. INSIGHT FROM A NORTH-SOUTH COLLABORATION

Laura Schmidt, *Universität Hamburg, Germany*

Keywords: Knowledge co-production; Power relations; North-South partnership; Southern Africa; Reality check

Transdisciplinarity has become a buzzword, promoted as a suitable approach to address today's urgent global challenges. In its conception, transdisciplinary research acknowledges the limits of traditional disciplinary knowledge production valuing different bodies of knowledge to be of relevance for the issue at hand, regardless of their discipline or academic education. Despite the concept's popularity, however, the issue of how to break with existing structural inequalities and knowledge hegemonies in order to realize a mutual knowledge co-production in research practice remains vague. Recognizing that knowledge and science is produced and reproduced by the social structures that pervade them, doing transdisciplinarity is thus shaped by pervasive power relations reflected in who decides what is researched, who is invited to contribute, who has control over the resources, whose values determine the desired solution etc. Revealing and reflecting such structures is essential to better understand transdisciplinary research in the making beyond its rhetoric. Using a transdisciplinary research project dealing with sustainable land management in Southern Africa as a case study, empirically based insights are presented. Based on semi-structured interviews with project partners and stakeholders, project observations and a document analysis, the in-vivo study pictures the underlying interests, discourses, mismatching institutions and resulting power relations that position those involved regarding their influence on and benefit of the transdisciplinary process. Looking at the specific case of the collaboration between German and African partners, a special emphasis is put on the analysis of the structural inequalities and power imbalances emerging from the post-colonial setting in such North-South partnerships. The results indicate that while the label of transdisciplinarity is used as rhetorical legitimisation of action, predominantly traditional academic, hierarchical and Western knowledge orders are reproduced. In conclusion, the high need for serious attempts of self-critical processes of reflexivity in transdisciplinary practice and a fundamental reorientation in the academic and funding system are emphasized in order to challenge existing asymmetries and slowly approach the idea of knowledge "co"-production.

SESSION 19: BROKERING BEYOND EDUCATION

Thursday, 14.09.2017, 14 – 15:30h

[C40.153]

Moderation: Jeremias Herberg, *Leuphana University of Lüneburg, Germany*

Promising transdisciplinary processes are cooking-up in the interstices of the educational system. But can students and teachers convene transdisciplinary communities despite institutional conventions? The presented inquiries and projects unearth how students and teachers already are in a privileged, yet complex position to do so: Students help to communicate rural know-how across generations, teachers can mobilize various brokering roles, and platforms in teacher education provide for cross-professional togetherness.

INTERGENERATIONAL DIALOGUE AS RESEARCH TOOL TO SAVE CULTURAL HERITAGE

Andrea Sieber, *Alps-Adria-University Klagenfurt, Austria*

Cultural heritage, in all its components, is a valuable, if not vital, factor for the re-organisation of our societies on the basis of dialogue between cultures, respect for identities and a feeling of belonging to a community of values. The transdisciplinary research project "BreadTime" (2015-2017, BMWFW Austria) focuses on the cultural sustainability and the manifold agricultural and manual practices of the cultivation and processing of grains and the production of bread in the rural region Lesachtal/ Austria. An inter- and transdisciplinary setting (university, local schools, local registered societies, media partners, Austrian Commission for UNESCO) enables to analysis, protection and documentation the local knowledge and practice related to the intangible cultural heritage of "Lesachtal Bread" which is part of the intangible cultural heritage list of the UNESCO. How could this local intangible cultural heritage be saved and transferred from one generation to the next generation? Citizens can participate in narrative dialogue groups as an open communicative space to collect and discuss local knowledge or write down and send their experiences to the collection of biographical records. Furthermore, students from Secondary lower and upper schools were instructed in the method of oral history and interviewed elder locals about the traditional cultivation and its significance in their daily rural life. By this way oral history interviews not only served as a tool of communication and mutual learning, but also as empirical basis for several research products, such as a documentary of local narratives and local practices related to bread.

Using this method of intergenerational communication, it could access and secure the local narratives and traditional knowledge, and communicate interest and curiosity between the youngsters of the valley and elders of the community. This form of intergenerational oral history brings together people of different generations in a socially integrating way, with mutual interest and also emotional bonds. As opposed to passive learning, oral history is very engaging and hands-on, not only collecting stories but also creating social bridges between generations.

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TEACHERS AS BROKERS: ADDING AN OUT-OF-SCHOOL PERSPECTIVE TO HIGHER EDUCATION TEACHER PROFILES

Carla Oonk¹, Judith Gulikers¹, Renate Wesselink¹, Pieter J. Beers², Martin Mulder¹; ¹ *Education and Competence Studies; Wageningen University & Research, The Netherlands;* ² *Dutch Research Institute for Transitions; Erasmus University Rotterdam, The Netherlands*

Keywords: higher education, university-society engagement, teacher professional development, competence, teacher profile

The mutual benefits of university-community partnerships and the design of transdisciplinary learning environments in which students and faculty staff collaborate with partners out-of-school, received increasing attention in scholarly debates since the last decade of the 20th century. However, studies contributing to these debates only pay oblique attention to what is required from faculty staff in their role of teacher to perform in university-community collaborative practices (e.g. Brundiers et al., 2013). Until the date, a systematic identification of roles and tasks that teachers fulfil in university-community collaborative learning environments, and the competencies that teachers should master to carry out these tasks, has not been done. Moreover, existing higher education teacher profiles (e.g. Giles et al., 2008), providing generic frameworks for tasks and/or competencies of current higher education teachers, do only slightly address out-of-school oriented elements. This is remarkable since collaboration and mutual learning between higher education institutions and society requires a lot from stakeholders, students and faculty staff involved (Oonk, 2016). The school doors, representing a boundary between the relatively safe and autonomous school world and the complex multi-stakeholder society, literally have to be opened to start mutual exchange. Opening school doors challenges school management and teachers who both need to develop the willingness and ability to connect to society, create university-community partnerships, contribute to research agendas, develop real life learning activities and start to collaborate with external stakeholders, while guiding the students through the transdisciplinary learning processes. If universities want to meet the demand of society-engagement, teachers should be prepared for transdisciplinary, out-of-school collaborative practices. A better understanding of responsibilities and requirements for teacher performance at the interface of university and society is needed to inform current and future teachers' professional development. The study as presented here first aims at developing a comprehensive role, task and competence profile for teaching in the Dutch exemplary, transdisciplinary Regional Learning Environment (RLE). In the RLE, multiple stakeholders, including local and regional governmental officials, entrepreneurs, employees from NGOs, citizens, and university staff and students co-create new knowledge towards sustainable regional innovation. A descriptive, qualitative study investigates teachers' roles, tasks and competencies required in the RLE by using a document analysis, and teacher interview and focus group data. The study secondly aims at identifying out-of-school oriented gaps in existing higher education profiles. This was done through a systematic analysis of existing higher education teacher profiles. The resulting RLE teacher profile offers nine roles, 19 tasks, and 24 competencies, the majority of which are new to existing higher education teacher profiles. Starting a scholarly debate on out-of-school additions to existing higher education teacher profiles, the paper develops an argument for adding the role of broker, including boundary crossing competence, and a collaborative learning attitude, to existing teacher profiles. Practically, the resulting RLE teacher profile is a useful source for identifying teacher requirements in other transdisciplinary, out-of-school learning settings and for developing consequential professionalization trajectories.

Key readings:

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CONCEPTUALIZING TRANSDISCIPLINARY COOPERATION IN TEACHER EDUCATION

Robin Straub, *Methodology Center and Zukunftszentrum Lehrerbildung (ZZL) - Leuphana University of Lüneburg, Germany*

Keywords: Transdisciplinary Cooperation; Teacher Education; Third Space

In Germany, the teacher education system is characterized by a traditional divide into three stages located within different institutional settings (universities, teacher training seminars and schools). Although this consecutive system itself was approved throughout different expert commissions, there has been a long lasting and ongoing debate about the lack of integration among the institutions involved. To overcome the gap between academic proficiency and vocational expertise collaborative approaches linking universities, schools, teacher education seminars and extra-school partners have been initiated. However, these relationships have been criticized for being asymmetrical due to an assumed superiority of academic knowledge over more experienced based knowing of practitioners (Zeichner, 2010). Bearing this background in mind the case of the ZZL-Network at the center for teacher education, Leuphana University Lüneburg will be introduced. The aim of the ZZL-Network is to bring together various groups of actors involved in teacher education as such as researchers, students, teachers, teacher trainers and extra-school partners in order to develop new seminars, teaching units and trainings collaboratively. Thus, a better linkage between research and practice in teacher education should be achieved. Furthermore, the project is considered to establish an environment where these partners encounter on an equal footing and jointly shape a culture of togetherness. Drawing on this case study this contribution provides conceptual considerations how to frame and analyze the given case in terms of transdisciplinary cooperation. Applying the concept of third space (Bhabha, 1996; Zeichner, 2010) the ZZL-Network can be understood as a jointly created sphere of enunciation and encounter between different groups of actors sharing their perspectives, knowledge and expertise as well as needs rooting in their particular professional contexts. This opens up the potential for fruitful exchange as well as critical debate fostering the identification and cultivation of synergies and complementarities. However, the creation of a third space is to be considered both conditioned by various prerequisites and also highly vulnerable. On the one hand, a third space requires mutual appreciation of particular differences (otherness of the other) and the capability of each party to contribute and participate on equal footing. On the other hand, the negotiation of asymmetries becomes an essential challenge. In order to analyze the ZZL-Network in terms of a third space a conceptual approach will be discussed which links dimensions of integration in transdisciplinary research (Jahn, Bergmann, & Keil, 2012) and the concept of epistemic living space (Felt, 2009). This framework is characterized by its focus on three analytical dimensions comprising the epistemic, the social and the organizational. These dimensions are considered to cover principal aspects constituting the third space linking professionals from different organizational contexts. The epistemic dimension refers to capability to intertwine various sources of knowledge ranging from academic research to personal experience as well as mutual learning. The social dimension informs about the emergence of interpersonal relations indicating acceptance and appreciation. Finally, the organizational dimension provides insights about ownership as well as participation of the involved parties. Moreover, the concept of epistemic living spaces allows to relate these dimensions more integratively by highlighting personal sentiments as such as “feeling intellectually and socially at home” within the third space (Felt, 2009, p. 19). Finally, an outline will be provided how these dimensions have been operationalized in order to conduct empirical research on the case study applying a standardized questionnaire and social network analysis. Preliminary results will be sketched out and discussed.

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SESSION 20: TRANSDISCIPLINARITY IN AND THROUGH EDUCATION

Tuesday, 12.09.2017, 14 – 15:30h

[C40.147]

Moderation: Maik Adomßent, *Leuphana University of Lüneburg, Germany*

The role of educators in hosting and learning transdisciplinary processes is well recognized but rarely discussed. This session addresses schools and universities in both regards. On the one hand, the presenters examine the institutional challenges of transdisciplinary teacher education, team science education, and educational brokering. In international contexts, educators are

presented as instigators of transdisciplinary processes, while struggling with systemic constraints. On the other hand, the session stresses the corresponding competences that educators can develop, teach and learn in and from transdisciplinary settings.

DESIGNING FOR TRANSDISCIPLINARY LEARNING IN HIGHER EDUCATION

Tanja Golja, *University of Technology Sydney, Australia*

Keywords: transdisciplinary education, learning ecology, collectivity

While the significance of transdisciplinary approaches to advance scientific discovery and address formidable societal challenges is becoming well understood in research contexts, the question of how and why transdisciplinary approaches might reconfigure education paradigms is more recently being interrogated in practice. Transforming its approach to the integration of teaching and learning, research and industry/community engagement, the University of Technology Sydney (UTS) has recently established a Faculty of Transdisciplinary Innovation and strategically committed to expanding transdisciplinary degree programs as new models are envisaged. Such emerging initiatives in the provision of transdisciplinary education also recognise an institutional need to grow designing and teaching capability in this field, preparing faculty and professional staff with the relevant knowledge, practices, connections and resources to make powerful contributions. Our development of a Graduate Certificate in Transdisciplinary Learning in Higher Education responds to that call for a scholarly professional learning program not only tuned to considering how academics and practitioners learn transdisciplinary practices – ways of thinking, acting and being in the world – to support their students' learning and equip them to tackle the open, complex and networked problems in today's world but also tuned to how such communities design research approaches for studying these diverse collective learning contexts.

In this paper, I report on how and why designing the Graduate Certificate of Transdisciplinary Learning in Higher Education is framed in ecological learning terms, including graduate attributes and the course intended learning outcomes. In particular, I explicate the nature of designing for collective learning in that context – structured as three interrelated subjects (Transdisciplinary learning: experiences and models; Designing for transdisciplinary learning: principles and practices; Transdisciplinary project: development and research) – where three challenges are being addressed:

1. An ethical challenge to enact democratic representation and experimentation, ensure genuine collaboration and establish 'a common world', maintain rigour and establish due process, and sensitise to heterogeneity and difference.
2. A theoretical challenge to explain, understand and support collective learning within nested learning systems: in particular, to establish an ecological complexity orientation, taking into account the nested agency in this learning system and outlining theoretical principles for supporting and studying collective learning
3. A pragmatic challenge to develop an integrated education/research framework for educational design and implementation, research design and analysis, that aligns with and emerges from contemporary concerns of stakeholders in transdisciplinary education development, fulfilling a methodological requirement.

Team Science Education - A comparison of approaches in the US, UK, and the Middle East

Sawsan Khuri, *University of Exeter, United Kingdom*

Keywords: collaboration, cross-disciplinary, team dynamics, soft skills, curriculum

The Science of Team Science community in the United States has been actively encouraging scientists of every discipline to take courses and workshops in team dynamics and effective collaboration. A few universities have begun to offer full semester courses in team science, and many more offer two-hour workshops that are open to students, staff and faculty. Curricula and ideas for such courses, and information about the institutions that currently run them, are freely available within the community via resources such as the NIH's Team Science Toolkit (Khuri and Wuchty, 2015), and the recent report by the National Academies of Science (2015). These courses and workshops often start with an overview of team building strategies, team dynamics, and leadership styles. Cross-disciplinary collaboration is presented as a cross-cultural exercise, with each "culture" having its own rules and regulations with regards to sharing of data, rewards mechanisms, and administrative infrastructure. Participants are then introduced to topics in conflict resolution, trust issues, and acknowledgement systems, that are specifically tailored towards the scientific community and cross-disciplinary projects. The more successful workshops include activities and break-out sessions that enable experiential learning, and longer running courses can include a team-based project that stretches the participants beyond their usual collaboration circles. Student evaluation of this type of training has been highly positive, and highlights the importance of the skills and perspectives learned. There are no reports yet of follow up one or more years later, which would

indicate the long-term impact of these courses on the collaborative strengths of the participants. Having said that, informal verbal communication with people who have undertaken this training indicates that they have found it invaluable as they embark on collaborative projects within and outside of their immediate research groups. However, the topic is dealt with quite differently in other parts of the world. As when the efforts first began in the US almost a decade ago, academics in other countries seem to still take it for granted that people, and particularly scientists, would know how to work in teams. There does not seem to be a parallel to the Science of Team Science community in the UK nor in the Middle East, even though most individual researchers would agree that team work is important and training in team dynamics would lead to more effective collaborations. Funding agencies in the UK, such as the Biotechnology and Biological Sciences Research Council, provide guidelines that encourage soft skills training for graduate students, and this is delivered independently and differently by the universities that receive these students. Team Science training strongly featured in the recommendations made by the Academy of Medical Science (2017), and it is therefore expected that more academic programmes will start offering such training as the need for it increases. In the Middle East, team science per se is almost unheard of. This presentation will outline the educational efforts in team science currently available in the US, the UK and elsewhere.

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THE BOUNDARY CROSSING RUBRIC: A NEW TOOL TO DEVELOP AND ASSESS INTER- AND TRANSDISCIPLINARY LEARNING OUTCOMES

Carla Oonk, Judith Gulikers, Karen Fortuin, Wageningen University and Research, The Netherlands

Keywords: boundary crossing, learning outcomes, rubric, transdisciplinary learning

Many different learning environments and teaching methods for inter- and transdisciplinary learning have been developed and implemented. Less attention has been paid to the development and assessment of learning outcomes that specifically address learning with and from 'the other' (Oonk, 2016), although transdisciplinary learning inherently requires students and scientists to learn with and from other disciplines, practices and/or cultures (Scholz & Steiner, 2015). What makes a student a good transdisciplinary learner? Wageningen University (Education and Competence Studies group) recently developed the so-called boundary crossing rubric based on the boundary crossing theory of Akkerman & Bakker (2011). The rubric is meant to explicate what students can learn and develop in inter- and transdisciplinary learning settings when learning with 'the others'. Boundary crossing refers to the ability to cross boundaries between the own and others' expertise, perspectives and cultures, establish new connections, learn from 'the other' and co-create new knowledge or practices. Four boundary crossing learning mechanisms are expected to catalyze learning across the boundaries, i.e. identification, coordination, reflection and transformation (Akkerman & Bakker, 2011). This rubric operationalizes these four learning mechanisms into eleven assessment criteria, and distinguishes four levels of performance (i.e. observable behaviour) for each assessment criterion. A good 'boundary crosser' than for example:

- is able to identify what expertise is needed to execute a project at hand, and knows and explicates his/her own limitations in this respect;
- stimulates and facilitates the collaboration of people involved in a project;
- actively searches for ways to learn from others;
- explicates how multiple perspectives and expertise are used and integrated in a project to deliver a better end result.

From February 2016 onwards, the rubric has been presented to, and discussed with various teacher teams in both higher education and secondary vocational education, mainly in the fields of life sciences education and medical education. These discussions were meant to explore whether the teachers indeed recognized in the rubric what their students learn in transdisciplinary settings. Teachers responded positively about the usefulness of the rubric. A few examples of teacher responses: 'This tool enables me to give words to what I see my students learn.' 'By using this tool, I will discuss with my students which basic attitude is needed to work in a transdisciplinary setting.' 'I will align our competence matrix for the transdisciplinary course we teach, with the rubric.' Currently, we explore how to make use of the rubric in various inter- and transdisciplinary educational settings. Is the rubric useful in defining learning outcomes, both on the individual and/or team level? How about using the rubric for expectation management with all stakeholders involved? Could the rubric be used as a tool to formatively assess and coach students during

their learning trajectories? And, maybe the rubric is also useful for summative assessment in the final stage of a learning trajectory? This presentation aims (1) to introduce you to the set-up and theoretical foundations of the rubric, (2) to show the usability and added value of the rubric for various educational contexts, and (3) to discuss if and how the rubric, now used for student learning, can also facilitate learning and development of other learning parties like scientific staff, clients, stakeholders or maybe even a transdisciplinary team of learners.

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A PROPOSAL FOR A TRANSDISCIPLINARY HERMENEUTICS BASED ON BASARAB NICOLESCU'S CONCEPT OF TRANSDISCIPLINARITY

Hans Dieleman, *Autonomous University of Mexico City, Mexico*

Basarab Nicolescu sees transdisciplinary hermeneutics as a key element of his concept of transdisciplinarity. He never developed a proper conception of transdisciplinary hermeneutics himself though. Over the past years I developed a transdisciplinary hermeneutics approach based on an integration of various ways of knowing, in particular formal, embodied and embedded ways of knowing. The paper and presentation will present the concept of transdisciplinary hermeneutics developed. Subsequently, it will address the question how such a concept of transdisciplinary hermeneutics can be taught in universities. A teaching program will be presented created around seven teaching essentials: 1. "Creating a Learning Environment of Being-in-the-World"; 2 "Training the Body to be an Organ of Perception"; 3 "Engaging Students in Phenomenological Ways of Knowing"; 4 "Facilitating Students to Engage in Reflective Practice"; 5 "Facilitating Students to Engage in Dialogue"; 6 "Facilitating Students to Learn in Analytical and Conceptual Ways"; 7 "Seeing Education as a Dispositive of Form and Content".

SESSION 21: OPPORTUNITIES AND CHALLENGES OF SCIENTIFIC CAREERS IN TRANSDISCIPLINARY RESEARCH

Tuesday, 12.09.2017, 11:30 – 13h

[C40.147]

Moderation: Judith Kahle, *Leuphana University of Lüneburg*

Keywords: transdisciplinarity, scientific career, research, higher education

Transdisciplinarity – a popular and vexed research approach: Since its first introduction by Erich Jantsch in 1972 transdisciplinarity evolved into a popular, increasingly discussed, and applied research approach across different academic disciplines, e.g. health sciences, development policies, nanotechnology, biotechnology and sustainability science. A growing number of individual researchers, research groups and institutes across the globe conducts transdisciplinary research or research on transdisciplinarity and integrates transdisciplinarity into higher education. Transdisciplinary research approaches are more and more debated and frequently promoted among funding bodies and science policy on national and international level as well.

Transdisciplinarity – a coming of age research approach characterized by conceptual openness, normativity and institutional boundaries: However, transdisciplinarity is still a rather young research approach that is characterized by its various understandings and conceptualizations across different scientific communities as well as by its strong normative intention to contribute to the solution of real world problems by reflexive and collaborative research. It also lacks a set of widely accepted quality criteria and is embedded in institutional structures that are mostly designed for disciplinary research and little interdisciplinary exchange. Hence, scholars in and lecturers of transdisciplinary research are frequently confronted with questions of legitimacy.

Opportunities and pitfalls of scientific careers in transdisciplinary research: It is exactly between the poles described above where researchers and lecturers pursue their careers as pioneers in a rather new land. In this session, we aim to explore this new land. Therefore, we at first take a close look at the key actors of transdisciplinary research. Guimarães and her colleagues allow detailed insights into the individual personalities, motivations and attitudes of both early career and senior scientists towards transdisciplinary careers. In a second step Rogga et al. focus on the influence that participation in transdisciplinary research projects has on the career of researchers including their reputation in academia. In a third step and with a focus on higher education Fam et al. provide comprehensive results on structural, institutional and operational limitations and opportunities of

transdisciplinary capacity building and empowerment for current post-graduate students, for potential future young scientists, so to speak. This session concludes with a joint discussion of current research insights, including (i) their potential to be transferred to similar (transferability) or larger contexts (upscaling) as well as (ii) their implications for future research and future structural, institutional and operational adaptations in academia.

WHO IS DOING TRANSDISCIPLINARY RESEARCH? AN EMPIRICAL CASE STUDY OF CHARACTERISTICS, TRAITS AND ATTITUDES

Maria Helena Guimarães, *Landscape Dynamics and Social Processes Group, Instituto de Ciências Agrárias e Ambientais Mediterrâneas (ICAAM), University of Évora, Portugal*, **Christian Pohl**, *Transdisciplinarity Lab USYS TdLab, Department of Environmental Systems Science, ETH Zurich, Switzerland*, **Marta Varanda**, *SOCIUS/Instituto Superior de Economia e Gestão, Universidade de Lisboa, Lisbon, Portugal*, **Olivia Bina**, *Instituto de Ciências Sociais, Universidade de Lisboa, Portugal; Geography and Resource Management, the Chinese University of Hong Kong, China*

Keywords: Transdisciplinary individuals, transdisciplinary attitude, academic system

This article presents the personality trait, attitudes, aspirations and career decisions of researchers formally developing transdisciplinary research, teaching and networking. The work presented is based on content analysis of 12 exploratory interviews to individuals (7 females and 5 males) ranging from young career to senior researchers, from 31 to 63 years old. Literature review describes transdisciplinary individuals as intellectual risk takers and institutional transgressors with a respect for the roles of creative inquiry, cultural diversity and relativism. The personality traits and attitudes found on the interviewees confirm the existence of such characteristics. Participants interest in transdisciplinarity goes back to the beginning of their educational training, even before they came across with the concept. To a smaller portion of the interviewees, the experience in transdisciplinary research started after achieving a well established academic career within a specific field. Behind these two types of researchers, lies an important debate regarding the current mainstream academic system and the future of transdisciplinary research. Respondents fell into two broad categories: (1) Most interviewees describe themselves as not interested in an academic career, perceived as inaccessible due to the inherent transgressive characteristic of transdisciplinary research. (2) A few interviewees stated to be interested in an academic career. Because of this, their strategy is to also develop disciplinary research and by doing this double work, keep scientific production at a high level, mainly publications. Such strategy was described as indispensable to achieve the competitive standard necessary for career progression. The question arises: would the interest of scholars involved in transdisciplinary research increase if, an academic career targeting this form of research was available? In summary, while our sample is limited, the research provides much needed additional empirical evidence about the subjective and embodied experiences of transdisciplinary participants; that is, how they become transdisciplinary individuals. Further, it confirms the dimensions already described about a transdisciplinary individual. By presenting such characterization, this work adds to the existing critique about a lack of recognition within academia of transdisciplinary research. Finally, the results contribute to the underlying debate regarding the place of transdisciplinary in academia; should the terrain be prepared since bachelor degree to this type of work or should it be a possibility after being rooted in a specific disciplinary setting? Despite the existence of proponents in both distinct manners of looking at the issue, our results show that most transdisciplinary researchers have been as such since the beginning and continue in the academic system by being in the right place at the right time, by persistency and by the capacity to face a big load of work. Our analysis ends by asking what would happen to transdisciplinary research if, learning how to do it and having the condition to do it existed?

CONCEPTIONS AND ASSESSMENTS OF TRANSDISCIPLINARITY AS A RESEARCH MODE – EMPIRICAL INDICATIONS FROM TD-RESEARCHERS IN SUSTAINABLE LAND USE SCIENCE

Sebastian Rogga¹, **Jana Zscheischler**^{1,2}, **Nadin Gaasch**¹, *¹Institute of Socio-Economics, Leibniz Centre for Agricultural Landscape Research (ZALF), Germany; ²Centre for Technology and Society, Technical University Berlin, Germany*

Keywords: TD conception, TD assessment, case study, mixed methods approach, survey data, semi-structured interviews

Transdisciplinary (TD) projects are for many scientists often associated with a considerable amount of resources, which does not occur in conventional research. At once, involved scientists report and stress an enhancement of individual capacity building, an expansion of practice networks and other aspects. However, what influence does participation in TD projects have for researchers and practitioners? How do they assess the transdisciplinary approach in general? Are there differences between the level of TD-experience and the position alongside the science-practice division? And which conclusions to career options in science or out-

side science can be drawn? Single studies (Lange and Fuest 2015, Blaettel-Mink 2013) have pointed out in the past that participating in transdisciplinary projects has a negative impact on the fate and career opportunities of young researchers from science. They often leave the science system and are thus also lost to the TD-community as promoters and knowledge providers. In recent transdisciplinary research, funding instruments are currently being used to equip TD-working scientists with societal-problem-relevant trainings (in particular innovation management skills). Are scientists thus more nudged to pursue non-academic career paths, or does a broad set of skills belong to professions of modern scientists? We will present the results of a quantitative survey among transdisciplinary researchers that are or have been associated with the German scientific system in the field of sustainability sciences. They are part of a broader study (Zscheischler et al., forthcoming), whose data were surveyed by more than 178 respondents in autumn 2016. Within the scope of the survey, the participants were asked to assess the TD's concept and the potential of the TD concept as well as an experience-based assessment of the success of respective TD projects. The quantitative data will be backed-up by additional qualitative inquiry data which was gathered from semi-structured interviews with participants of the same funding programme. Our results suggest that, among the scientists surveyed, a clear practical preference has already been developed in the notion of TD and the solution orientation of TD is considered more important than the scientific gain in knowledge. Typical career building blocks, which are attributable to the scientific system, are also devalued in the success assessment of a TD project. We will discuss whether and to what extent the empirical findings are case-specific or can be discussed in a wider scope.

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META-CONSIDERATIONS FOR PLANNING, INTRODUCING AND STANDARDISING INTERDISCIPLINARY LEARNING IN HIGHER DEGREE INSTITUTIONS

Dena Fam, *Institute for Sustainable Futures, University of Technology Sydney, Australia*, **Scott Kelly**, *Institute for Sustainable Futures, University of Technology Sydney, Australia*, **Tania Leimbach**, *Institute for Sustainable Futures, University of Technology Sydney, Australia*, **Lesley Hitchens**, *Faculty of Law, University of Technology Sydney, Australia*, **Michelle Callen**, *Strategy and Communications, Vice-Chancellor's Office, University of Technology Sydney, Australia*

Keywords: interdisciplinarity, collaborative research, institutionalization

The increase in 'challenge-driven', 'problem/project focused' university models where students work across disciplines to solve complex real-world problems has been driven by a number of emerging factors: a rise of competitors in the education sector, employers demanding more than subject based knowledge, the emergence of online educational resources, greater acknowledgement that new models of education are needed to deal with contemporary problems/challenges and an increasingly globally competitive field requiring universities to innovate to maintain student numbers. A challenge/problem/project-based model to higher education offers a new kind of learning; treating traditional pedagogy and disciplinary expertise as a foundation, with the addition of inter- or transdisciplinary approaches supporting (1) project based work, (2) team oriented skills development, (3) addressing complex problems and (4) engagement with external partners to support collaborative research and collective learning. The challenge of institutional conservatism and embedded university structures tend to discourage risk-taking and the development of degrees that cross disciplinary fields and instead perpetuate support and reward systems maintaining disciplinary silos. In this paper, we draw on a 12-month program of work at the University of Technology Sydney (UTS) – a culturally diverse and progressive university - to identify structural, institutional and operational challenges and opportunities for introducing interdisciplinary (ID) postgraduate degrees that support collaborative research and collective learning across disciplinary faculties. The options for overcoming these challenges were thoroughly explored through a series of interviews and workshops with key stakeholders. In total, 27 interviews and multi-stakeholder workshops (including 20 staff across faculties, operations and marketing), and discussions held with senior staff (55 staff) academic committees (28 staff). The outcome from the consultation period was the identification of perceived barriers and opportunities for introducing and implementing ID programs at UTS and suggestions for how these barriers could be overcome. From this process seven key themes were identified using a clustering analysis. These key themes included the need to:

- (1) Create an interdisciplinary culture and community: ensuring a course narrative, cohort experience, collaborative culture and ID community
- (2) Support interactive engagement with industry and external stakeholders: considering cradle to cradle industry engagement and future proofing education with integrative thinking
- (3) Understand external market dynamics: articulating and responding to market research, testing the market and providing a 'try-before-you-buy' model for ID programs
- (4) Overcome transition tensions: through faculty partnerships, new rewards and incentives, preplanning, funding, timetabling, incentivising staff and resourcing for the development of ID programs
- (5) Plan for successful governance: creating leadership, ownership and oversight structures for ID programs, while streamlining existing programs
- (6) Design courses for innovation and flexibility: offering the potential for modularity, online platforms, structuring core subjects, trialing and evaluating ID programs
- (7) Ensuring quality, rigor and relevance: seeking professional and academic accreditation, considering breadth verses depth and being able to clearly articulate the "story" and value of ID programs.

If the higher education sector is in fact undergoing a fundamental transformation in terms of its role in society, mode of operation and economic structure and value, understanding the core structural, institutional and operational barriers are central to the ongoing viability of such change. This paper has aimed to contribute to this emerging discussion with evidence and data from the experience of the University of Technology Sydney of minimising barriers and maximising the opportunities of introducing and on-going implementation of ID programs in practice.

SESSION 22: QUALITY AND EFFECTS OF TRANSDISCIPLINARY RESEARCH. REFLECTIONS ON TRANSDISCIPLINARY GRADUATE PROGRAMS

Thursday, 14.09.2017, 11:30 – 13h
[C40.153]

Moderation: *Anna Henkel, Leuphana University of Lüneburg, Germany*

Transdisciplinarity as the combination of knowledge and action from both interdisciplinary scientific as well as practice fields, is discussed as the key chance and challenge in dealing with modern society's self-endangerment. As involving both theory and practice, transdisciplinarity is confronted with the double requisite of convincing academically as well as outside academia. The session reflects this double requisite by presenting an analysis of possible quality criteria and three case studies regarding different aspects of performed transdisciplinary research.

QUALITY CRITERIA FOR ASSESSING TRANSDISCIPLINARY DOCTORATES AND IMPLICATIONS FOR THE EXAMINATION PROCESS

Juliet Willetts, Cynthia Mitchell, Institute for Sustainable Futures, University of Technology Sydney, Australia

Keywords: transdisciplinary doctoral thesis, examination or assessment, thesis examiner, critical reflection

Objective: Our intent is to provide a new framing, itself aligned with transdisciplinarity, for the assessment of transdisciplinary doctoral research outputs. Our focus is the transdisciplinary doctoral thesis/exegesis and the process, outputs, and outcomes of its examination. Societal and scientific problem under investigation: To date there is a gap in quality frames to assess transdisciplinary doctoral work. This poses a significant challenge for students, supervisors, and examiners, particularly in systems where the examination of a thesis represents the principal means for assessing doctoral completion and quality. The lack of such frames means transdisciplinary students and supervisors face increased risk of unexpected and possibly unwarranted assessments at the most critical juncture of the PhD process, in part because of different worldviews (ontology, epistemology, axiology, societal vision, anthropology (Hedlund-de Witt, 2013)). This discourages supervisors and students from taking a transdisciplinary path even though the need for the kind of insights that transdisciplinary approaches provide is already significant and rapidly growing. Scientific and societal goals: Quality criteria have been established and explored for disciplinary theses. In this work, we sought to investigate whether and how such criteria might be meaningfully adapted to a transdisciplinary realm, and to explore what the ramifications might be for examiners and the examination process. Description of research process and methods: We synthesised our proposed framework through critical review and reflection on three sources of analysis, insight and inspiration spanning theory and practice:

- The emerging field of transdisciplinary research evaluation, now broad and deep enough to withstand a formally constructed systematic review (Belcher et al., 2015);
- The field of doctoral pedagogy, particularly the examination process; and
- 20 years of forging a path with our Institute's transdisciplinary higher degree research program in sustainable futures, including our leadership of the program and supervision of students.

Summary of findings: We identified five distinct criteria that together describe the necessary breadth and depth of quality required in a transdisciplinary doctoral thesis/exigesis:

- (i) substantial research that makes an original contribution to knowledge and other broader societal outcomes;
- (ii) demonstrated reflexivity and responsiveness;
- (iii) research integrity as demonstrated by credibility, legitimacy and alignment;
- (iv) appropriate breadth and depth of engagement with both research context and literature; and
- (v) coherent argument across diverse conceptual and methodological approaches and perspectives.

We believe the implications of adopting these criteria in practice are significant. The application of the criteria ought to be undertaken with the same degree of reflexivity inherent in the criteria themselves. This suggests a need for examiners to open themselves to critical reflection, and, for example, to reflexively document and share their process of assessing the thesis, making apparent their worldview and reflecting on the interaction between it and the thesis/student/supervisor under examination.

Key Readings:

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BRIDGING THEORY AND PRACTICE IN TRANSDISCIPLINARY RESEARCH - A CASE STUDY OF A MULTI-STAKEHOLDER-WORKSHOP WITH THE CCES WINTER SCHOOL "SCIENCE MEETS PRACTICE 2017"

Daniel Ketzer^{1,2}, Gabriel Abu-Tayeh³, Johanna Goetter⁴, Marilou Jobin⁵, Simon Knüsel⁶, Valeria Superti⁷, Rohini Athavale^{8,10}, Patricia Fry⁹, Matthias Zimmermann^{8,10}, Sandra Probst-Rüd^{10,11}, Carolina Adler⁵; ¹*Department for Physical Geography, Stockholm University, Stockholm, Sweden*, ²*Institute for Technology Assessment and Systems Analysis, Karlsruhe Institute of Technology, Karlsruhe, Germany*, ³*Department for Business Administration, University of Bern, Bern, Switzerland*, ⁴*Department for Environmental Economics, Brandenburg University of Technology Cottbus-Senftenberg, Cottbus, Germany*, ⁵*Institute for Environmental Decisions, ETH Zurich, Zurich, Switzerland*, ⁶*Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Community Ecology, Birmensdorf, Switzerland*, ⁷*Chair for Green Economy and Resource Governance (GERG), École Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*, ⁸*Eawag, Swiss Federal Institute of Aquatic Science and Technology, Kastanienbaum, Switzerland*, ⁹*Knowledge Management Environment LLC, Zürich, Switzerland*, ¹⁰*Department of Environmental Systems Science, Institute of Biogeochemistry and Pollutant Dynamics (IBP), ETH Zurich, Zurich, Switzerland*, ¹¹*Department of Environmental Microbiology, Swiss Federal Institute of Aquatic Science and Technology (Eawag), Dübendorf, Switzerland*

Keywords: Multi-Stakeholder-Workshop, Teaching, Co-Production, Group Dynamics, Practice

Transdisciplinarity is not only an emerging approach in today's research practice, but is also an integral part of teaching in higher education. Here, a challenge is to successfully transfer theoretical knowledge into practice. Because real-world knowledge exchange cannot be simulated, we propose a case study format that combines coaching in theoretical methods and practical experience in a real-world situation. In this presentation, we describe a case study experience of this knowledge exchange for a group of 20 PhD students who attended the CCES (Competence Center Environment and Sustainability) Winter School "Science meets Practice", held in January and February 2017 in Wislikofen, Switzerland. In the two weeks of coached training, the PhD students planned and conducted a multi-stakeholder workshop where representatives from civil society, private and public sector, and science were brought together to deliberate on "Rheintal+", a municipality amalgamation project in Switzerland. The aim of the workshop was to formulate potential transdisciplinary research questions, particularly regarding the potential impact of the amalgamation on land use and regional planning. The workshop combined multiple methods that varied in the degree of formal and informal interaction: (1) a walk, (2) a focus group, (3) a plenary discussion, and (4) a market place. The walk at the beginning of the workshop enabled the stakeholders to express their tacit knowledge. The subsequent focus group discussions

provided more detailed insights on perceived risks and opportunities related to (a) a joint vision for the amalgamated municipalities, and (b) regional planning. Afterwards, a plenary discussion was used for collecting and integrating the thought collectives and insights from the focus groups and developing interdisciplinary research questions. After the workshop, the methods and the research questions as well as the discussions were reviewed and displayed in a market place format. The market place was open to the public and the stakeholders to facilitate an informal exchange on the outcome of the workshop. The Winter School not only focused on the analysis of the workshop output, but also provided room for (i) guided reflections within the group of responsible PhD students, (ii) analyses of the process and the results, as well as (iii) lessons learnt through the monitoring of the planning and conduction of the workshop. In order to enhance the learning process for an effective workshop planning, students and teachers analyzed the particularities and the effectiveness of the methods used (e.g., reflections were made on group dynamics and the implications of bringing together stakeholders from different thought collectives). Furthermore, a follow-up survey invited the stakeholders to give additional feedback to the different phases of the workshop and the developed research questions. Through this survey, we received additional feedback on content- and process-related aspects, which are usually not captured in conventional research practices. In our presentation we stress the process, the results and lessons learnt at the Winter School from diverse perspectives. Besides a deepened understanding and provision of new knowledge on the amalgamation process and the identification and validation of research questions for transdisciplinary research, we also evaluated the exchange of tacit knowledge and the bridging of thought-collectives. Simultaneous observations on group dynamics among the stakeholders (e.g., power relations) and within the group of PhD-students (e.g., explicit vs. implicit coordination) provide valuable insights for transdisciplinary research processes and allow for methodological reflection. To conclude, learning about transdisciplinary methods is enhanced and achieved when theoretical inputs go alongside with practical experience in planning, implementing, and reflecting in a real-world setting that enables experiential learning, such as a workshop.

WHEN WORLDS COLLIDE? FIRST EXPERIENCES WITH INTER- AND TRANSDISCIPLINARITY

Anna-Lena Berscheid, *Universität Paderborn, Germany*, **Nils Wingenbach**, *Universität Paderborn, Germany*

Keywords: transdisciplinarity, case study, interdisciplinarity, negotiation process

As recent phenomena – such as climate or demographic change, finite resources or overpopulation – threaten the wellbeing of mankind as well as our environment, the urgent need for a change is widely postulated. Therefore, a “transformation” (National Advisory Council on Global Change 2011) is needed, “if we want to preserve the accomplishments of modernity” (Schneidewind/Singer-Brodowski 2013). This transformation entails “shifts in technology, new welfare concepts, manifold social innovations and a yet unrivaled level of international cooperation” (National Advisory Council on Global Change 2011). As this massive project cannot be undertaken by academic research alone, business corporations, policy makers and members of civil society are also asked to take part. Thus, the unanimous opinion of most policy and decision makers for research funding is that transdisciplinarity is pivotal for coping with so called “great societal challenges” (Wissenschaftsrat 2015). It is expected that academic research produces better and more usable knowledge in cooperation with society than while being isolated in the infamous ivory tower. In this contribution, we aim to present our own experiences with transdisciplinarity imposed by a public funding program. We are both part of a graduate school engaged with the research on hybrid lightweight materials where doctoral candidates from differing fields (mechanical engineering, physics, chemistry, sociology), basic and applied science, are brought together and are asked to work inter- and transdisciplinarily for the very first time in their academic career. Hybrid lightweight materials are mostly developed for the use in car and plane construction and promise to make vehicles not only lighter, but also safer by using the ‘right material at the right spot’. As the variety of possible lightweight materials is huge – one can think of different metals, but also synthetic materials and fiber-reinforced hybrids – the research projects and approaches of the involved doctoral candidates and their supervisors differ widely. Therefore, we want to point out the negotiation processes we had on how to make transdisciplinary research work. Those came along with heated discussions, institutional as well as individual obstacles, factual constraints and differing academic cultures. In particular, we want to present a little case study about one junior researcher usually engaged with modelling crash situations of cars who is trying to reach out to unknown territory – namely geriatric care work. It was not only difficult to think outside of academic boxes and imagine possible stakeholders outside of the industry for the research we make, we also experienced complications in contacting those stakeholders and imparting our ideas in an understandable way. Thus, this contribution is meant as critical reflection on what could be done better or differently, on how we imagine and think of stakeholders, on ways how to treat them and about what we really can expect from ‘non-academic’ input, especially when the research project is already settled. We consider our work in this graduate school as an ongoing and precious learning process which is why we want to share our insights and failures with other people from the field. Furthermore, we hope for valuable input on how to improve our efforts in the future from other attendees of the conference.

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EXPERIENCES FROM AND CONCEPTUAL FRAMEWORK OF FLÜGE – A GRADUATE SCHOOL FOLLOWING PRINCIPLES OF INTER- AND TRANSDISCIPLINARITY IN RESEARCH AND TRAINING

Florian Fischer, Alexander Kraemer, *Bielefeld University, School of Public Health, Germany*

Keywords: refugees, health, graduate school

The so called “refugee crisis” dominated discussions within political, societal and scientific communities in recent years. Besides other challenges, particularly aspects of health care provision and health promotion for the refugee population need to be placed on the agenda. For that reason, a graduate school following the principles of inter- and transdisciplinarity in research and training was initiated in 2016. The graduate school entitled “FlüGe – Challenges and opportunities of global refugee migration for health care in Germany” encompasses 13 doctorate positions and covers a broad range of disciplines (public health, psychology, molecular biology, cognitive systems, theology, philosophy and law). FlüGe is characterized by the combination of expertise and competence from various disciplines from the natural as well as social sciences. A characteristic of the graduate school is a centralized and common data collection using a cohort study design. In addition to scientific excellence, the active involvement of practice partners, such as clinical, self-help and governmental institutions from the beginning is a core issue of the graduate school. In doing so, the graduate school aims at identifying the short-, middle- and long-term challenges and opportunities of global migration for healthcare in Germany and developing practical solutions. This talk will focus on how inter- and transdisciplinarity are incorporated both in research and training of the doctoral students. The qualification concept within the graduate school includes different kinds of workshops and exchange with practical partners. Due to the thematic focus of FlüGe, various aspects which are also central in conducting transdisciplinary research, such as interculturality, heterogeneity, integration, values and norms, play a vital role in the graduate school. According to this, several workshops on the handling with language mediators, the relevance of considering cultural aspects and further methodological aspects have been and will be conducted. Experiences with setting up and carrying out the qualification concept and research strategy will be described. The transdisciplinary aspects of the program will be highlighted to provide the basis for discussions on their benefits for academic and professional profiles of graduates.

SESSION 23: BUILDING STUDENT CAPACITY TO ADDRESS COMPLEX SOCIETAL CHALLENGES

Tuesday, 12.09.2017, 11:30 – 13h

[C40.152]

Moderation: Ilan Chabay, *Head of International Fellowships, Incubator, and the Knowledge, Learning, and Societal Change International Research Alliance at the Institute for Advanced Sustainability Studies, Germany*

The session will start with three presentations each describing a different educational program with distinct, but related approaches to interdisciplinary learning needed to address complex societal issues. The presentations will stimulate thinking about preparing students in tertiary education for collaborative design, interdisciplinary and transdisciplinary research, and complex systems thinking. The objective in this session is to expand our thinking about ways to build and assess capacity to address the essential challenges of science with and for society in diverse contexts.

LEARNING IN-BETWEEN ACADEMIA AND SOCIETY: DESIGN PRINCIPLES AND AN EXAMPLE FROM WAGENINGEN UNIVERSITY

Valentina C. Tassone, *Wageningen University & Research, The Netherlands*

This presentation introduces educational principles that can encourage the development of learning spaces in between academia and society within curricula, and that can equip students to be responsible actors in a complex world. Those principles, developed within the context of the EnRRICH (Enhancing Responsible Research and Innovation in higher education curricula) project, are: education for society, education with society, educating whole persons. Those principles will be discussed not only conceptually, but also by means of a case study: the Wageningen University MSc course “Academic Consultancy Training” (ACT). During the ACT course students work as academic consultants and innovators, within multi-disciplinary teams, on real world inter-disciplinary projects for and with external societal partners called commissioners (such as CSO, governmental organizations, businesses, etc.). The course attempts to equip higher education students to tackle collaboratively complex societal problems by making use of various disciplines and forms of knowledge. The course engages teams, of about six students, for a total of eight weeks and for a total of 12 ECTS-credit points. The course runs five times a year; it engages yearly almost 1,000 MSc students, from various social sciences, environmental sciences and natural sciences programs at Wageningen University, which are executing yearly about 160 real life projects. The ACT course fosters an education for society in the sense that it engages students in projects dealing with a range of real life societal challenges, related for example to climate change, energy, water, biodiversity and well-being. During the course, the teams engage into an academic consultancy process from the framing of the challenge to the development of a scientifically sound and practically relevant advice for their commissioners. This may result in an advice about the design of a new technology, a next step in regional development arrangements, a policy, a business strategy, a communication plan, etc.. Additionally, the course fosters education with society, because it allows the development of learning spaces in-between the scientific and the societal spheres. The ACT teams discuss and take into account knowledge and perspectives of the commissioner, of the scientific advisor assigned to the project, and of other (societal) stakeholders. Such ACT design can foster a process of social learning and collaboration, and it can allow for learning to take place when various perspectives, norms, and values are present. Additionally, the course allows students to learn within multiple learning domains and attempts to foster whole persons development. ACT teams need to understand the problem at hand and apply knowledge for tackling it (learning to know), reflect on their attitudes and collaborate (learning to be), engage into presentation, communication activities, and actions when working on their project (learning to do). Furthermore, through a supportive course, students can engage into practicing various competencies of their choice within the dimensions of anticipation, reflexivity, inclusiveness and responsiveness. During the presentation findings will be shared highlighting both strengths and challenges when learning in between academia and society.

ENHANCING COMPLEXITY THINKING TO DEAL WITH WICKED PROBLEMS

Coyan Tromp, *Institute for Interdisciplinary Studies, University of Amsterdam, Netherlands*

Keywords: Interfaces and boundaries, Models for change and transferability & Other: complexity thinking and wicked problems

Complex problems such as climate change and energy, food and water issues are spread out over several disciplinary knowledge fields. Within the inter-/transdisciplinary bachelor programme of Future Planet Studies at the University of Amsterdam we aim to deal with these issues by offering an approach that covers both the natural and social domain, and to some extent that of the humanities too. In our philosophy of science course, we try to offer students conceptual tools in complexity thinking, to learn them how to deal with the so-called ‘wicked problems’. One of the main obstacles to overcome in the context of complexity thinking is the apparent dualism or dichotomy between positivism and interpretivism, i.e. the philosophical positions that are traditionally held rather exclusively in the natural and social domain respectively. In this presentation, I will discuss the philosophical tools that help students how to overcome the existing dichotomies. We do that by, first, making them reflect on the basic ontological and epistemological assumptions they involve, such as realistic and objectivistic presuppositions, or their contrary pendants: constructionistic or relativistic presuppositions. Next, we invite them to express a set of apparently opposed positions in a mind map, inviting them to use metaphors or analogies to make the abstract terms more workable. And lastly, we ask them to try and build a bridge between the chosen positions, i.e. to bring into view in their mind maps how the apparent dichotomies can be overcome in ontological and epistemological meta-positions. For instance, while a Mastermind metaphor may serve as a visualisation of the combination of a realistic ontology and objectivistic epistemology, and a narrative as a visualisation of the combination of a constructionistic ontology and relativistic epistemology, a choral metaphor might be an option to bridge those two

positions. What the exercise hopefully brings, is an understanding of the fact that it needn't necessarily be a problem that several truths seem to exist (e.g. various claims that X or Y is the best solution for climate change may be valid), but that this doesn't mean we'd have to give up our aim to distinguish true from false claims (e.g. give in to the idea that climate change denial claims are just as valid as any other claim). This way, we try to bring into view some of the characteristics of complexity thinking, which according to some represents a new way of thinking, or even a complete new paradigm that is needed to tackle the current challenges we are facing. By showing concrete examples of learning activities and assignments on this topic, the participants are supplied with ideas of how they themselves could address complexity thinking in their classrooms.

SCIENCE MEETS DESIGN: A METHODOLOGICAL APPROACH FOR EVALUATION OF INTERDISCIPLINARY RESEARCH-BASED LEARNING IN SUSTAINABILITY RESEARCH

Anett Kuntosch, Anne Dombrowski, Lukas Wortmann, Bettina König, Humboldt-Universität zu Berlin, IRI THESys, Germany, Alexandra Toland, Visual Artist and Landscape Planner in visual arts, soil culture, urban ecology, and the Anthropocene, Berlin, Germany, Myriel Milicevic, University of Applied Sciences Potsdam, Department of Design, Potsdam, Germany

Keywords: Interdisciplinary teaching, transformation, science & arts interface

It is assumed that working in interdisciplinary research teams results in added value for both the team involved and their research results. But working in such teams not only requires specific skills from the involved researchers, but also implicates that teaching needs to be designed in a different way. Ideally, such teaching would be integrated into ongoing interdisciplinary research to prepare students for work in interdisciplinary environments (Luederitz et al. 2016). However, both interdisciplinary research and teaching face the challenges of integrating and communicating knowledge in order to solve complex sustainability problems. Our presentation shows how the interface of science, arts, and design brings about new promising contributions to research and teaching programs that facilitate new forms of communication and knowledge exchange. We provide insight into an interdisciplinary seminar offered to students of Humboldt-Universität zu Berlin (HU) and the University of Applied Sciences Potsdam (FH Potsdam). The interdisciplinary teaching team consisted of one agricultural scientist, one science communications expert, two geographers, one designer and one artist. Jointly they conducted an interdisciplinary project-seminar titled "Chicken à la carte - knowledge maps for more sustainability". The seminar involved 25 students from more than ten disciplines (e.g. Agricultural Sciences, Ethnology, Psychology, Interaction Design, and European Media Studies); most of whom had not worked in such a setting before. Developing mutual understanding is an important step in the group-dynamics of interdisciplinary student teams. If interdisciplinarity is understood as an intercultural endeavor, it is of particular interest to address (1) the students' prior attitudes towards interdisciplinarity; (2) how those attitudes change during the interdisciplinary collaboration process, and (3) the potentials, limitations and conditions for complementary interdisciplinary teaching and learning at the interface between science, arts, and design in the framework of university research and teaching. The seminar was concomitantly evaluated to answer these questions using a mixed-methods approach that included a semi-open questionnaire, a group-documentation, participatory observation, and before and after drawings. The focus of the evaluation was to assess on the one hand the students' prior understanding of science and design, and on the other hand the impact of the process of interdisciplinary collaboration within the interdisciplinary student teams. The students were jointly taught by the interdisciplinary teaching team, did joint research and product design around the model case of transformation of animal production and consumption systems, focusing on the example of dual purpose chicken breeds. The seminar offered an explicit space for interdisciplinary and research-based learning by connecting it to the ongoing transdisciplinary innovation group ginkoo (www.ginkoo-projekt.de). To focus outcomes of the interdisciplinary collaborations, the seminar was product-oriented. The student groups were tasked with the creation of knowledge-maps that would integrate methodologies from the different team members' perspectives as well as external knowledge sourced from the wider research network of the ginkoo group. The student projects should also generate new knowledge stemming from interdisciplinary collaboration, experimentation, and the combination of different disciplinary methods. Our contribution presents selected results from this accompanying evaluation in combination with student products, reflecting on potentials but also on limitations of interdisciplinary research-based learning at the interface between science, arts, and design. We discuss the added-value of research-based interdisciplinary teaching and learning compared to classical disciplinary teaching approaches in the field of sustainability science.

SESSION 24: INTERCULTURAL STUDYING AND TEACHING – A GLIMPSE INTO CONCEPTS AND PRACTICE

Wednesday, 13.09.2017, 14 – 15:30h

[C40.153]

Moderation: Daniela Peukert, *Leuphana University of Lüneburg, Germany*

Holding intercultural skills is one of the key competencies to tackle complex problems and to foster transformation in diverse fields. But how can these skills be gained and taught? Which challenges do students and teachers face when studying and teaching in intercultural settings and how do they cope with them? How does learning in inter- and transdisciplinary teams across continents work and how do curricula and working environments support it? This session will explore these and further questions and give an insight into different concepts and practices of intercultural studying and teaching by means of three examples.

CHALLENGES IN MULTICULTURAL TEAMWORK – STUDENTS' EXPERIENCES AND PERCEPTIONS

K.P.J. Fortuin, D. Brinkman, R. Lie, A. Pap, Wageningen University, The Netherlands, V. Popov, University of San Diego, USA

Keywords: Multi-culturality, team work, mutual learning

Mutual learning among scientists and practitioners about complex, societal problems is an essential element of transdisciplinary processes. As such transdisciplinary processes may serve capacity building among all participants (Scholz and Steiner 2015). When people from different countries or cultures collaborate an extra layer of complexity is added to this mutual learning and capacity building. These people bring in their own, often culture based style of learning and collaborating which challenges the actual collaboration and learning that takes place in the group. To get a better understanding of these challenges and the way students deal with these challenges, we set up this research at a Dutch University with a lot of international students. We investigated the experiences of Higher Education students while collaborating and learning in multi-disciplinary and multi-cultural teams. This study aims to (i) identify which issues and challenges these students experienced, (ii) identify the strategies students developed to cope with these challenges, and, (iii) assess whether these challenges and coping strategies can be related to differences in cultural background. The research consists of three phases. In the first phase, 60 reflective journals of students of a course on Intercultural Communication Skills are analyzed, issues identified and consequently coded using the Template Analysis (Frambach, 2014). In these reflective journals students are expected to report about issues they observed in cross-cultural situations, either at the university, in daily life or during a stay abroad. Students also have to analyze their experience and describe how they coped with the cross-cultural incident. In the second phase 120 reflection papers of students collaborating on a sustainability issue in a multi-disciplinary and multi-cultural group (one group consists of 30 students with about 12 different nationalities) in an intercultural setting are analyzed, using the codes earlier identified. These students didn't have a specific training about intercultural communication and were instructed to report specifically about their experiences in their group work. In the third phase, data are analyzed to answer the questions: (i) Do students of different cultural backgrounds report on different issues and challenges? and (ii) Do students of different cultural backgrounds provide different interpretations of these issues and challenges or propose different strategies to solve these? We expect to find differences in perception and coping strategies between students from countries with high or low scores on collectivism, using Hofstede's dimensions to make a distinction between countries. Findings will yield guidelines for instructors and team coaches to facilitate team work in cultural diverse groups and to enhance the learning effects.

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TEACHING IN INTERCULTURAL AND TRANSDISCIPLINARY COLLABORATIONS BETWEEN UNIVERSITIES – THE GLOCAL CURRICULUM

Guido Caniglia, Beatrice John, *Faculty of Sustainability, Leuphana University of Lüneburg, Germany*

Keywords: Transnational collaboration, curriculum development, change agents, interculturality

Transnational collaborations between universities offer a unique opportunity to prepare students for the complexities of an increasingly interconnected world. They provide an underutilized opportunity to create spaces to exchange, critically appraise, and creatively produce knowledge on local to global scales as well as across disciplinary, cultural, and geographical boundaries. In our talk, we introduce a glocal model for transnational collaboration in higher education for sustainable development, which combines local and global teaching and learning. In the context of higher education for sustainable development, thinking glocally means mobilizing global and local considerations in how we: (a) conceive of the nature of (un)sustainability (Ontology); (b) produce knowledge about (un)sustainability (Epistemology); (c) act to support transformations towards sustainability (Ethics). Thinking glocally, we argue, has implications for the kind of education that can empower students to contribute to sustainability transformation. In our talk, we present the concepts of glocal curriculum and glocal teaching-learning environment using examples of exemplary implementations. Both concepts and implementation emerged in *The Global Classroom: Liberal Arts Education in the 21st Century (Global Classroom)*, a collaboration between Arizona State University (ASU) and Leuphana University of Lüneburg (Leuphana). We suggest that together the concepts and the exemplary implementation provide a model for transnational collaboration in higher education for sustainable development. The glocal curriculum rethinks the engagement of knowledge, skills, and mindsets through the demands posed by learning about sustainability problems and solutions on global and local scales and across geographical and cultural contexts. Also, the implementation of a glocal curriculum requires a glocal teaching-learning environment. Teaching-learning environments include not only physical but also emotional, social, and cultural aspects. Main dimensions of a teaching-learning environment are its direction, space, place, and people. Hence, we redefine a glocal teaching-learning environment as student-centered, digitally and virtually mediated, engaged in global and local contexts, and involving multiple relationships (e.g. instructors, students, local stakeholders etc). Through the alignment of curriculum and teaching-learning environments in local and global contexts, we point out the importance of integrated approaches to internationalization, digitalization, and curriculum reform in higher education for sustainability. We specifically show how intercultural competence can be fostered in a glocal teaching-learning environment even through the use of digitally mediated and project based teaching-learning environments. Glocal teaching and learning environments are a promising way to provide more students with intercultural and professional competence necessary to address sustainability problems. The glocal model relies less on mobility and more on domestic environments to support international and intercultural learning (i.e. internationalization at home). The use of virtual technologies to communicate and collaborate across different contexts can complement in-person meetings and collaborations that usually take place in expensive study-abroad programs. It allows students to connect with international peers and communities and to recognize local needs. Students have the opportunity to collaborate in an international community of scholars on projects that aim to positively impact their local communities. In this way, glocal approaches can contribute not only to the education of citizens who are able to think and act from local to global scales, but it also allows for an immediate impact of educational programs towards sustainability.

THE OPEN DESIGN MASTER PROGRAM - INTERDISCIPLINARY TEACHING BY DESIGN

Christian Stein, *Humboldt Universität - Excellence Cluster Image Knowledge Gestaltung*

Keywords: Interdisciplinarity, Interculturality, teaching, design, master

With "Open Design" an extraordinary interdisciplinary and intercultural master program has been introduced in 2015. The program has been developed as a cooperation between Humboldt University and Universidad de Buenos Aires since 2008. Students are receiving a double degree from both universities and study two semesters in Buenos Aires and one in Berlin. The master thesis can be done either in Berlin or Buenos Aires. The instituts collaborating are on the Argentinian side the Facultad de Arquitectura, Diseño y Urbanismo, of the Facultad de Ingeniería and the Facultad de Ciencias Exactas y Naturales at UBA. On the German side it is the Institut für Kulturwissenschaft of the Humboldt University in cooperation with the Helmholtz-Zentrum für Kulturtechnik and Excellence Cluster »Bild Wissen Gestaltung. Ein Interdisziplinäres Labor«. The core concept of the master is the so called "design turn" in sciences and humanities, which demands for highly diversified interdisciplinary competencies. The necessary knowledge includes analysis from a cultural studies and humanist perspective, historiography, scientific experimentalization and design synthesis. Within the teaching the students learn praxis oriented creative problem-solving strategies. But also social competences, self-reflection, interdisciplinary competence, intercultural competence, communication skills are a crucial part of the

master program. The program itself contains the three core modules "Elements", "Experiments" and "Projects", which are accompanied by practical laboratory modules for each core module, Electives and Language Courses and a dedicated module for "Intercultural and Interdisciplinary and Competence". The key topics throughout the whole program are Spatial Structures, Media Technologies and Design Strategies, which includes a huge variety of perspectives, methods, techniques and knowledge from many disciplines. The idea is to actively combine very different forms of knowledge and learn how to connect them, how to find them, how to develop ideas at the borders of disciplinary discourses and how to communicate beyond disciplines. The teaching is done in co-teaching teams, always at least combining one Argentinian and one German teacher from different disciplines. Overall 23 teachers from a multitude of disciplines in science, humanities and design are teaching in the program. This is combined with digital teaching and learning methods through a specifically for this purpose designed digital master platform. This platform organizes the master program, allows for communication and collaboration and integrates planning, progress and overview features. The first track of students who chose this extraordinary master program were 25 students from Argentina, Australia, Bolivia, Brazil, Columbia, Germany, Mexico and Turkey. The students themselves were not only different in their nationality, but also regarding their previous discipline. They came from Architecture, Business Administration, Communication Design, Costume Design, Design, Direction and Theater Sciences, Graphic Design, Image and Sound Design, Industrial Design, Journalism, Political Sciences and Visual Communication. The author of this presentation, Christian Stein, has been involved in the planning process of the master from the very beginning and has been teaching different courses in it too. He is leading the core area "Architectures of Knowledge" in the Excellence Cluster "Image Knowledge Gestaltung" at Humboldt University with six highly interdisciplinary projects. In his presentation, he will talk about the experiences with designing and teaching the master program, about the highly heterogeneous group of students and the learnings including the frustrations experienced on the way. He will also reflect about how to teach interdisciplinary skills and what that really means in a teaching context. On the way, he won't be able to hide his enthusiasm about the students group and their incredible motivation.

SESSION 25: EFFECTS, SUCCESS AND QUALITY: EVALUATING TRANSDISCIPLINARY RESEARCH

Wednesday, 13.09.2017, 11:30 – 13h

[C40.146]

Moderation: Matthias Bergmann, *ISOE - Institute for Social-Ecological Research, Frankfurt a.M., Germany*

Three presentations will address a number of issues concerning aspects of quality and success in transdisciplinary research (TDR): a study that aimed to gather insights into the perceptions and assessments of success for TDR projects from scientists and practitioners; capacity building among the research program participants; and quality criteria for the appropriate evaluation of transdisciplinary research. The three studies included scientists as well as practitioners into their investigations on evaluation of TDR.

SUCCESS OF TRANSDISCIPLINARY RESEARCH FOR SUSTAINABLE LAND USE – INDIVIDUAL PERCEPTIONS AND ASSESSMENTS

Jana Zscheischler^{1,2}, **Sebastian Rogga**², ¹*Centre for Technology and Society, TU Berlin, Germany*, ²*Institute of Socio-Economics, Leibniz Centre for Agricultural Landscape Research (ZALF), Germany*

Keywords: evaluation, quality criteria, impact measurement, land management

Evaluation is a major issue in discussions on transdisciplinary research (TDR). A large part of the literature on TDR is dedicated to the search for adequate evaluation approaches. Empirical studies often consider expert perspectives; however, knowledge on the experiences, attitudes and motivations of a broader science-practice community applying transdisciplinarity remains rare. In addition, as known from previous contributions (see Fuest & Lange 2015, Zscheischler & Rogga forthcoming) there is an evident gap between the ‚idealised‘ concept of transdisciplinarity and ‚real world‘ adopted practice. Given this gap, it seems highly questionable whether the often-promised benefits of transdisciplinarity will actualize and thus, whether measurement of TDR impacts may become possible. Apart from the need to develop techniques to show the effectiveness of TDR, there is also a need to explain the flawed application. The presentation will introduce results of a study that aimed to gather insights into the perceptions and assessments of success for TDR projects from scientists and practitioners. Project success is considered a social phenomenon constructed subjectively and intersubjectively by individuals and groups of individuals and reflecting attitudes, motivation structures and satisfaction (Ika 2009, Alderman & Ivory 2011, McLeod et al. 2012). Hence, we argue that a study of the perceived project success can provide valuable insights into the quality of cooperation between scientists and practitioners. In addition, we

sought to test hypotheses explaining the often non-ideal application of the TDR approach. The study is based on a mixed-method approach combining qualitative expert interviews with a quantitative survey reaching 178 respondents from practice and science. Results will show a high commitment to the targets of TDR projects and a basic shared 'success profile'. Nevertheless, there is currently a strong 'practice tendency', while TDR-specific benefits for the scientific knowledge gain remain ignored. The general success assessment of TDR projects can be described as rather moderate, which can be attributable to deficits in applying and managing TDR.

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WHAT IS SUCCESSFUL TRANSDISCIPLINARY CASE STUDY RESEARCH?

Silvia Tobias, Maarit Ströbele, *Federal Research Institute WSL, Switzerland*, **Tobias Buser**, *td-net, Switzerland*

Keywords: transdisciplinary knowledge; stakeholder views; evaluation; integration and collaboration; capacity building

This contribution assesses the effects of the transdisciplinary process in a comprehensive research program on its participants. In the research program, researchers and non-academics together developed scenarios for future urban and landscape development in four case study regions in Switzerland. The participants were grouped in two types of teams: four teams of local stakeholders in the case study regions and a few researchers responsible of the program synthesis, and one team of the funding partners from cantonal and national offices together with several researchers investigating the topic from their disciplinary perspectives. The transdisciplinary exchange took place in several events at different levels of cooperation: information, consultation and coproduction. The research program started with a workshop among the researchers and funding partners to jointly define the research questions, which was at the level of coproduction. The final meeting between the researchers and funding partners was a workshop to evaluate the transdisciplinary process, again at the level of coproduction. The local stakeholders participated in two workshops in their specific case study regions at the level of coproduction: one for developing visions about the future development of their region, and one for creating steering approaches to achieve their visions. At the level of consultation, the researchers and funding partners participated in field trips to the case study regions and in yearly meetings for project management. We further conducted explorative interviews with key local stakeholders for problem framing in the case study regions. At the level of information, we organized a conference where the researchers informed the funding partners about the results of their specific projects, and we presented the landscape visions, which the local stakeholders had developed in their first workshops. Finally, we organized information events in the case study regions to inform the local stakeholders about the findings and products of the research program. We chose two approaches for the evaluation: a quantitative approach with standardized questions in questionnaires for each actor group, and a qualitative approach with own observations and a simplified implementation of the Most Significant Change method. The evaluation revealed that the participants actually developed transdisciplinary knowledge during the process of the research program, but this knowledge is on the level of tacit knowledge and will not immediately turn into visible effects in the participants' real worlds. The main piece of transdisciplinary knowledge gained is that the participants discovered additional problem owners from other thought-styles. Together, they developed a feeling of companionship, which increased the relevance and legitimacy of the issue of urban and landscape development, and motivated the participants to link back the shared knowledge in their real worlds. Our findings confirmed the following success factors of transdisciplinary research: offer opportunities for excitement; choose a way of communication that facilitates mutual trust; provide boundary objects or have them produced jointly. To conclude, our transdisciplinary process facilitated certain capacity building among the research program participants due to the exchange of different thought-styles. However, the shared knowledge has to be made compatible with existing institutional structures in the specific scientific and practical realms, before it may induce capacity building there, as well.

TRANSDISCIPLINARY DEVELOPMENT OF QUALITY CRITERIA FOR TRANSDISCIPLINARY RESEARCH

Rico Defila, Antonietta Di Giulio, *Research Group Inter-/Transdisciplinarity, University of Basel, Switzerland*

Keywords: Quality criteria for transdisciplinary research, review of research, research programs

The paper will present results from the project "Civil society and research for sustainable development: demanding and fostering transdisciplinarity" (ZiFoNE). The project is the accompanying research project to the funding program "Research for sustainable development" (WfNE) in the "Vorab, Lower Saxony", managed by the Volkswagen Foundation. The project is funded by the Ministry of Science and Culture of Lower Saxony. The project leaders are Rico Defila, Antonietta Di Giulio, and Claudia Binder (EPPFL Lausanne, Switzerland). The project investigates three questions, one of them is devoted to the appropriate evaluation of transdisciplinary research. The results that will be presented focus on this research question. The question which criteria should be used in deciding upon the funding of transdisciplinary research projects is not new. The novelty of the findings we provide are due to the fact that we chose a transdisciplinary design to address the question: The practitioners we are working with in our inquiry are the Volkswagen Foundation, the Ministry of Science and Culture, and the interdisciplinary group of experts responsible to review the research proposals. In a first round of funding, the reviewers used a list of criteria provided by the ministry and the foundation. We observed the discussions of the reviewers, we interviewed the reviewers as well as members of the foundation and the ministry in order to learn about their experiences in applying this list and about whether they deemed the single criteria to be suitable, and we asked the applicants to judge the single criteria (online questionnaire). Subsequently, we discussed the empirical results with the members of the foundation and the ministry involved in the management of the research program and provided a collaboratively reprocessed list of criteria. This new list has been used in the second round of funding, and again we observed the discussions of the reviewers and asked the different actors about their experiences in using this list and about their judgement of the adequacy and applicability of the single criteria of this new list. The results are: A list of criteria that stood the test. Insights with regard to the interdisciplinary dynamics and challenges reviewers face in evaluating transdisciplinary research proposals. Suggestions on how the interdisciplinary review of transdisciplinary research proposals covering a broad diversity of research subjects could be facilitated.

DOUBLE SESSION 26: TO CONTROL OR NOT TO CONTROL? SOCIAL AND EPISTEMIC DILEMMAS OF CONTROL

Tuesday, 12.09.2017, 11:30 – 13h & 14 – 15:30h

[C40.704]

Organizers: Jeremias Herberg, *Leuphana University of Lüneburg, Germany* and Gerald Midgley, *University of Hull, United Kingdom*

Keywords: Control, Heterarchy, Collaboration

Any control for complex problems is itself riddled with complexity – this insight is a cornerstone of transdisciplinary research. More pointedly, transdisciplinary methodologies seem to grapple with a control dilemma: On the one hand, they acknowledge the increasing need to control for socio-technical and socio-ecological problems. On the other hand, they face the decreasing capability to legitimate and exercise control. Altogether this puts the issue of control center stage and begs the question: to control or not to control? The session explores social and epistemic dilemmas of control as they undergird transdisciplinary research, specifically addressing three questions:

- How do transdisciplinary researchers seek to gain or surrender control?
- Do transdisciplinary methodologies aspire to control for the uncontrollable?
- May transdisciplinary projects act as countervailing forces against given regimes of control?

Many important notions in transdisciplinarity are rarely discussed as control issues – be it social forms of leadership and non-hierarchical collaboration, the epistemic implications of post-normal science, transformational experiments, or inclusive information infrastructures. Yet public debates currently seem to both challenge and elevate the countervailing potential of transdisciplinary forms of control – be it debates about project-driven research, digital infrastructures, disciplinary hierarchies, the role of science in post-truth politics, or the push for evidence-based research. Transdisciplinary practitioners and theorists seem divided on the control dilemma. Some argue that transdisciplinary methods promise a more reflexive kind of control. They seek to purposefully re-distribute the liability, accountability, and responsibility to articulate and solve societal problems by means of synthetic ways of knowing or participatory negotiations. Others emphasize that transdisciplinary processes only thrive when transdisciplinary researchers surrender control and question linear regimes of collaboration. There seems to be a need to more explicitly discuss the epistemic and social circumstances that drive transdisciplinary approaches towards control, or away from it. The contributions therefore contextualize and discuss the methodological situations under which transdisciplinarity can mark

a shift in epistemic and social control: A shift towards sharing the social locus of control, towards purposefully controlling for social imbalances, towards controlling for scientists' political role, towards designing information infrastructures, or towards transformational experiments. A panel discussion on the questions above concludes the session. The session is organized within the project "Complexity or Control? Paradigms for Sustainable Development" (Leuphana University Lüneburg / Arizona State University, funded by the Ministry for Science and Culture of Lower Saxony / Volkswagen Foundation) at the Center for Global Sustainability and Cultural Transformation. The project studies the foundations for a science of sustainable development from an interdisciplinary perspective. See more on <https://complexitycontrol.org/>

POST-TRUTH, ANTHROPOCENE POLITICS AND THE NEW NORMAL OF POST-NORMAL SCIENCE

Katharine N. Farrell, *Berlin Workshop in Institutional Analysis of Social-Ecological Systems (WINS) and Resource Economics Group, Humboldt-Universität zu Berlin, Germany and L'Institut de Ciència i Tecnologia Ambientals, Universitat Autònoma de Barcelona, Spain*

Keywords: The Anthropocene, Post-truth, Post-normal Science, Epistemology, Transdisciplinary Methodology

Helping humanity, taken as a whole, to better understand and to effectively address both the causes and consequences of The Anthropocene are two great challenges of modern science. In spite of being decidedly European in origins, the late 20th and early 21st Century impacts of massive industrialized human activity, which characterize The Anthropocene, are today experienced and reinforced, sometimes wittingly, sometimes unwittingly, by human populations across the planet. In the early 1970's these impacts were widely discussed by myriad physical and social scientists, activists, politicians, philosophers and social theorists. The concepts 'wicked problems' and 'post-normal science' reflect a core methodological implication of their observations: modern science, which claims its right to intervene in political discourse based on its objectivity, is a European cultural artifact that is intimately bound up with the modern European man's battle to subdue a capricious and dangerous nature; that battle is reified in the impacts of massive industrialized human activity; therefore modern science cannot be neutral on the questions of what causes and of how to deal with the consequences of The Anthropocene; the terms, on the basis of which science has a right to intervene in political discourse must be reconstituted and established routines for ensuring quality control in science must be re-evaluated. While this has drawn attention within some academic circles over the years, it has not been widely addressed in political debate. With the advent of post-truth politics, an already epistemologically brittle Anthropocene Science is confronted with an epistemologically opportunistic Anthropocene Politics. Necessarily contingent and qualified scientific explanations and predictions concerning The Anthropocene are treated in the political debate as opinions, and political strategies are pragmatically adopted by concerned scientists. Exploring both dynamics as part of the euro-descendent Enlightenment cosmology, this text attempts to bring them under control.

LOSING CONTROL IN TRANSDISCIPLINARY RESEARCH: NEW FORMS OF LEADERSHIP, ENTITLEMENT AND RESPONSIBILITY

Merrit Polk, *University of Gothenburg, School of Global Studies, Sweden*

Keywords: collaboration, control, transdisciplinary

Transdisciplinary research refers to different types of knowledge production for societal change which are based on in-depth collaborative processes that integrate knowledge from different disciplines with values, knowledge, know-how and expertise from non-scientific sources. Similar approaches include issue-driven interdisciplinary, interactive social research, transformative or participatory sustainability science. While all of these approaches focus on solving problems in real-world contexts, and include collaborative processes which integrate values, knowledge and expertise from different sources, the way this collaboration is undertaken varies greatly. The locus of control of the research or knowledge producing process can be seen on a continuum from research driven on the one end, through shared processes in the middle, to practitioner driven on the other. One project can itself even embody all of these loci of control in different phases. Different forms of joint ownership and leadership, mutual commitment and shared responsibility entail varied researcher and practitioner control over the problem formulation and focus, as well as over the research design, execution, implementation and evaluation. Exemplified through a number of empirical cases, this talk will discuss how these different loci of control impact the research process, practically, epistemologically and contextually. This includes the juxtaposition between scientific excellence and practical relevance, the role of normativity, multiple claims to knowledge, and managing reflexivity and learning within and between the spheres of practice and research. It will also discuss the implications these issues have for the relevance, legitimacy and credibility of the project process and results, for both practitioners and researchers.

PRIOR HIERARCHIES INSIDE TRANSDISCIPLINARY?

Jan Hermann, *Forecasting and Predictive Analytics - Stuttgart, Germany*

Keywords: Epistemology, Transdisciplinary, Discourse, Control

This talk contributes to the question if transdisciplinarity and the basic assumption that every contribution is equally weighted is more an ideal situation. The applied view on transdisciplinarity raises the question if this basic assumption should be actively controlled for. Asking about the conditions that can make such a thing like transdisciplinarity successful it is safe to say that very much depends on the attitude of the stakeholders involved. It seems useful to think of a process chain like step1, step2 and so on. Figuring transdisciplinarity as a steady discourse with a loop structure and in-/output gives room for the idea that the classic problems most of us have in mind when talking about transdisciplinary do not necessarily have a defined solution or that this solution, if it can be defined, cannot be reached in a classic process chain. Steady improvements with changing conditions inside the transdisciplinary discourse could be a possible and optimistic scenario. To get to a transdisciplinary state and to stay inside the team/group/stakeholders/contributors have to agree on problems, the usefulness of methodologies etc. In a single disciplinary setting gaining cognition/results or solving problems require normative and explicative discourses within this discipline. In transdisciplinary settings, a structural imbalance can arise that leads to more power and control for disciplines which have an easier or more developed explicative discourse. Because of organization processes inside disciplines this imbalance must be even stronger when the setting is huge. Also loop structures might even intensify the structural imbalance. This underlines a possible need for control not necessarily in the sense of leadership but in a sense that the necessary explicative and normative discourses are moderated and ensured.

TRANSDISCIPLINARY RESEARCH TOPOGRAPHIES

Ulli Vilsmaier, *Leuphana University of Lüneburg, Methodology Center, Germany*

In transdisciplinary research we create space in-between positions that are constituted of specific ways of knowing, acting, and being. We challenge positionalities that are grounded either in the belonging to a certain discipline, societal field/domain, or culture. Transdisciplinarity, thus tackles knowledge systems, societal regimes and cultural orders. Against this background, I will discuss the changing research topographies that appear when we move from modes of modern, occidental, and disciplinary-based science, towards transdisciplinarity. I will discuss how the bipolar structure that is based on Aristotelian logic and the Cartesian subject-object divide, has been disrupted and transformed into a multipolar structure. This structure has the potential to overcome the divide between the researcher and their object. This is particularly evident when research claims to archive both, epistemic and transformative objectives, i.e. objectives that not only aim to explain or understand, but to transform concrete situations. Changing research topographies also imply changes for the controllability of the research situation. If objectification and, as a consequence, controllability of the research subject is no longer the method of choice, other strategies are required to create traceability and transparency of the research results. Going beyond these theoretical considerations, I will present how research topographies can be addressed and made visible in research teams and discuss the effect of it addressing the question of control.

CONTROLLING FOR EVIDENCE. WHAT ROLE CAN EXPERIMENTS PLAY IN TRANSFORMATIONAL SUSTAINABILITY SCIENCE?

Guido Caniglia, *Leuphana University of Lüneburg, Faculty of Sustainability, Germany*

Keywords: Evidence, Experiments, Control, Sustainability, Transformation

Evidence is the hallmark of science. The opportunity to test and justify hypotheses and theories with empirical evidence distinguishes scientific knowledge from other kinds of knowledge. Experiments have produced evidence in fields as diverse as quantum physics, psychology, and molecular biology. Transformational forms of experimentation are also crucial for sustainability science as they help researchers produce evidence about how to foster and achieve transformation towards sustainability. In this field, many laboratory and field studies, community-based initiatives, and pilot projects have been defined as experiments. In this talk, first, I provide a definition of experimentation in sustainability science as a scientific practice that relies primarily on an intervention and that allows for the production of empirical evidence. Second, I show that, in transformational experimentation, researchers can have different types of control over interventions as well as over change in system variables and contextual factors. I argue that the main challenge for the development of an evidence-based transformational sustainability science is to clearly characterize and organize the plurality of types of control that can help design interventions that foster and produce evidence about transformation towards sustainability.

SESSION 27: BEYOND RHETORIC – CONSTRUCTIVE DIALOGUE ON INTERDISCIPLINARY FUTURES

Tuesday, 12.09.2017, 11:30 – 13h

[C40.146]

Organizer: Roderick J. Lawrence, *University of Geneva, Switzerland*

Keywords: Disciplinarity, Divergence, Interdisciplinarity, Pluralism, Transdisciplinarity, Integration

Interdisciplinary research has been challenged repeatedly since its emergence in the early 20th century. Some claims of critics are unfounded and based on ignorance or misunderstandings of theories and methods of interdisciplinary contributions by scholars in natural and biological sciences, humanities and arts, and social sciences. Similar claims also appear and are extended in recent criticisms of transdisciplinary research. The contributors to this session share a concern about origins, motives, and rationale of the composite of criticisms, especially given their persistence in recent publications. Each of their contributions will analyse specific claims (such as the dichotomy between disciplinary and interdisciplinary research, or the goal of unification by integration) in order to move beyond divisions created by rhetoric to positively look forward to plausible futures of inter- and trans-disciplinary research.

ARGUMENTS AGAINST INTERDISCIPLINARITY

Julie Thompson Klein, *Department of English, Wayne State University, Detroit, USA*

This contribution will frame the session by answering criticisms in Jerry Jacobs' book *In Defense of Disciplines* (2013) and Harvey Graff's *Undisciplining Knowledge* (2015). Jacobs contends the promises of ID are illusionary, blurring boundaries does not promote more integrated research and teaching, interdisciplinary programs are not needed, cross-disciplinary communication is routine within disciplines, and administrative prioritizing imposes a form of centralization. Graff in turn contends scholars date the origin of interdisciplinarity too late, lack comparative studies, are blinded by a science-dominated standard version, perpetuate overstated claims and myths, are beset by conflicting definitions and purposes, and are preoccupied by a cacophony of terminology. While raising valid questions, questioning multidisciplinary superficiality, and presenting case-based evidence, both critiques overstate generalizations based on partial evidence and cherry picking quotations, engage in unprofessional attacks on other scholars, lack informed understanding of transdisciplinarity, and dismiss professional organizations that have produced a substantial literature on inter- and trans- disciplinarity.

References:

Graff, H.J. (2015). *Undisciplining Knowledge: Interdisciplinarity in the Twentieth Century*. Baltimore, MD: Johns Hopkins University Press.

Jacobs, J. A. (2013). *In Defense of Disciplines*. Chicago: University of Chicago Press.

DIVERGENCE AND PLURALITY: DEFINITIVE CHALLENGES OF INTER- AND TRANSDISCIPLINARY INTEGRATION?

Machiel Keestra, *Institute for Interdisciplinary Studies, University of Amsterdam, the Netherlands*

Authoritative definitions of interdisciplinarity have emphasized that the integration or synthesis of multiple disciplinary insights crucially distinguishes inter- from mono- or multi-disciplinarity (Klein and Newell, 1997; Nat. Acad. of Sciences, 2004). Precisely this element of integration or synthesis has also invited criticism as it suggests that this would be a feasible goal at a time when divergence, pluralism and fragmentation are prevalent within disciplines and societies. Indeed, this has even invited a warning 'against holism' as the latter easily seduces interdisciplinary projects to develop technological or politicized fixes (Sarewitz, 2010). Acknowledging these challenges of divergence and pluralism, it will be argued that inter- and trans-disciplinarity must and can provide room for those. Mentioning several approaches to interdisciplinary integration that do so, we will present a Reflective Equilibrium account (borrowed from philosophy of language and ethics) and argue how both epistemological and normative differences can remain even if partial integration is possible.

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Klein, J. T., and Newell, W. H. (1997). *Advancing Interdisciplinary Studies*. In J. Gaff and J. Ratcliff (eds.), *Handbook of the Undergraduate Curriculum: A Comprehensive Guide to Purposes, Structures, Practices and Change* (pp. 393-415). San Francisco: Jossey-Bass.

National Academy of Sciences (2004). *Facilitating Interdisciplinary Research*. Retrieved from Washington, DC: https://www.nap.edu/download.php?record_id=11153

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RESPONSES TO RECENT RHETORIC

Rick Szostak, *Department of Economics, University of Alberta, Edmonton, Canada*

I will briefly outline some misperceptions in some recent literature, especially Frickel et al., eds., (2016) *Investigating Interdisciplinary Collaboration: Theory and Practice across Disciplines*. In particular they argue that interdisciplinarity is judged to be superior to disciplines, and that the literature on interdisciplinarity ignores common challenges in interdisciplinarity analysis. These are surprising claims, given that the literature on interdisciplinarity tends to recognize a symbiotic relationship between specialized and interdisciplinary research, and focuses on identifying and transcending challenges to the latter. There appears to be a receptive audience within the academy that is suspicious of interdisciplinarity. It is thus critical that the community of inter/transdisciplinary scholars communicate clearly the idea of symbiosis and the recognition that inter/transdisciplinary scholarship is feasible but difficult.

References:

Augsburg, T. and S. Henry, eds. (2009). *The Politics of Interdisciplinary Studies*. Jefferson NC: McFarland Press.

Frickel, S., Mathieu, A., and Prainsack, B. eds. (2016). *Investigating Interdisciplinary Collaboration: Theory and practice across disciplines*. New Brunswick NJ: Rutgers University Press.

Lyall, C., Bruce, A., Tait, J., and Meagher, J. (2011). *Interdisciplinary Research Journeys: Practical strategies for capturing creativity*. London: Bloomsbury.

SESSION 28: TRANSDISCIPLINARY KNOWLEDGE COMMUNICATION UNDER CONDITIONS OF MULTILINGUALITY

Tuesday, 12.09.2017, 11:30 – 13h

[C40.108]

Organizers: *Kristina Pelikan*^{1,2,3}, *Tilo Weber*⁴, *Jakob Zinsstag*^{1,2}, ¹*Swiss Tropical and Public Health Institute Basel, Switzerland;* ²*University of Basel, Switzerland,* ³*Technische Universität Berlin, Germany,* ⁴*Technická univerzita v Liberci, Fakulta přírodovědně-humanitní a pedagogická, Katedra německého jazyka, Liberec, Czech Republic*

Keywords: transdisciplinarity; multilinguality; knowledge communication; knowledge transformation

Our focus in this section is on scientific disciplines and practical (economic, medical, social) domains as cultures. We will raise and discuss the question of what this cultural point of view implies and reveals about transdisciplinary communication in academia and beyond. In recent decades, science has become global. Increasingly, research is carried out in international teams, whereby different cultures mingle. Transdisciplinary research at the global level is not the result of individual players, ingenious ideas and acts. Rather, it is an interplay of various scientific and social processes with - more or less - efficient cooperations and exchanges between multiple players as its backbone. The complexity of issues at stake has been growing rapidly (e.g., progress in providing medical services to more people worldwide depends on scientific, political, social - development); at the same time, our (technical) means to bring together people independently of their physical whereabouts and their background cultures seem to have increased as well. All this requires knowledge transfer and transformation - induced and realized by communication. Transdisciplinary and multicultural transfer of knowledge within communication often comes down to translation processes - translation between disciplines, cultures, languages - and often a lingua franca is used. In the proposed session and its presentations, the triad of transdisciplinarity - multiculturality - multilingualism shall be discussed with a particular focus on the pros and cons of using multiple languages for collaboration purposes. We will also present what we call Transfer Sciences as a transdisciplinary network and approach that aims at developing solutions for the issues raised in the session.

FUNCTIONAL MULTILINGUALISM IN TRANSDISCIPLINARY RESEARCH PROJECTS

Kristina Pelikan^{1,2,3}, **Jakob Zinsstag**^{1,2}, ¹*Swiss Tropical and Public Health Institute Basel, Switzerland;* ²*University of Basel, Switzerland;* ³*Technische Universität Berlin, Germany,*

Keywords: multilingualism, lingua franca, project communication

International and inter- or transdisciplinary research requires intense collaboration between and cooperation of all involved persons. For enabling prosperous collaboration, efficient communication between all involved parties is essential. While external communication is a highly discussed and well elaborated topic, internal communication is mainly neglected. Therewith, the main backbone of efficient collaboration including the project's language is neglected. Routinely using English as lingua franca (ELF) causes difficulties and strengthens power issues, already existing due to the dimensions of hierarchy, physical location, and native versus non-native English speakers involved in the research collaboration (Pelikan et al. forthcoming). Communicating in

research means sharing and also acquiring knowledge - both cannot be done on the highest level of efficiency (ibid.) in a foreign language. Based on concrete case studies from projects with mobile pastoralist groups in Chad and Kel Tamacheq in Mali, intercultural transdisciplinary processes require multiple *linguae francae*. In our case French and English. Further we require translation from local African languages. In this way, we want to present the challenges of interactions of local languages and ELF and FL (French as a *lingua franca*). When is the usage of ELF recommended and when should functional multilingualism be preferred? This presentation aims to give evidence that there is a need for considering about internal communication - followed by a hands on approach with suggestions for application in transdisciplinary research projects.

References:

Pelikan, Kristina; Jeffery, Roger; Roelcke, Thorsten (forthcoming): The time the British took the lead is over. Writing in complex research partnerships.

ONE WORKSHOP, FOUR WORKING LANGUAGES: A BEST PRACTICE EXAMPLE

Tilo Weber, *Technická univerzita v Liberci, Fakulta přírodovědně-humanitní a pedagogická, Katedra německého jazyka, Liberec, Czech Republic*

Keywords: multilinguality, intercultural communication, collaborative research

Establishing efficient modes of communication is a crucial issue for international and intercultural research teams.

In November 2012, we conducted a workshop on "Quality Assurance in Academic Research and Teaching in Tunisia" at the Université de Gabès as part of an EU project. European coaches worked with Tunisian scholars and students from both the human and the natural sciences.

I will argue that the flexible use of four different languages (French, English, German, Arab) and for different communicative purposes (plenary and group sessions, small preparatory meetings, role plays, dinner and tea break talk) was a prime factor for realizing the goals set for the workshop. In particular, I will highlight the following factors:

- There was no single *lingua franca* mastered by all participants.
- Consecutive translations were generally considered helpful and non-disruptive in spite of their consuming some extra time.
- The working languages were used in different pairs or triplets according to the respective composition of the groups and according to various functional needs.
- A basic rule that participants oriented to was formulated as: communicate in a way that makes it possible for everyone to participate.
- Written materials were realized in English and French, the two languages one of which all participants were able to read.

In conclusion, the more general question will be raised of what conditions must hold for multilingualism to have positive effects in a working context.

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Roberts, Celia (2007): Multilingualism in the workplace. In: Peter Auer/Li Wei (eds.). *Handbook of multilingualism and multilingual communication*. Berlin, New York: de Gruyter, 405-422.

Weber, Tilo (2014): Students' multilingualism as a resource in German Studies class rooms at Kenyan universities. In: Daniel O. Orwenjo, Martin C. Njoroge, Ruth W. Ndung'u & Phyllis W. Mwangi (eds.): *Multilingualism and education in Africa*. Cambridge: Cambridge Scholars Publishing, 153-165.

MULTIVOCALITY MAKES DISCIPLINARY CULTURES EXPLICIT WHEN RESEARCHERS ENGAGE IN INTERDISCIPLINARY TEAM SCIENCE

Kristine Lund, *IR CNRS, HDR, ICAR Research Lab, Ecole Normale Supérieure Lyon, France*

If culture is defined as understanding the rules by which people are expected to act, academic disciplines have cultures that define the theoretical assumptions that researchers subscribe to, the purpose of the analyses they do, how they represent data, and practices about how data can be manipulated. However, such culture is often progressively acquired as part of becoming a member of a research community and is not necessarily explicitly taught. Moreover, researchers trained in one tradition may not question the epistemological foundations of their discipline. Examining the possible complementarities between the explanatory frameworks of different disciplines may occur only when researchers coming from different traditions come together to work on the same object. In this symposium, in discussion with experts on intercultural communication, I propose to address researchers' epistemological encounters in a methodological approach to doing interdisciplinary work we have called multivocality (Lund, Rosé, Suthers, & Baker, 2013). Multivocality occurs when researchers from traditions assumed to be mutually incompatible make an effort to compare and contrast their understandings of a given phenomenon with the goal of broadening their view (Suthers,

Lund, Rosé, & Teplovs, 2013). We put multivocality into practice during a four-year project involving over thirty researchers interested in understanding group interactions from different theoretical and methodological traditions: What are the pitfalls that researchers face when they collaboratively construct knowledge together in interdisciplinary projects (Rosé and Lund, 2013)? How does information flow occur between the different actors, including societal actors outside of research, such as teachers or policy makers? When is such knowledge construction productive and glitch free and when is it difficult, yet still productive? In what situations do missed opportunities occur and when can such encounters even lead to radicalizing incommensurable stances? These questions lead to a suggestion of principles for best practices that we offer to the broader research community.

References:

- Suthers, D. D., Lund, K., Rosé, C. P., Teplovs, C. & Law, N. (Eds.). (2013). Productive Multivocality in the Analysis of Group Interactions. In C. Hoadley & N. Miyake (Series Eds.), Computer Supported Collaborative Learning Series: Vol. 15. New York: Springer.
- Lund, K., Rosé, C. P., Suthers, D. D., & Baker, M. (2013). Epistemological encounters in multivocal settings. In D. D. Suthers, K. Lund, C. P. Rosé, C. Teplovs & N. Law (Eds.), Productive Multivocality in the Analysis of Group Interactions. In C. Hoadley & N. Miyake (Series Eds.), Computer Supported Collaborative Learning Series: Vol. 15 (pp. 659-682). New York: Springer.
- Rosé, C.P. & Lund, K. (2013). Methodological Pathways for Avoiding Pitfalls in Multivocality. In D. D. Suthers, K. Lund, C. P. Rosé, C. Teplovs & N. Law (Eds.), Productive Multivocality in the Analysis of Group Interactions. In C. Hoadley & N. Miyake (Series Eds.), Computer Supported Collaborative Learning Series: Vol. 15 (pp. 613-637). New York: Springer.

TRANSFER SCIENCES

Thorsten Roelcke¹, Tilo Weber², Kristina Pelikan^{1,3,4}, ¹*Technische Universität Berlin, Germany*; ²*Technical University Liberec, Czechia*; ³*Swiss Tropical and Public Health Institute Basel, Switzerland*; ⁴*University of Basel, Switzerland*

Keywords: information and knowledge, concepts of knowledge, transfer and transformation of knowledge

Transfer Sciences (in German: Transferwissenschaften) is a community for discussing any aspects of knowledge as well as its transfer. Founded by the two linguists Gerd Antos and Sigurd Wichter in the 1990s, Transfer Sciences became an in the humanities well known series of symposia and publications concerning e.g. the following questions answered by scientists of applied linguistics, journalists, technical editors, communication trainers etc.: What is knowledge? How does knowledge change? How is knowledge communicated? What kind of knowledge is communicated? In which medium is knowledge constituted? How does knowledge affect our society? Is knowledge always known, and who or what is the subject of knowledge?

Since 2016, Transfer Sciences is organized and edited by Matthias Ballod (Halle), Thorsten Roelcke (Berlin), and Tilo Weber (Liberec). In 2016 and 2017 they started with two symposia on “Information and Knowledge” (Berlin) and “Transfer and Transformation of Knowledge” (Halle); a third symposium on “Knowledge and Multilingualism” (Liberec) is planned. Beside a modern, discussion orientated design a common feature of the new symposia series is a wide spread of disciplinary insights, e.g. from (theoretical and applied) linguistics, semiotics, epistemology and philosophy, psychology, sociology, and medicine. Since not only an interdisciplinary but rather a transdisciplinary approach is intended, the symposia want to bring scientists and representatives of other professional groups in a fruitful dialogue. Central questions of the last symposia are:

- What actually is knowledge – how does it arise, how does it change, how is it transferred?
- Which concepts of knowledge characterize the discussion in certain subject fields?
- Are there any interdisciplinary similarities and differences in the conception of knowledge?
- Last but not least: How could Transfer Sciences help to answer transdisciplinary questions?

DOUBLE SESSION 29: FRAMEWORK FOR THINKING ABOUT RESEARCH AND INSTITUTIONAL CONDITIONS FOR INTERDISCIPLINARY AND TRANSDISCIPLINARY RESEARCH, TEACHING, AND LEARNING IN HIGHER EDUCATION

Wednesday, 13.09.2017, 11:30 – 13h & 14 – 15:30h
[C40.704]

Organizers: Bianca Vienni Baptista, *Leuphana University of Lüneburg, Germany and Universidad de la República, Uruguay* and Julie Thompson Klein, *Wayne State University, USA*

Key words: Culturality, Institutions and Communities, Power Relations and Conflicts

This panel will establish a framework for thinking about research and institutional conditions for interdisciplinary (ID) and transdisciplinary (TD) research, teaching, and learning in higher education. The participants will define strategies and models of change and patterns of success and failure. By including representatives of projects and programs in Europe, Australia, Latin America and Africa, the panel will bring comparative perspectives to both theory and practice. They will describe how historical and geographical contexts have shaped institutional context in a particular country, modifications and transformations over time, and related challenges and opportunities. Finally, they will consider whether concepts and practices of ID and TD are challenged and even being supplanted by alternative discourses such as “problem solving,” “relevance,” “accountability,” “impact,” “collaboration,” “globalization,” and other localized priorities.

Introduction: Vienni will set up the framework based on her current research and Klein add insights from a study of conditions for changing campus cultures. They will also distribute a handout with main points for discussion by the speakers and audience alike. Two presentations of 20 minutes each grouping the invited panelists in pairs:

- Marcel Burstyn, Centre for Sustainability, Universidad de Brasilia (BR)
- Catherine Lyall, University of Edinburgh (UK)
- Maik Adomssent, Leuphana College and Faculty of Sustainability, Leuphana University of Lüneburg (D)
- Gabriele Bammer, Australian National University (AU)

Closing: Moderated by Klein and Vienni: Panelists will join audience members in reflecting on the relationship of “interdisciplinarity”, “transdisciplinarity” and “culturality” while considering the possibility of “interculturality” across commonalities and differences.

SESSION 30: MODES AND IMPACT OF TRANSDISCIPLINARY RESEARCH – CONCEPTS, METHODS, PROCESSES AND CASE-BASED EVIDENCE

Thursday, 14.09.2017, 11:30 – 13h
[C40.146]

Organizers: Matthias Bergmann, Alexandra Lux, Lena Theiler, Thomas Jahn, *ISOE - Institute for Social-Ecological Research, Frankfurt a.M., Germany*; Martina Schäfer, Emilia Nagy, *Center for Technology and Society, Technische Universität Berlin, Germany*; Stephanie Jahn and Jens Newig, *Research Group Governance and Sustainability, Leuphana University Lüneburg, Germany*, Judith Kahle and Daniel J. Lang, *Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University Lüneburg, Germany*

Keywords: research design, research methods, case study comparison, research processes, societal and scientific impact, sustainability

Transdisciplinary (td) projects that deal with complex societal problems are supposed to create and implement practical results as well as new scientific insights. Effective transdisciplinary research thus faces the challenge to create impact in both society and science. The aim of the session is to map out complementary views on research modes, processes and methods and how they relate to the societal and academic impact of transdisciplinary research. Researchers making use of transdisciplinary research modes often postulate links between quality and characteristics of the research process (e.g. degree of participation) and the methods used (e.g. knowledge integration methods) on the one hand and the research results and their impact on the other hand. However, these links rarely have been described in a systematic way so far. Especially, up to now, a shared understanding of describing and categorizing research impact in its different facets is missing within the community of td researchers. In this field there are still many open questions: Is it a generalizable rationale that a strong participative research concept, e.g. with societal actors being part of the research team from the very beginning, is supporting the implementation of research results in the socie-

tal problem field? Which are appropriate concepts and methods of participation that lead to the targeted impact? Does integration of heterogeneous knowledge lead to robust and balanced transformation knowledge which is accepted by a wide range of societal actors? In how far does the phase of the problem constitution in the very beginning of a project play a role for the targeted impact? How about scientific impact? Is there a conflict between intense participation and scientific innovation? Which process design in the phases of project constitution, integrative and solution-oriented research and implementation of results facilitates the generation of societal and scientific impact? The session will provide insights into respective research projects and a discussion on conceptual and theoretical aspects of transdisciplinary research. By comparing different approaches to capture links between research praxis and impact it will, at the same time, allow to get insights into crucial points of designing transdisciplinary research processes. The session provides perspectives from ongoing or recently finished research projects and presents their first findings:

- MONA – Modes of research and their impact on scientific and societal outcomes – A comparative analysis of 100 third-party funded sustainability-related research projects;
- TransImpact – Effective transdisciplinary research: Analysis and transfer of standards for transdisciplinarity;
- Solution Readiness Levels: Measuring Impact of Innovation Groups for Sustainable Land Management.

The projects will present their conceptual frameworks for analyzing modes, research processes and methods of enhancing the potential impact of transdisciplinary research as well as empirical findings from broad and in-depth case study research. They will outline relevant aspects for the design of future transdisciplinary research processes and embed the results of this type of research in respective contexts. Since the three selected projects use very different and complementary approaches for the analysis of favorable research conditions for generating impact, a comprehensive and nuanced overview of opportunities and limitations for achieving practical and societal contributions will be won.

TRANSIMPACT – EFFECTIVE TRANSDISCIPLINARY RESEARCH: ANALYSIS AND TRANSFER OF STANDARDS FOR TRANSDISCIPLINARITY

Oskar Marg, **Alexandra Lux**, *ISOE - Institute for Social-Ecological Research, Germany*; **Martina Schäfer**, *Center for Technology and Society, Technische Universität Berlin, Germany*

Keywords: research design, research methods, research processes, societal and scientific impact

TransImpact asks if and how societal and scientific impact of transdisciplinary research projects is correlated to the quality of the respective research processes (e.g. use of methods, degree of participation, types of results). So far, there are only few studies dealing with links between the mode of research, its methodological characteristics and the societal and scientific effects. The importance of these endeavors becomes evident since requirements for inter- and transdisciplinary research designs have become part of a growing number of research programs and agenda processes. Currently, the understanding of transdisciplinarity is getting more and more differentiated - terms and concepts apparently need to be clarified. We will present first results of our analysis of finalized projects which were analyzed in cooperation with their research teams. The analysis focusses on four key aspects: problem constitution, participation, knowledge integration, and transferability. TransImpact explores options to actively prepare the ground for potential impact of transdisciplinary research by choosing and applying adequate methods and processes. It thus provides researchers with recommendations for an impact-oriented project design that is derived from this meta-analysis. At this stage of the project, special emphasis will be put on the phase of problem constitution and the relevance of enhancing the participation of societal actors. Additionally, we will outline TransImpact's contributions to:

- (1) strengthening the scientific basis for td research: integrative concepts, methods, quality criteria are being identified;
- (2) strengthening of the scientific community: by sharing challenges and quality criteria for transdisciplinary research, community building is encouraged;
- (3) strengthening multipliers for the transdisciplinary research mode: contributing to the establishment of a recognized canon for transdisciplinary research which can also be taken up by university teaching;
- (4) consolidation of the knowledge basis: the establishment of the online hub transdisciplinarity as a virtual forum where findings and experiences of TransImpact will be made available and can be interactively developed further. The online hub will serve as a pre-study for a Virtual Academy for Transdisciplinary Studies.

SOLUTION READINESS LEVELS: MEASURING IMPACT OF INNOVATION GROUPS FOR SUSTAINABLE LAND MANAGEMENT

Christian Eismann, Susanne Schön, *inter 3 GmbH - Institut für Ressourcenmanagement, Germany*

Keywords: research design, research processes, societal and scientific impact, evaluation

This talk is about a cascade model for transdisciplinary impact research. The authors, doing accompanying research for the funding programme “Innovation Groups for Sustainable Land Management”, develop a qualitative indicator-based approach called Solution Readiness Level (SRL). The model’s aims are, firstly, to identify and categorize outcomes of transdisciplinary research projects in non-scientific fields, and secondly, to support management and monitoring of those projects. Therefore, it is useful to frame formative and summative evaluations. The SRL is designed for projects working on system solutions in the fields of sociotechnical and socioecological innovations. We understand system solutions as compositions of autonomous but corresponding single elements to answer complex, multidimensional societal problems and needs. In our understanding, innovation processes actually last even longer than transdisciplinary projects. Hence, the SRL does not take the projects self-defined goals as the frame of reference, but higher-level innovation processes. With respect to system solutions, the SRL model assumes the existence of distinctive development stages which are independent from the substantial aspects of transdisciplinary projects. The SRL concentrates on their form instead. This means, for each development stage the model proposes a unique configuration of three facets: common activities, boundary objects, and participants. Stages of the SRL involve, for example, basic and applied research, prototyping, and the testing of stand-alone or system solutions in different environments. Certain practical outcomes follow these configurations on an individual, institutional and regional level. These are, for example, awareness of social roles and role-making, organizational ambidexterity, or spatial discourses. Thus, the SRL focuses on the outcome of transdisciplinary processes rather than substantial products or results (artifacts). This presentation puts a first SRL-model heuristic up to discussion. The focus is on the pattern of development stages on the one side, and process-related practical outcomes on the other.

DOES TRANSDISCIPLINARITY IMPROVE ACADEMIC AND SOCIETAL RESEARCH OUTCOMES? EMPIRICAL RESULTS FROM A LARGE-N COMPARATIVE STUDY

Stephanie V. Jahn, Judith Kahle, Jens Newig (*Leuphana University of Lüneburg*), **Matthias Bergmann**, *ISOE - Institute for Social-Ecological Research*, **Daniel J. Lang**, *Leuphana University of Lüneburg, Germany*

While transdisciplinary research is often touted as ideal or even necessary to produce meaningful, socially robust knowledge and effectively address societal problems in fields such as sustainability, the empirical evidence that would support this claim is still weak and fragmented. We will present the results from the DFG-funded research project “Modes of sustainability-related research in comparison (MONA)”. Aiming at structuring the field and at finding empirical evidence for the relation between the research mode and societal as well as scientific results and impacts, we conduct a case survey of 100 completed inter- and transdisciplinary research projects in the field of sustainability-related research. This large-N comparison is supplemented by a small-N in-depth case analysis of a subsample of six research projects. We find that – depending on its form and intensity - practitioner involvement indeed impacts positively on the societal outcomes of sustainability-related research projects. Moreover first analyses indicate that the involvement of non-scientific actors as research partners on an equal footing diminishes the academic output, while other forms of involvement don’t. Our data also shows that a general openness for transdisciplinarity as well as previous collaborations among the participating scholars and practitioners play a crucial role for the extent and types of scientific and societal effects. With regard to the funding context our analyses show that funding criteria have a tremendous impact on the research modes and designs, as well as on results and impacts of inter- and/or transdisciplinary sustainability research. Acknowledging the great diversity of (transdisciplinary) research approaches and their various results and impacts, we find that there is no one understanding of and no golden path to “effective” transdisciplinary research but many.

DOUBLE SESSION 32: TRANSDISCIPLINARITY BETWEEN IDEALITY AND REALITY

Thursday, 14.09.2017, 11:30 – 13h & 14 – 15:30h

[C40.704]

Organizers: **Stefan Emmenegger, Gaudenz Welti**, *University of Berne, Institute of Educational Science, Switzerland*

Keywords: Case-studies, interculturality, art

As much as transdisciplinary research is a prominent practice in science, as nebulous and ambivalent is the foundation of its understanding. Especially in intercultural and artistic contexts, transdisciplinarity as an ideal is faced with actual and specific limitations. Here, not only disciplinary borders are being crossed, but also borders of spoken and written and therefore theoretical language in general. The etymological root of the Latin *trans* (“across, on the far side, beyond”) comes to its full application. For an adequate description and practice of transdisciplinarity it is essential to address and reflect upon these issues. This session aims to confront the ideal of transdisciplinarity with actual practice. It does so by first providing a theoretical framework built on the concepts of “multiperspectivism” and “dynamics”. These concepts will be developed from a standpoint based on system and complexity theory. The session further elaborates upon these issues by presenting three different case-studies from the artistic and intercultural realm. By doing so, the session attempts to make real limitations of transdisciplinary research visible and therefore enable an open discussion. The first case-study takes the Dak’Art Biennale as an example to show the limits and possibilities of dynamic multiperspectivism. The second presentation looks at the concept of “Arte Latinoamericano” to show the limits of scientific language in describing non-scientific phenomena. As a final example, a photography project from West Africa will be presented to discuss the function and role of photography under transdisciplinary viewpoints.

The main goal of the session is to enable a theoretical reflection based on case studies. We aim to show actual contextual limits but also possibilities of transdisciplinarity in relation to intercultural and artistic contexts. The relationship between the ideal of transdisciplinarity and its reality will therefore become clearer for discussion.

IT’S ABOUT ASKING THE WRONG QUESTIONS

Gaudenz Welti, *University of Berne, Institute of Educational Science, Switzerland*

Keywords: Complexity, multiperspectivism, dynamics, theory

Focussing on transdisciplinarity and interculturality as relevant subject matters for a scientific discussion presumes the presence of an attributed problem. The first question that will be addressed concerns the form of the problem that is under consideration when speaking about transdisciplinarity and interculturality. Considering that both concepts naturally imply processes of intermediation, and therefore the necessary condition of existing boundaries and underlying unities, the overall objective is to locate the parameters under which these conditions become a problem. One way to do that is by using a system-theoretical and complexity-theoretical perspective. System-theoretical and complexity-theoretical approaches have become more and more popular in scientific research, due to their universally applicable design (see Prangel & Berg 1993, Morin 2005, Luhmann 2012). The presentation will, firstly, present general assumptions and terms related to system-theoretical and complexity-theoretical thinking, secondly, discuss the implications system-theoretical and complexity-theoretical frameworks have on how we determine and detect relevant problems in social contexts, and thirdly, challenge present patterns of discourse by which the subject of transdisciplinarity and interculturality is commonly constructed. In the context of the discussion, two concepts will become of particular interest: *Multiperspectivism* and *Dynamics*. The consideration of Multiperspectivism and Dynamics not only as characteristics of systems being described, but simultaneously as a condition of the description itself, leads to fundamental methodological difficulties: Are we asking the wrong questions?

LIMITS AND POSSIBILITIES OF TRANSDISCIPLINARY DISCOURSE - THE DAK’ART BIENNALE AS A CASE-STUDY OF DYNAMIC MULTIPERSPECTIVISM

Stefan Emmenegger, *University of Berne, Institute of Educational Science, Switzerland*

Keywords: Case-study, multiperspectivism, incommensurability, organizational-research

The two key concepts, dynamics and multiperspectivism, will be explored by using the Dak’Art Biennale of African Contemporary Art as a case-study. As the Dak’Art Biennale is embedded within intercultural, international and artistic contexts, the exhibition poses a rich field of topics for reflection. The presentation will take an organizational-theory perspective on the exhibition, based upon interviews conducted with people involved both in past exhibitions and the upcoming 13th edition of the Biennale, as well as catalogues, newspaper articles and scientific publications. In the Dak’Art Biennale participants from a broad variety of backgrounds, not only scientific but also from different system-backgrounds (such as politics, arts, education, law, economy, religion,

etc.), are part of the organization and discourse. This accumulation of many different perspectives allows reflection upon the concept of multiperspectivism in this specific context. From a system-theoretical perspective many questions arise in the Biennale due to a presence of multiple purposes defined from different perspectives (see Rodatus 2015, S. 13f.), where no single perspective can define one purpose that is binding for all parties involved. In addition, the Biennale in Dakar can be considered a prime example of dynamics in transdisciplinarity. In past editions, the idea of the exhibition purpose has shifted many times or has been under discussion (Oguibe 2004, S. 83). From the theoretical basis provided in this session, such issues can be identified and discussed. The presentation aims to advance theoretical foundations and the epistemology of transdisciplinarity as well as to exemplify actual contextual limits and obstacles. We also aim to provide possible theoretical as well as research-practical implications on how to deal with arising limitations of transdisciplinarity. The presentation therefore tries to foster the potential of transdisciplinarity to deal with heterogeneity and difference.

ARTE LATINOAMERICANO - ALTERNATIVE APPROACHES THROUGH TRANSDISCIPLINARITY

Laura Bohnenblust, *University of Berne, Institute of Art History, Walter Benjamin Kolleg Center for Global Studies (CGS), Switzerland*

Keywords: Latin American Art, exhibition practice, Transdisciplinarity, Transculturality

The increasing interest of major European museums for art produced by artists from Latin America has heightened the need for a critical analysis of multilayered discourses on the subject. The use of the generalized term “Latin American Art” brings to the fore the issue of associating art and geographies. Aesthetic and political questions are primarily interpreted in relation to geopolitical conditions. Art works are framed as being Latin American. This presentation will therefore discuss transdisciplinary ways of allowing new perspectives and alternative views of art from Latin America that are beyond simplistic geopolitical allocations. While at the beginning of the 20th century “Latin American Art” stood for the primitive, exotic, irrational and fantastic, in the 1980s new exhibition criteria were being searched to present the “other art”. Nowadays, on the background of global art, this “Western monopoly of art” is being opened up (Belting / Buddensieg / Weibel 2013). In exhibition practice “Latin-American Art” is often considered a prime example of “political art”, as many exhibition titles are synonyms for resistance, oppression, or crisis. These generalizations and stereotypes run the risk of (re)affirming the distinction between the “West and the rest of the world”. A portrayal of “the other” remains, even under positive or idealized viewpoints (Foster 1996). How can we reframe a homogenous vision of art based on geographical criteria? What potential lies in artistic and curatorial strategies as well as in research approaches to identify and overcome dichotomies such as “Self and Other”, “Center and Periphery” or “West and Rest”? Neighbouring disciplines of art history such as cultural science, anthropology, ethnology or literature science are providing us with alternative concepts to theorize cultural production such as *Transkulturalität* (Welsch, 1997), *Routes* (Clifford 1997) or the *Zwischenzone* (Waldenfels, 2006). These concepts must be tested in relation to the research field addressed in this presentation. Within the framework of global art history, the objective of this presentation is to reflect on transdisciplinary methods and theories such as multiperspectivism and dynamics and to consider alternative approaches related to art and Latin America.

ART AND TRANSDISCIPLINARITY - EVOKING DIALOGUE THROUGH PHOTOGRAPHY

Adji Dieye, *Photographer, Italy and Senegal*

Keywords: photography, art, west Africa

Photography can be considered as a medium in which transdisciplinary subject-matter can be put into perspective. It is therefore not only science with its theoretical descriptive language, but also the language of art and photography which is an important contributor to an intercultural and transdisciplinary dialogue. In this presentation, Adji Dieye presents her photographic project “Maggic Cube” wherein she broaches the issue of the interrelationship between food manufacturers, advertisements and their influence on everyday life in West Africa. The project explores the influence of advertisements on contemporary African archetypal figures and in the construction of a national and personal identity through a commonly used product in West Africa: the stock cube. Wishing, as a starting point, to unveil and critique the impact of products imported to West Africa, she studies with irony these “magic” cubes. By analyzing the semiotic language used by the advertising of this product (such as “With Maggi every Woman is a star”) and its omnipresence in every corner of Senegal, her work intends to cause reflection on the codes that identify the imagery of photography and visual culture in relation to West Africa. This reflection, initiated by photography, can therefore be situated in a transdisciplinary dialogue. Adji Djeyes work presents itself as a hybrid combining documentary storytelling with the aesthetics and sensibilities of fine art; the former becoming a silent testimony and the starting point of reflection for her stu-

dio based works. The bouillon cubes become a pretext to developing a discourse to do with branding and the way a brand's identity shapes the identity of their consumers. The aspect of the twofold gaze among advertisements and society is central to this project. Maggic Cube is a word pun to do with the first stock cube brand that entered the African market and the popular jargon used in West Africa for stock cubes: "magic cube". This word pun becomes a reflection on the impact of the codes of advertisements in the behaviour of our societies and how we, as a part of consumer society, contribute to the proliferation of this visual communication system.

PANEL DISCUSSION - TRANSDISCIPLINARITY BETWEEN IDEAL AND REALITY

As a starting point for the panel discussion we shall ask the different participants to give their perspective upon transdisciplinary work. Thematically, the panel can again revisit specific aspects of the presented theories and case studies. The focus will lie on the issue of communication in a situation where multiple parties from varying fields are present with individual interests, values and perspectives. The panel will therefore re-enact multiperspectivism in the discussion itself. Through this panel, the theoretical framework of the opening discussion will be tested on its reach and practicality. The whole session therefore can be considered a contribution to transdisciplinary theory construction.

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SESSION 33: TRANSDISCIPLINARITY IN ACTION – HOW DOES TRANSDISCIPLINARY RESEARCH EMERGE FROM HETEROGENEOUS CULTURES?

Thursday, 14.09.2017, 11:30 – 13h

[C40.154]

Organizers: Jeremias Herberg, Nico Lüdtke, *Leuphana University of Lüneburg, Germany*

Keywords: Science and Technology Studies, specificity of transdisciplinarity, multireferentiality

Transdisciplinary research is often considered as a highly specific research culture. In this regard, transdisciplinarity both addresses problem-oriented questions and provides forms of participation, in order to integrate heterogeneous non-scientific actors, knowledge forms, values, interests and claims. The integrative research culture is characterized by multi-referential practices, knowledges cultures, and institutional settings that mediate between heterogeneous cultures, or even between 'academia' and 'the society'. Yet, we know relatively little about where these specifics come from, what their constitutive contexts are, and how these contexts shape transdisciplinary research cultures. The panel addresses the cultural particularities of transdisciplinarity from a science studies approach. That is, we do not predefine specifics as they are represented in handbooks, practitioners' self-descriptions or prevalent articles. Instead this panel investigates the logics and boundaries of transdisciplinarity as they emerge in the process of constituting projects, methodologies, debates in literature or policy formations. To understand

transdisciplinary research in-the-making, we focus on the inner workings of research projects and on the constitutive contexts that transdisciplinary practitioners seek to mediate. According to concepts, such as co-developing, co-design, or co-production, the interrelation between research practices and context-dependency is one of the key specifics of transdisciplinary research cultures. The question is how transdisciplinary practices build a distinctive research culture, by opening-up to the influences of diverging scientific and political cultures, institutional arenas, communicative media and organizational practices. How does this opening-up shape the specificity of transdisciplinary research cultures? In order to emphasize both the emergence and multi-referential shaping of transdisciplinary research cultures, the panel focuses on three bidirectional questions:

- In their practical multireferentiality, how do transdisciplinary practitioners seek to integrate heterogeneous expectations and affordances? How does practical multireferentiality in return constrain or widen the corridors of cooperation and learning that are available to transdisciplinary researchers?
- In their discursive multireferentiality, how do transdisciplinary practitioners represent and symbolically mobilize actors, sectors, disciplines, 'academia' or even 'the society'? In vice versa, how do these perspectives shape the cross-cultural mediation at play in transdisciplinary processes?
- In their institutional multireferentiality, how do transdisciplinary cultures of research relate to the rules and resources of neighbouring fields? In vice versa, how do they emerge from the interaction of neighbouring fields?

The session thus addresses the conference theme of interculturality in the sense of criss-crossing social spheres. All three contributions investigate how the ambivalence and ambiguity of transdisciplinary research emerges from heterogeneous relations to other research cultures. In short, the context-effects of transdisciplinarity are investigated in the opposite direction: The many contexts that may be affected by transdisciplinary work in turn shape transdisciplinary research cultures. The panel is organized in collaboration with the project "Reflexive Responsibilisation. Responsibility for sustainable Development" (Leuphana University Lüneburg / Carl von Ossietzky University of Oldenburg, funded by the Ministry for Science and Culture of Lower Saxony / Volkswagen Foundation). In this project, scholars from different academic fields investigate the ambivalences and the ensuing social and political consequences of diverse concepts of sustainability for practices of everyday life and different institutional contexts. A major topic is the view on recent developments in the emerging field of transdisciplinary research.

IF TRANSDISCIPLINARITY IS THE ANSWER, THEN WHAT IS THE QUESTION? HOW SCIENCE POLICY CULTURES CLASH IN PRACTICING THE OPENING UP OF ACADEMIC KNOWLEDGE PRODUCTION

Jan-Peter Voß, *Technische Universität Berlin, Department of Sociology, Berlin, Germany*

Keywords: science and technology studies, governance, transdisciplinarity, umbrella terms, science policy cultures, practices of representation, displaced politics

Transdisciplinarity is one of these broad terms that allow for all different kinds of interpretations and enactments. Such terms often become formative for policy programmes, also in areas of science and technology (Rip and Voß 2013). Yet, in actually doing research there is no way but realizing a concrete version of what such broad terms might entail. My argument is that "transdisciplinarity" is not only a term capturing the idea to "open up" disciplinary processes of knowledge production, but that it also works as a mediator between different ways of knowing relations of science and society. Elzinga and Jamison distinguish four "science policy cultures [...] competing for resources and influence, and seeking to steer science and technology into particular directions": an academic/epistemic, a bureaucratic/state, an economic/entrepreneurial and a civic/democratic one (1995). I argue that it is particularly in the practices of representing "society" where we may recognize how any of these cultures is given prevalence when transdisciplinarity is actually done. I offer a connection also with different concepts of transdisciplinarity as articulated by Mittelstraß (1998), Lubchenco (1998), Gibbons (1999), Jasanoff (2007) and Felt and others (2007). The vagueness of transdisciplinarity as a policy term shifts the burden of arbitrating broader political differences onto the research process. The politics of science policy is thus displaced from public debate and parliamentary decision to each particular programme and project where contending demands have to be dealt with. I give a few examples. This is where a reflexive perspective on transdisciplinarity can be most fruitful, studying both the practices and internal controversies as to how society is represented, and then also in a more synoptic way ascertaining how different science policy cultures could gain ground, and in which parts of the broader field of transdisciplinary research.

BOUNDARY WORK IN TRANSDISCIPLINARY ENERGY RESEARCH. NEGOTIATING SCIENTIFIC IDENTITIES, SKILLS AND NORMATIVITIES

Mirko Suhari, *Zeppelin University, Energy Cultures research group, Germany*

Keywords: Energy Transition, Boundary Work, Sustainable Transformation

Since the German Government announced the Energy Transition in the aftermath of the nuclear disaster in Fukushima Daiichi, the phase-out of nuclear energy and the increased promotion of renewable energy and energy efficiency are at the core of the political agenda. Dealing with the complexity of such socio-technical transformations, which are embedded in economic, political, and cultural dimensions and cover an extensive time span, requires drawing on a variety of heterogeneous bodies of knowledge. Hence, it comes as no surprise that questions regarding the position, relationship, and relevance of science in society are prominently raised in current debates about the Energy Transition. The presentation draws the attention to the field of Transdisciplinary Energy Research in this realm, which has been institutionalized primarily in the state-driven research-framework program FONA (Research for Sustainable Development) in several research and agenda-setting projects. One of the main challenges faced by practitioners in this emerging research culture leads to the multireferential expectations claimed by different social worlds who engage in sustainable energy transformations. Thus, transdisciplinary practice is shaped by the interplay between rising controversies regarding the diffusion of renewable energy technologies, traditional academic value orders, and stakeholders' demands for usable knowledge. Based on expert-interviews, the presentation explores tensions between discursive framings of multireferential expectations on the one side and the fragmented adaptations of practitioners on the other. It is then shown that transdisciplinary identities, skills, and normativities are negotiated in relation to different social worlds from academia, civil society, economy, and the state. On this premise, it is argued that various dynamics of boundary work are at play that reshape the role of science in society and thus diversify the possibilities of scientific engagement for the Energy Transition.

TRANSDISCIPLINARY SUSTAINABILITY STUDIES BETWEEN DELIBERATION AND TECHNOCRACY – MAPPING OF A BIPOLAR FIELD

Jeremias Herberg, *Leuphana University of Lüneburg, Faculty of Sustainability, CGSC, Germany*

Keywords: Deliberation, Technocracy, TD as a field, Computational Analysis

Transdisciplinary languages somewhat represent, revive and inhabit the science-society interface. In all their ambiguity, they can be seen as indicative for their institutional position at the crossing points between academic and societal fields. They even themselves give shape to cross-cutting practices as something like an institutional intermediary. In the face of its semantic ambiguity and institutional multireferentiality, how can one think of transdisciplinarity as a 'field'? This talk uses computational analysis (specifically, semantic clustering) of academic transdisciplinarity literature (specifically in sustainability science) to describe and model transdisciplinarity as a field in academia. To capture the multireferential position and disposition of transdisciplinary research papers, the talk presents an idealtypical model of transdisciplinarity as a field that cuts across a bipolar axis. That is, the academic language of transdisciplinarity, as found in sustainability science articles, relies on a traditional debate of technocracy vs. deliberation in several instances. At the more technocratic pole, the science-society interface is more or less seen as a lever for political decision making. In this means-ends logic, the functional interplay of institutional roles is well defined and targeted. At the more deliberative pole, the science-society interface is seen in the humanist light of collective "Vergesellschaftung" (societalization) and individual emancipation. The paper thus contributes to a debate on the institutionalization of transdisciplinarity as an intercultural realm. It raises the question whether transdisciplinary writing is somewhat predisposed by traditional terminologies and conceptualizations of science and society, while in practice transdisciplinary scholars and practitioners try to overcome those very dispositions.

SESSION 34: ADVANCING TD RESEARCH IN AFRICA THROUGH LIRA 2030 AFRICA

Thursday, 14.09.2017, 11:30 – 13h

[C40.152]

Organizers: *Katsia Paulavets, Science Officer, ICSU, Vivi Stavrou, Senior Executive Manager, ISSC, Kouamé Parfait Koffi, Centre Suisse de Recherches Scientifiques, Côte d'Ivoire, Project Title: Mitigating Risks to Flood-related Waterborne Diseases in Abidjan and Kampala, Ng'weina Francis Magitta University of Dar es Salaam, Tanzania, Project Title: Delivery of clean air strategies for mitigating household air pollution and associated respiratory illnesses in urban informal settlements in Dar es Salaam and Lilongwe cities*

Leading integrated research for Agenda 2030 in Africa (LIRA 2030 Africa) is a five-year programme to strengthen capacity of early career scientists in Africa to undertake integrated (inter- and trans-disciplinary) research on sustainability. The programme is implemented by the International Council for Science (ICSU) in partnership with the Network of African Science Academies (NASAC) and the International Social Science Council (ISSC), with support from the Swedish International Development Cooperation Agency. To achieve its goal, the programme provides trans-disciplinary training activities, collaborative research grants. The programme also provides opportunities for collaboration and networking as well as contributing to international scientific and policy processes on sustainable development. The event will present the design of the funding scheme that supports trans-disciplinary capacity building and research activities, outlining lessons learned so far. The LIRA grantees will share their experience in undertaking trans-disciplinary research projects in Africa.

SESSION 35: SUSTAINABILITY-DRIVEN ENTREPRENEURSHIP – CURRICULUM FOR NEW APPROACHES TO BUSINESS DEVELOPMENT

Thursday, 14.09.2017, 14 – 15:30h

[C40.147]

Organizers: *Petra Biberhofer, Vienna University of Economics and Business, Institute for Ecological Economics/RCE Vienna, Vienna, Austria, Johan Boman, University of Gothenburg, Centre for Environment and Sustainability, Gothenburg, Sweden, Bohuslav Binka, Masaryk University, Department of Environmental Studies, Faculty of Social Studies, Brno, Czech Republic, Jan Cincera, Masaryk University, Department of Environmental Studies, Faculty of Social Studies, Brno, Czech Republic, Antje Disterheft, University of Vechta, Department of Education, Vechta, Germany, Susanne Elsen, Faculty of Education, Free University of Bolzano, Italy, Claudia Lintner, Faculty of Education, Free University of Bolzano, Italy, Marco Rieckmann, University of Vechta, Department of Education, Vechta, Germany, Christian Rammel, Vienna University of Economics and Business, Vienna, Austria, Gabriela Schaad, University of Gothenburg, School of economics, Gothenburg, Sweden*

Keywords: Transdisciplinary collaboration, knowledge alliance; joint master's programme, curriculum development

Integrating Education for Sustainable Development (UNESCO 2014) in higher education curricula requires innovative ideas and approaches how to bring together different types of knowledge and how to create spaces for development of new competencies - in particular competencies that would allow students to be better prepared for shaping a sustainable future in general and starting sustainable socio-economic processes in particular. Thus, curriculum developers are challenged to be open to new concepts and to go beyond their disciplines regarding what should be taught and how it can be taught. This research project explores ways to combine educational, sustainability and disciplinary knowledge into learning and teaching formats that facilitate learning processes for students to acquire the corresponding sustainability-related competencies and entrepreneurial skills. A new joint Master's programme on sustainability-driven entrepreneurship is developed in transdisciplinary collaboration settings. Ten universities and business partners from five European countries form an intercultural knowledge alliance, financed by the European Union's Erasmus+ programme. This "Competencies for A sustainable Socio-Economic development" (CASE www.case-ka.eu) project aims to develop an innovative concept for a European Master's programme. The Master's draft curriculum shall be discussed in this workshop, giving participants the opportunity to deepen their understanding of inter- and transdisciplinary learning formats. This Master's programme is based on the competencies' framework for sustainability by Wiek et al. (2011) and has been created in qualitative research loops. The research design follows a participatory, inter- and transdisciplinary approach, using interviews, focus groups and questionnaires with heterogeneous stakeholder groups. Each academic project partner has been testing different parts of the Master's programme in transdisciplinary learning pilots with a variety of collaboration formats (workshops, seminars, excursions etc.). Of particular interest are key competencies of future entrepreneurs, including cognitive

(knowledge and skills) and non-cognitive (motivation) elements. Based on this research, the workshop facilitators will present an outline of the Master's programme in which students from different fields can work together with regional partners and participate as entrepreneurs in socio-economic transformations towards sustainable development. This is "work-in-progress" that should be discussed on the basis of some guiding questions:

- What is needed for implementing such a Master's programme at different universities and how can it be adapted to specific contexts?
- How can students be attracted to such a programme?
- How can regional partners, especially enterprises, profit from this programme and how could co-operations look like?

Participants can learn from this workshop:

- Possible formats for partnerships at the science-society interface reaching out for meaningful cooperation between universities and practice partners.
- How to initiate and apply learning spaces necessary to foster competencies for sustainability-driven entrepreneurship.
- Strategies, methods and instruments of community based (bottom-up) development feasible to initiate community economies or to motivate sustainable entrepreneurship.
- Tips for learning processes at individual and collective level enabling and empowering people to shape and implement actual transformation practices.
- Insights to approaches and methods facilitating and supporting dialogue between different disciplines.

Key readings

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UNESCO (2014). Unesco Roadmap for Implementing the Global Action Programme on Education for Sustainable Development. Paris: UNESCO Retrieved from <http://unesdoc.unesco.org/images/0023/002305/230514e.pdf>

Wiek, A., Withycombe, L., and Redman, C. (2011). Key Competencies in Sustainability: A Reference Framework for Academic Program Development. *Sustainability Science*, 6(2), 203-218. doi:10.1007/s11625-011-0132-6.

POSTERS

[Forum/Foyer] Wednesday, 13.09.2017, 11:30 – 13h

CO-OPERATION: EMBEDDING TRANSDISCIPLINARY RESEARCH WITHIN THE LEVERAGE POINTS PROJECT

Julia Leventon, Elizabeth Clarke, Rebecca Freeth, *Leuphana University of Lüneburg, Germany*

The Leverage Points project embeds two transdisciplinary case studies within a larger sustainability science project. Ten PhD students, five postdocs and eight professors are actively researching leverage points to intervene in a system in order to create fundamental system transformation for sustainability. The project forms a lattice-work of parts and relationships where the whole is greater than, and different to, the parts.

- The workpackages empirically examine institutional structures (ReStructure), human-nature connections (ReConnect), and diverse and novel ways of knowing (ReThink) as potential leverage points.
- Two transdisciplinary (TD) case studies in Lower Saxony (DE) and Transylvania (RO) seek real world, place-based transformations through action-based empirical research.
- Empirical and conceptual inquiry weaves together to both feed into, and learn from and with the TD cases.

This poster uses our practical experiences to reflect on the challenges associated with such embedding of TD case studies into a broader research project. We highlight the need to create spaces for co-operation, by which we mean operating in collaboration, where participants work together within the TD cases, between the TD cases, as well as beyond the TD cases in the broader project. However, we also use co-operation to refer to the mutual operation of the various parts of the project. In this way, we must create space for both the workpackages and the TD cases to function and fulfil their purpose without being entirely dependent on the other, but while being able to contribute to each other. This is particularly challenging because of the range of research cultures and the differing timelines of the workpackage research and the TD cases. We show that in order to create necessary spaces for co-operation, the practice of the researchers should include reflectivity, reflexivity, an iterative recursive approach, and an appreciative understanding of the strengths of embracing difference and diversity.

A REAL-WORLD LABORATORY, TRANSITION DESIGN APPROACH FOR TEACHING TD

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Real-world Laboratories (RwL) are part of a dynamic family of sustainability research settings, i.e. living laboratories, urban labs, or social innovation labs. They share the idea to use experiments in real-world settings to understand and shape societal transformation towards sustainability. RwL create spaces for transdisciplinary (TD) research and teaching, developing and experimenting with potential solutions to sustainability challenges. They provide opportunities for informing global sustainability through place-based research, and help define context-specific pathways towards sustainability. On the case of the RwL MonViso Institute (MVI) in the Italian Piedmont mountains, we report from different, combined higher education – practitioner TD teaching and learning experiences and experiments. We pinpoint challenges and opportunities for mutual learning in different didactic settings available at the MVI and its embedding in the local community and region. The applied didactics inform the transfer to global sustainability from place-based, context-specific pathways towards sustainability, applying the RwL concept of combining transformation, experimentation, transdisciplinary collaboration, long-term orientation, transferability, learning and reflexivity. The interdependency in teaching arrangements of these characteristics is showcased by different experimental settings at the MVI, in specific with Master courses engaging in TD research on-site, while critically reflecting, presenting and cognitively evaluating results and effects with local stakeholders and international audiences on a global scale. The TD courses discussed here combine traditional lecture and seminar elements with outdoor activities, self-directed action learning, e-learning, creative visualization of storytelling, fabrication laboratories in design and engineering, and project-based, embedded case study methods and experiments. A specific focus is on the involvement of local stakeholders in the TD learning projects, and on institutional settings to allow for the creative and organizational freedom required.

UNDERSTANDING THE DECISION-MAKING PROCESSES IN PERMACULTURAL GARDEN PROJECTS IN LOWER SAXONY

Mark Baron, Tabea Borisch, Claudio Nuber, Arriya Sugal, *Leuphana University of Lüneburg, Germany*

Civic participation is a radical pillar in achieving the UN Goals for Sustainable Development. As this is fundamentally connected to the involvement in group formations, decision-making processes within such entities become an especially driving force. In consequence, the success of sustainability efforts on a macro scale needs to be viewed under the influences and barriers of social interactions on the micro scale – thus locating the knowledge of social behavior as an inevitable requirement for any social transformation. Therefore, we want to test for societal transferred tendencies in individual decision-making processes within the context of groups with a sustainability focus. Thereby our approach consists of four steps: First, a selection of four permacultural garden projects around Lower Saxony (districts: Braunschweig, Göttingen, Hamburg & Nienburg/Weser), using a typological matrix consisting of size, gender distribution and the duration of their activity. Second, the conduction of a semi-structured interview coding for 13 variables (age, gender, nationality/ ethnicity, education level, working status, occupation, membership, relationship, additional subject specific education, knowledge sharing, work distribution, harvest distribution, sustainable behavior). These will be collected for up to eight interviewees per garden project – balanced in gender and age representation. Followed by a further codification, carried out using f4analyse, the fourth step will obtain the creation of Social Network Analysis using GEPHI software. As a result, we expect to observe a relationship between an increased likelihood of balanced structures in the decision-making of the garden projects and a high diversity within the group. Beyond that, we assume that individuals who are more in the center of the group network have an elevated understanding of sustainability regarding their personal lifestyle choices. Nonetheless, we are aware that this conduction solely focuses on individual decision-making patterns, which does not allow any statements about the dynamics of the entire group.

LEARNING TO COOPERATE: PROSPECTIVE MODELS APPLIED TO INTEGRATED MANAGEMENT OF WATER RESOURCES IN THE REGION OF COMAHUE, ARGENTINA

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Keywords: Collaborative Work, Transdisciplinary, Boundary work, Social Network Analysis, Argentina

In this contribution, we analyze the collaborative work between scientific, technical and public institutions that took place within a transdisciplinary project whose main objective was to study the adaptation to hydrological stress in the Comahue Region (Argentina) aiming at providing a planning model to manage regional water policies. We analyzed the relationships between actors, institutions, disciplines and geographic regions, using a conceptual and methodological framework with three main building

blocks: (1) anthropological analysis, interviews and ethnographic fieldwork; (2) relational analysis, by social network analysis (SNA) aimed at understanding the collaboration structure and dynamics as well as the levels of cooperation; (3) a framework provided by boundary work results, which we call “boundary social space” to explore and classify the social actors participating and relating to each another. By mapping actors and their relationships with each other, we identified the construction of knowledge communities that include scientists, public and private decision makers, and technical personnel. This information enabled us to inquire about the construction of user oriented interdisciplinary research and its implementation, and the lessons learned within the process of interdisciplinary work. This led to the analysis of those boundary objects created and used at the interfaces of knowledge communities, such as the vulnerability concept, cartography and models. The integration of ethnographic analysis and SNA to model the relationships of knowledge production in inter- and transdisciplinary projects, allowed us to reconstruct the collaborative net within and among the fields of science-policy for a case study designed to optimize the adaptation to global change. We identified difficulties in interactions among the heterogeneous actors, which have led to a poor performance and inconclusive results. Cooperation among different knowledge communities, which implement different institutional rationalities, require a deep integration process in order to achieve the project’s goals. This means that a long-term practice is required that provides the mechanisms of cooperation in order to generate innovative results, where the whole is greater than the sum of its parts: a) to set both a common language to communicate and the same basic concepts used; b) to deploy theoretical models that include the contribution of every field involved; c) to potentiate the contributions and paths from different disciplines represented by those different communities.

LEARNING FROM DIVERSITY – INTEGRATIVE PRINCIPLES FOR TRANSDISCIPLINARY RESEARCH

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Keywords: Transdisciplinary case studies, principles, integration, communication, learning

In light of the high degree of complexity of sustainability problems, transdisciplinary approaches are becoming increasingly important in sustainability research. Over the past years, the number of transdisciplinary case studies has increased at a growing pace, broadening the range of contexts and problems that are collaboratively addressed by researchers and practitioners. In sustainability research, there is an emerging consensus regarding the great potential of learning across such cases - i.e. through newly developed evaluation approaches. In this context, the growing body of empirical evidence provides vast opportunities to learn about sustainability challenges and solution strategies. However, the diversity of transdisciplinary research practices, schools of thought, and rhetoric is also becoming a limiting factor regarding the comparability between case studies. To address this issue, guiding principles for the design of transdisciplinary case studies have been developed, and have since gained wide recognition by the scientific community. Questionable is, however, if and how such principles are applied in practice. More specifically, there is lack of empirical evidence indicating if, and how, such principles have informed the design of case studies, or assessment of the extent to which the use of such principles enhances comparability between transdisciplinary case studies. Based on the principles suggested by Lang et al. (2012), we systematically reviewed 34 transdisciplinary case studies, and analyzed if and how these guiding principles were considered in the recent transdisciplinary case study literature. We found that currently only few of the proposed principles are simultaneously and explicitly addressed in the reviewed research articles. While we strongly acknowledge the importance of detailed guiding principles, we also recognize that these principles were developed for the purpose of informing the design of case studies and, as such, are not suited to integrate the increasingly diverse field of transdisciplinary research. In order to facilitate an integration of this growing research field, we developed a set of integrative principles that provides a framework for reflection on aspects of sustainability orientation, the integration of knowledge domains, the ability to upscale results - both in research and practice -, and the maintenance of the collaborative research process. We propose these principles as a tentative guidance for reflection during ongoing transdisciplinary research, and moreover for communication on these highly-contextualized processes.

BUILDING AN EXPERIMENTAL ARENA FOR SUPPORTING THE DESIGN OF STRATEGIC NATIONAL CROSS-CUTTING ENERGY POLICY: A MULTIDIMENSIONAL CASE STUDY OF THE ECUADORIAN TRANSFORMATION TOWARDS SUSTAINABILITY

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Keywords: Latin America, Energy oligopoly, Cross-sectoral partnerships, Knowledge co-production, Experimental arenas, Supportive networks, Energy transition policy

This is a proposal for a Poster presentation, in which I invite discussion of my proposed method for policy design and cross-sectoral partnership as an adjunct to Ecuador's formal energy policy process. In essence, I am applying and testing transition management and related approaches, building on my own connections within the Ecuadorian energy system. An oligopoly policy-making process has been shaping and reshaping the energy system throughout Ecuadorian History. Incumbent networks have controlled the energy system starting from the consolidation of the oil coalition in the 70s, until the consolidation of the large-scale-hydropower coalition in the 2010s. These two main coalitions have centralized power, investments, profit, employment, and institutionalization. There has been no space left for non-conventional renewable energy development, decentralization, democratization of energy, distributed employment generation, energy justice and wealth distribution. Values, beliefs and interests of the incumbent state-market alliance oligopoly are represented in the energy policies that subsequently structure the energy system. Civil society groups have different views, perceptions, understandings and visions of the energy problems, preferred future alternatives and policy roadmaps. Nevertheless, they are not coordinating nor intervening in the policy-making process. There aren't sustainability-based coalitions, counter-hegemonic discourses, and alternative guiding visions. In this context, this research explores the adequate approach to foster the configuration of an empowered constellation of change agents from different sectors that can co-produce transformative knowledge, build transformational leadership capacities and jointly engaged in socio-political processes. A national-scale reflexive governance process will be simulated with societal actors from the government, business sector, academia and NGOs. This real-world experiment will bring key stakeholders into a joint decision-making process where different perceptions, values and interests that influence the shaping of the Ecuadorian energy system, future scenarios and policy choices will be better understood. The arena of experimentation will catalyze the development of a transformative knowledge network for the support of strategic national cross-cutting energy policy design. Drawing on various conceptual approaches related to sustainability transformations and integrating a review of transition politics and reflexive governance into how transformational change is intertwined with joint decision- and policy-making processes aims to strengthen the theoretical foundation of the whole research project by providing the context for analysis. The methodology will be based on a participatory research process that integrates insights from transdisciplinary sustainability research, transition management, reflexive innovation systems and social psychology to be applied to the National Energy Policy of Ecuador by experimenting with a cross-sector-interface-space that simulates an alternative energy governance process. The participatory intervention will co-produce system, normative and transformation knowledge by the selected epistemic community of stakeholders conformed by scientific individuals and non-scientific change agents, representatives of different sectors. Reflexive, anticipatory and integration capacities at an individual and collective level will be developed throughout the process of knowledge co-production. The research design involves methodological triangulation by using more than one method to gather data, such as policy documents analysis, interviews, participatory processes and questionnaires. This triangulation will facilitate validation and cross verification of information in order to better understand the social experimentation and a more detailed and balanced picture of the phenomenon. The preliminary results will be of two types: content- and process-based. The content-based results will be materialized in a conceptual model of the energy system (summarizes the key features of the selected system), a long-term vision (preferred ideal vision) and an agenda for triggering the transformational readiness (strategies). The process-based results will be represented by the network structure conformation and the negotiation- and consensus building-dynamics.

THE CO-PRODUCTION OF KNOWLEDGE: HOW TO ANALYSE AND EVALUATE SOCIAL LEARNING PROCESSES IN THE TD RESEARCH CONSORTIUM CAPITAL4HEALTH – FIRST INSIGHTS

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Keywords: Transdisciplinary Evaluation, Interactive Knowledge-to-action, Communities of Practice, Health promotion Interventions
Objective, scientific and societal goals: The transdisciplinary research network "Capital4Health" (funding: German Ministry of Research, 2015-2018) aims to promote capabilities for active lifestyles among different population groups and stakeholders in five settings in Bavaria, Germany - child-care centres, schools, worksite, neighbourhoods, senior residential-homes. It uses an

innovative transdisciplinary knowledge-to-action approach (Stokols et al. 2013). All subprojects implemented their interventions via a cooperative planning approach focussing on the co-production of knowledge. The process of shared planning, implementation and reflection between researchers, professionals and policymakers can be defined as communities of practice. On this level, C4H integrates the various actors in a steering committee to establish a co-learning community that works towards a transdisciplinary research agenda. We aim to present a model for describing and analysing the (quality of) social practices and social learning processes within the IK2A framework (Rütten & Gelius, 2013). Therefore, generic challenges and potential solutions for transdisciplinary cooperation between researchers, policymakers, and professionals to promote capabilities for active lifestyles will be identified. Societal and scientific problem under investigation: We will present how interactions between context and interventions affected the interdisciplinary research teams and their social learning processes. Analysing the social practices in the specific cooperative planning groups of the subprojects may shed lights on intercultural formations between researchers, policymakers and professionals and might illustrate which relationships have influence on which impacts and outcomes and how the co-development of skills and the construction and exchange of knowledge developed. Therefore, the main question is, does the IK2A approach lead to more integrated social practices? Description of research process and methods: In the ongoing intervention and assessment process, so far we did participant observation of network-meetings, reflexive focus groups with researcher teams (n=15, three times per setting with four to nine participants each), semi-structured interviews (n=15) with Principle investigators, policymakers and professionals. For triangulation, we analysed additional project documents, e.g. minutes, resolutions. We used computer-assisted software for transcription and did thematic content analysis. Summary of findings: We identified the following challenges: (1) identification of a shared working basis, (2) achieving policymakers' commitment, (3) participation of end-users, and (4) integration of specific research elements into the cooperation with policymakers and professionals. Challenges in cooperation are shared across diverse settings. Addressing generic challenges in a case-consultancy-approach might provide specific solutions for a specific case as well as secondary learning outcomes for stakeholders in other settings and thus contribute to more adequate, sustainable, and transferable interventions for the promotion of capabilities for active lifestyle. The characteristic learning outcomes of the actors may help to conduct an improved, transdisciplinary and thus a more sustainable implementation of interventions.

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ENVIRONMENT COURTS IN CHILE: A NEW SPACE FOR TRANSDISCIPLINARITY?

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Keywords: Environmental adjudication, law, science, transdiscipline

Since year 2000, a steady growth in the number of environmental courts and tribunals (ECTs) in the world has occurred. Last year, the UNEP reported over 1200 of this specialized courts in 44 countries. The main difference between ECTs and traditional courts, is that the decision-making process often incorporates both lawyers and scientific experts. Chile is one among these 44 countries with ECTs. This country's jurisdictional model for solving environmental disputes is territorially based, and has a mixed composition. This last means that one of the three judges of the court must be an expert in sciences. According to the history of the law N° 20.600 that creates the environmental courts in Chile, the mixed composition should be the way for true integration of different disciplines for a reasonable and complete dispute resolution process. But after almost four years of functioning, a natural question arises: Is multidiscipline or interdiscipline enough to achieve that? If we consider that the next level of complexity is transdiscipline, and that a clear and simple definition of that is: a reflexive, integrative, method-driven principle, aiming at the solution of complex problems? (adapted from Lang et al., 2012), it becomes coherently related to environmental courts and tribunal's job: resolve complex socio-environmental disputes, applying different sources of knowledge, and combining reasoned technical-scientific, socio-economic and legal arguments. By reviewing some key aspects considered relevant on transdisciplinary research and a more philosophical approach to transdisciplinary, this research tries to bind different concepts related to transdiscipline with the decision making process of Chilean Environment Courts, with emphasis in the requisites, the phases as well as the challenges acknowledged for transdisciplinary research, reviewing if all this elements can be directly related or detected in

the process of environmental adjudication. Based on this review, it is possible to state that the environmental adjudication process is, without a doubt an incredibly fertile terrain to implement and analyze a transdisciplinary framework as a methodological approach for a better decision-making process, since this process can fill the requirements of all transdisciplinary research, which are (according to Lang et al., 2012) the focus on socially relevant problems, the promotion of mutual learning among disciplines and creates new knowledge that can be transferred to practice. The same occur when reviewing the phases of transdisciplinary research: problem framing, co-creation of a solution and application of created knowledge or solution. Finally, a more philosophical approach to transdiscipline, provided by Max-Neef (2005), in which he proposes a “First Law of Transdisciplinarity” that tells us that the laws of a given level of reality (discipline, knowledge or point of view) are not self-sufficient to describe the totality of phenomena occurring at the same level, can rephrased for environmental adjudication in terms of having a methodological frame to avoid solving any conflict (any phenomena) with a single level of reality (a single discipline). The same occurs for the second law of transdisciplinarity which recognizes that a theory shall be transitory until reviewed in different levels of reality, which in a judicial decision, shall consider, for example, reviewing the consistency of an act from all the different disciplines engaged on it, and not only from the legal perspective.

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INTRODUCING THE TEACHER EDUCATION NETWORK IN LÜNEBURG: THEORY-PRACTICE-INTERRELATION THROUGH TRANSDISCIPLINARY COOPERATION

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Keywords: Transdisciplinary Cooperation; Teacher Education; Innovation Network; Case Study

This poster presentation provides insights about a case study of the Teacher Education Network (ZZL-Network) at Leuphana University of Lüneburg in Germany. Background information about the network's structure, its research, as well as development goals, will be outlined. Then its transdisciplinary characteristics will be elaborated. Finally, key features about the accompanying research will be highlighted. The teacher education network in Lüneburg is part of the Quality Pact for Teaching, which is funded by the German Ministry for Education and Research. The network is a multi-faceted research and development consortia bringing together various disciplines, organizations and occupational groups aiming at the integrated development of the local teacher education system. The overarching goal of the network is to overcome structural boundaries of the traditionally three-staged educational system in Germany, by fostering an integrative theory-practice-interconnection. In doing so, the network of teacher education brings together various subject matters, ranging from empirical educational science, general and special education, and subject didactics comprising English, mathematics, music, German, science studies, as well as health psychology. In addition, different status and occupational groups including teachers, special educators, principals, teacher educators, researchers and students are involved. Over 80 representatives from more than 20 different organizations form eight so-called development teams. The teams jointly design, implement and evaluate teaching formats ranging from university seminars and teaching units concerning heterogeneity and inclusion, or competency-based instruction as well as advanced teacher trainings. Thus, the network bears the potential of becoming a jointly-shaped third space (Zeichner, 2010) and community of practice (Wenger, 2003). This makes it possible to share, negotiate and critically discuss various perspectives including different sources of knowledge, experience, convictions and needs. Moreover, the self-declared claim of the ZZL-Network is to bring together the aforementioned stakeholders on an equal footing and within a culture of togetherness. The pooling of professional resources and expertise from different backgrounds bears potentials not only for the participating organizations, but also contributes to a better integrated and therefore more efficient and robust teacher education. Following prominent conceptualizations of theory-practice-interrelations in teacher education (Hericks, 2004, p. 301; Villiger, 2015), the accompanying research on cooperation and interconnectedness within the network highlights four main distinguishing features: interrelations on the level of a) interpersonal relations, b) subject matter, methodological or didactical principles, c) curricular fit and d) organizational structures. In order to conduct empirical research, a mixed-methods design was developed comprising selected quantitative and qualitative instruments to generate further insights on these levels. To elaborate on epistemic, social and organizational aspects of collaboration and integration (Felt & Fochler, 2012, Jahn, Bergmann, & Keil, 2012, p. 7, 2012) within the eight development teams, a standardized questionnaire was conducted. An additional ego network analysis adds further information about the integrative potential of the teacher education network in terms of its potential, to bring together different occupational groups and organizations, which are usually

not – or only weakly – connected within their original work context. Follow-up studies using assessment methods like half-standardized and construct interview questions, network cards and focus groups, will provide further knowledge about success factors, challenging conditions and mutual learning potentials for working in transdisciplinary development teams in the network.

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DEVELOPMENT OF AN ANALYTICAL FRAMEWORK FOR ACTIONABLE KNOWLEDGE IN TRANSFORMATIVE SUSTAINABILITY RESEARCH (2017-2020)

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Keywords: Actionable Knowledge, Transformative Sustainability Research, Water and Land-Use

Project: Anticipating challenges at the nexus of Luxembourg's water and food systems: Combining a scenario- and systems-approach to co-create a citizen science tool set for monitoring and social learning (funded by the Luxembourg Ministry of Sustainable Development and Infrastructure, 2016-2021). Our project aims to contribute to a better understanding of practices and challenges at the water-land nexus in Luxembourg and, furthermore, to reconfigure the science-policy-practice interface.

We engage representatives and members of two river partnerships as well as national stakeholders in qualitative interviews, (the design of) collaborative (conceptual mapping and scenario) workshops as well as in the design of citizen science tools. These activities serve to identify practices, variables and drivers of change, feedbacks, lock-ins and solution options from a water-land systems perspective, notably, in relation to agriculture, residential development, industry and households, both locally and nationally. The overall objective is to adopt transdisciplinary approaches conducive to the co-creation of actionable and socially robust knowledge that enhances the capacity of actors to reflect on and tackle sustainability challenges. Whilst it is generally accepted that transdisciplinary sustainability science is action- and solution-oriented, the concept of actionable knowledge itself is still in need of definition and refinement. Wiek and Lang describe actionable knowledge as “multi-faceted”, as “knowledge that stakeholders are willing and able to implement” and “evidence-supported solution options” (2016). Referring to Grunwald, they also state that actionable knowledge should be based on different knowledge types (descriptive-analytical/system, normative/target and instructional/transformation knowledge). Interestingly, Pohl and Hirsch Hadorn propose to structure transdisciplinary research itself along the very same knowledge types in order to facilitate knowledge integration. However, few attempts have been made to explain actionable knowledge in terms of how different types of knowledge actually interrelate. Moreover, scholars such as Georg Burt and Kees van der Heijden (2008) prefer to elaborate on Vickers' different judgment types and stress the importance of interactive (or social) learning. Again, others call for reflexivity as a central aspect of and concept for (the evaluation of) transdisciplinarity (Popa et al, 2015). In our project, we use grounded theory methodology in order to gain a better empirical understanding of how stakeholder practices at the water-land nexus relate to different types of knowledge, rationality, judgment, social interaction and learning or reflexivity, to mention but a few possible factors. Furthermore, we will investigate how different collaborative methods, forms of engagement and representation (e.g. in systems thinking approaches such as conceptual mapping or scenario workshops) may lead to changes in knowledge, judgment or action among individual and organizational stakeholders in a specific problem space. Special attention will be paid to uncertainty, controversy, diversity, vulnerability and other aspects that may influence or impair the co-creation of actionable knowledge. In this way, we seek to develop and test an analytical framework for actionable knowledge grounded in (empirical) evidence and practical experience. The framework should also

be suitable to provide guidance for the implementation and evaluation of transdisciplinary projects. Our central research questions thus are “How is actionable knowledge constituted (in terms of both process and content)?” and “Which quality criteria can be applied?”.

CONTRIBUTIONS TO COMMUNITY PROBLEMS – A TRANSDISCIPLINARY APPROACH

Beatriz Amanda Watts, *Guest Lecturer at Leuphana University of Lüneburg, Germany*, **Milly Bolivar**, *Universidad Antonio Nariño, Colombia*, **Valeria Zago**, *Departamento de Ciência e Tecnologia Ambiental - CEFETMG, Brasil*

Keywords: Community action, Millennium Goals, Solid Waste, Children Violence, Responsible consumption

This work is a transdisciplinary approach for the practical solution of specific problems of some communities in Colombia, the collaboration was done among individuals belonging to several institutions and yet without an institutional framework and carried out on a voluntary basis. Academic actors come from three universities, the first group from the Leuphana University in Germany from the complementary studies seminar "Sustainability in Latin America". The second group belongs to the faculty of psychosocial studies of the Antonio Nariño-Colombia University and the third to the Environmental group of CEFETMG-Brazil. The participation took place in different degrees and at different levels. The other group of stakeholders involved in this work corresponded to secondary teachers and their communities, as well as an indigenous leader and his community. Communities committed to their own development and whose interests are aligned with the objectives of sustainable development of the United Nations. The main focus of the whole strategy was to create a working alliance between these interested in promoting some projects. Projects that are not intended to be addressing large-scale research questions, but simple practical solutions to major problems. The contribution of the academic sector was to support the initiative of the community, by the transfer of knowledge through workshops, videos and brochures. Despite the various difficulties, it was possible, to varying degrees, to obtain optimal works that resulted in a mutually beneficial product. There were four different research questions, two of them aimed at working the psychosocial part, these were supported by a Psychosocial Research Professional in Colombia, its students and the German working group. 1. How to take action against child violence. 2. Which strategies may be developed to minimize the influence of technologies on family dynamics. The other two research questions focused on environmental issues and were supported by two environmental education professionals from Brazil and Germany and their students, these projects were: 3. How to encourage responsible consumption in youngsters between 11-15 years. 4. How a culturally independent indigenous community can remain independent in its management of solid waste. The products thus developed were implemented by the communities, which provided feedback, in order to make possible the subsequent collaboration. The research question was generated by a real problem in each community and the community was an active actor on the design, development and implementation of the products, therefore, the academic support pretended to be only an impulse and the project belongs to the community which is expected to be replicated by similar communities. From the academic point of view, it is possible to close some circles of design, implementation and evaluation of the results. In addition, the knowledge produced will be published in scientific communications.

COLLABORATIVE LEADERSHIP IN TRANS-DISCIPLINARY RESEARCH PROCESS AND THE SUSTAINABILITY OF PUSH-PULL TECHNOLOGY

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Transdisciplinary research approach requires that different scientists with their discipline-specific theories, concepts and methods find ways to work together with other societal players to solve a real-life world problem. In order to put this into practice, Trans-disciplinary Action Research (TDR) approach was applied in this study using Push-pull technology (PPT) implementation as a case study. Field work was conducted in Bako Tibe and Yayu districts in the Oromia region of Ethiopia between from August 2014 to April 2015. PPT is a biological based technology for stemborer pest control in to maize was used to provide an opportunity for collaboration, interaction and learning between researchers and other stakeholders. The data was collected using qualitative methods; 37 key informant interviews, 20 Focus Group discussions, two stakeholders' workshops, on-farm practical demonstrations and participant observations. The findings showed that; effective collaborative leadership provides a chance for the stakeholders to participate in the technology learning and decision making by enabling them to contribute skills towards development, refinement and adaptation of the technology regardless of their station in life. Although PPT perennial nature of cropping provided opportunities for continuous interaction and learning, it requires committed leadership and institutional engagements to sustain such collaboration. This is because the stakeholders, although they were working on joint basis, they represented their

respective groups. Therefore, collaboration with “personally” committed leadership is what increase sustainability of PPT. Market forces and the involvement of private sector players will also play a role to achieve this.

PERIODICAL STUDIES RESEARCH [RE]VISITED: AN [INTER]CULTURAL APPROACH, A HOLISTIC [TRANS]METHODOLOGY

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Keywords: paratext, editorial design, inter/trans-disciplinarity

Interdisciplinarity is often under-practiced partly because researchers find it difficult to create efficient methodological tools that combine theoretical concerns with empirical data. In particular to periodical studies research, existing methodological approaches fail to bring together the textual, visual, and designed characteristics of the periodical. I, therefore, argue that looking outside the established culture, meaning discipline, researchers could find suitable methodological tools that allow the true appreciation of the periodical as a complex design object. To that end, this paper presents a modified version of the Genettian theory of the “paratext”, and considers the advantages and disadvantages of this framework when applied to periodical studies design historical research (Genette, 1997). It then expands on the concept of the paratext to demonstrate how it can be used for academic research in other fields, whilst emphasizing the need for interculturality in academia. Periodical studies research is predominantly strictly disciplinary, and the main reasons for this division are: the disintegration in communication amongst scholars; the pressure for specialization; and the type of questions examined. Evidence suggests that most research is produced by communication scholars (mainly from communication, media studies, journalism and public relations), some is produced by humanities (mainly from English, history, and art history) and social sciences (mainly psychology and sociology) scholars, and a much smaller body is produced by design research scholars (a body of work typically focusing on design theory, applied design, or design history). Inevitably, the majority of periodical studies research attends to content analysis with a focus on the textual and/or the visual, whilst a very small proportion of studies concentrate on design. Consequently, the research questions asked and the methodological tools used to answer these questions are in their majority focusing on one or two aspects of the periodical, or one or two parameters that may influence the reading of the periodical, rather than addressing the full complexity of this multilayered communication medium. I, therefore, argue that a holistic approach to the study of the periodical is long overdue; an approach that is “thinking with the medium”, in Marie-Laure Ryan’s words, and not “thinking about the medium”, where the former is “an art of compromise between the affordances of the system and the demands of narrative meaning”, and “not the overzealous exploitation of all the features offered by the authoring system” (Ryan, 2005, p. 516). This paper presents one such holistic methodological model for periodical studies research, and maintains that in order to be able to expand the discussion, we need to refuse inward looking niche groups, which infrequently quote outside their own culture, and are even more infrequently quoted by others. We need to make the effort to adopt intercultural, meaning interdisciplinary, and transdisciplinary approaches to research to protest against practices, that are pigeonholed and can often constrain, rather than encourage, as Gen Doy argues, “thinking across borders, and going places without a passport” (Doy, 2008, p. 17).

RESEARCH ON SUSTAINABLE ENERGY SYSTEMS - FROM FEASIBILITY STUDIES TOWARDS AN INTEGRATED, TRANSITION-ORIENTED AND CULTURALLY CONSCIOUS APPROACH

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Keywords: Sustainable Energy Systems, Diffusion of Innovations, Cultural Compatibility, Rebound Effects

The transformation of economy and energy systems into a low-carbon setup is fundamental to maintaining acceptable climate conditions on the planetary level. A considerable amount of literature on the subject has been published. Our analysis of key publications in the field exposes common conceptions as well as shortcomings resulting from a scenario-based perspective that focuses almost exclusively on the technical feasibility of the integration of fluctuating power sources (i.e. wind and solar) into the grid. First, the scenarios described minimize CO₂ emissions during the use phase of the grid, power generation and storage components, but environmental impacts during their whole life cycles are hardly discussed. Second, the studies do not account for rebound effects. As an example, the availability of more energy efficient household appliances can lead to extended use by consumers, sacrificing a part of the energy savings. Third, and probably most important, the models of transition pathways solely reflect on technical and financial conditions. We argue that a successful transformation of energy systems is constrained by the adoption of crucial innovations by households, firms and governmental institutions. The adoption of innovations, including insti-

tutional and cultural ones, according to Rogers, happens within a social system where decisions of individual entities are constrained by technical, financial and regulatory limitations. They are also strongly influenced by the visible behaviour of peers and by compatibility with shared values and beliefs. Additionally, with ongoing adoption of technical inventions or use patterns, their symbolic value and the general perception of adopters of a certain innovation can change radically over time. Our goal is to describe and analyze the social systems consisting of (potential) adopters of energy related innovations and change agents (promoters). With a thorough understanding of drivers and obstacles, sophisticated transformation strategies may be deduced. Resources needed for the promotion of certain innovations can be allocated more efficiently. Furthermore, measures could be taken that aim to alter communication structures in said social systems, e.g. by increasing the visibility of successful adoptions or moderating the communication between change agents. Starting with a framework categorizing energy-related innovations by technical, institutional and cultural aspects and generic sustainability strategies (efficiency, consistency and reduction of consumption), we develop an empirical research design for analyzing the potential for widespread adoption of crucial innovations, following a mixed methods approach. A deeper understanding of influence factors, perspectives and the cultural framework will be gained through qualitative interviews with adopters and change agents. Where applicable, findings will be reassessed through statistical surveys. Preliminary results of the qualitative analysis integrating cultural perspectives with technical and economical ones will be discussed alongside the design as well as the performance of the approach. The project is part of the transdisciplinary research programme "Nachhaltige Energieversorgung Niedersachsen (NEDS)" that aims to model, simulate and evaluate consistent pathways for a transformation of the electricity system of the state of Lower Saxony, Germany. The general goal is to define a method which helps in the decision-making process needed for the transition from fossil and nuclear energy systems to sustainable energy systems. Within this context we will show how our findings can be used for adjusting transition pathways in joint technical and economic simulations of sustainable energy systems and support decision making. Funded by the Lower Saxony Ministry of Science and Culture through the "Niedersächsisches Vorab" grant programme (grant ZN3043).

PLAY+FORMANCE

USING PERFORMANCE ART AS A METHODOLOGY TO DISCOVER CREATIVE COMPATIBILITY BETWEEN PEOPLE OF DISPARATE DISCIPLINES

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Keywords: Interdisciplinary, performance art and PLAY+FORMANCE.

Introduction: In this first-ever studio project within the Envision platform at the Royal College of Art (RCA), we will ask questions around the core-business of poets, scientists and designers alike: What does Uncertainty and Discovery mean today and what is our Future with Uncertainty and Discovery to be? How would we take an active role in shaping our common future, and is it as it seems, that overcoming uncertainty or even ignorance, will increasingly take place within a distinctly interdisciplinary future? Why PLAY+FORMANCE? "Great Creativity" could appeal from interdisciplinary team with a trust and an extraordinary breakthrough perspective. However, "If people were worried that their ideas might be ridiculed by the group, the process would fail." (Jonah Lehrer, 2012) For instance, in a brainstorming level of interdisciplinary team, considering background of other teammates without a comprehension and trust between each other can provoke a limitation on creative thinking. PLAY+FORMANCE allows participants to transcend cultural experience barriers between dissimilar teammates, encouraging valuable success beyond interdisciplinary fail. It is a method of sensing compatibility on a more nuanced, physical level. The absence of rules, spontaneity, and a performer spectator relationship leads to performance art. Our interdisciplinary team, consisting of a vehicle designer, financial engineer performance artist and interaction designer reflects the interdisciplinary mission of the Envision Platform of Service Design at the RCA. It is explicitly understood on our platform that these disparate backgrounds often cause great difficulty when we try to make creative decisions on a collective level. However, through PLAY+FORMANCE for one continuous hour, we interacted freely, often discovering subtle disconnects between our thoughts. By watching recorded video and talking about the reason, we have more understood other perspectives of our teammates. After, in a brainstorming step, our team obtained various perspectives of ideas because we have built such kind of a trust between each other and we tend to propose ideas based on a sense of unity. PLAY+FORMANCE could build an extra educational value on a new way of ice-breaking for interdisciplinary team Conclusion: Although interdisciplinary team can have a possibility to propose breakthroughs, the less-trustworthy pairings is risky because of disparate backgrounds and experiences. Interdisciplinary team might get ontology of related or dissimilar fields via PLAY+FORMANCE and it can achieve a desired balance between risk and reward. Our work has an apparent limitation in terms of iterative test to demonstrate an effect on PLAY+FORMANCE, but undoubtedly, it is expected to be regarded as a one of solution to solve a dilemma of an interdisciplinary team.

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»VIELFALT DER WISSENSFORMEN« – STUDIUM GENERALE 2.0

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Keywords: interdisciplinary, object based learning/teaching

Programmes promoting interdisciplinary higher education have gained momentum in Germany with the Quality Pact for Teaching (BMBF) in 2011. Previously, in the course of the Bologna process, interdisciplinary components in higher education curricula were reduced in favour of a strong disciplinary training. This development was identified and considered as a loss. Together with a variety of activities within the “Übergänge” (“Transitions”) project addressing different target groups, challenges and problems, Humboldt-Universität zu Berlin took the opportunity to establish the interdisciplinary study programme »Vielfalt der Wissensformen« (»Diversity of Knowledge«). Key foci in the development of the programme are:

- to bridge the gap between different science cultures (natural sciences, humanities, social sciences) thus aiming at a broad interdisciplinary thinking
- to sharpen students’ understanding of the characteristics and the different structures of disciplines and science cultures
- to cause students to reflect on their epistemological convictions
- to qualify lecturers for interdisciplinary teaching

As follows, »Vielfalt der Wissensformen« is a programme of interdisciplinary studies which adds an interdisciplinary component to the disciplinary training of students. Building on the idea of a Studium generale 2.0, it focuses on aspects of stability, transferability and distinguishability of knowledge in a historical, contemporary and future perspective. The poster proposed to be presented at the “International Transdisciplinarity Conference 2017” aims at presenting insights into the study programme »Vielfalt der Wissensformen«. It thus also provides the background for Anne Dombrowski’s et al. submitted case study of a course taught within »Vielfalt der Wissensformen«. Teaching in »Vielfalt der Wissensformen« is based around the work with concrete objects of knowledge relevant to disciplines across sciences (such as the “Zweinutzungshuhn”, the “radio” or the “fossil of a dinosaur”). In the first half of the courses multiple disciplinary perspectives on the particular object of knowledge are brought together complemented by phases of meta-reflexions on knowledge, science/s and inter/disciplines. The second half of each course is reserved for group-work projects in small interdisciplinary teams, translating the knowledge acquired in the first half of the courses into a product or presentable format (like e.g. a knowledge map, a radio show or an exhibition). Programme evaluations have shown that this interdisciplinary learning approach is apt:

- to activate students’ disciplinary knowledge while at the same time questioning the limits of that knowledge
- to enable the dialogue between students of different science cultures
- to encourage the development of interdisciplinary understanding, sometimes even interdisciplinary thinking
- to develop interdisciplinary team skills by demonstrating how interdisciplinary collaborations work

To guarantee the transfer of the aims of »Vielfalt der Wissensformen«, two workshops are organized each semester to train lecturers in their teaching of interdisciplinary courses in the specific »Vielfalt der Wissensformen« teaching format. Furthermore, these workshops assure an exchange of experience and stimulate discussions about teaching interdisciplinarity.

DIDACTICS FOR TEACHING TD AND SUSTAINABILITY LEADERSHIP

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We will explore different didactical settings of teaching TD sustainability leadership skills in various formats and settings. We incubate the exchange through various speed talks on teaching cases, good practice, and open challenges. One focus will be on real world laboratories, one on outdoor experiential settings. We showcase programs at the University of Freiburg, the ETH Zurich, University of Lugano, and the HTW Chur, reporting from embedded case studies in tourism, geography and conservation in the Nature Park Southern Black Forest; building and testing eco skis; exploring alpine urbanism in the Italian mountains, and others. The courses shown and discussed here are inter- and transdisciplinary courses combining traditional lecture and seminar elements with outdoor activities, self-directed action learning, e-learning, creative visualization of storytelling, fabrication laboratories in design and engineering, and project-based, embedded case study methods. We have been evaluating some of these courses for more than ten years and are now willing to share and discuss those experiences with others. We intend to develop a kind of explorative overview and matrix of teaching TD sustainability science and leadership in this workshop, and others can contribute with spontaneous speed talks.

PLACE-BASED TRANSDISCIPLINARY RESEARCH FOR SUSTAINABILITY TRANSFORMATION: THE CASE OF TRANSYLVANIA, ROMANIA

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Keywords: place-based, context, leverage points, scaling

Understanding how changes in interconnected social-ecological systems facilitate the transformation to sustainability represents one of today's key challenges of sustainability science. Rather than just understand how systems have changed, there is an urgent need to examine more deeply the root causes of unsustainability, why and how opportunities for change can be created, and to highlight what changes can be made. One way to do so is to focus on hitherto under-recognized leverage points — places in complex systems, where a small shift can lead to fundamental changes in the system as a whole, potentially fostering a more sustainable development of social-ecological systems. The Leverage Points project includes two transdisciplinary case studies that seek to understand and ground truth the functioning of interconnected levers for sustainability transformations in the study areas and beyond. Our approach is place-based, that is, we apply the transdisciplinary research mode within the concrete settings and context of two regions: Lower Saxony and Transylvania. This poster reflects on the challenges and opportunities associated with the Transylvania case. Transylvania is a region in central Romania, dominated by rural population, and with a vibrant civil society acting as practitioners of change towards a commonly agreed upon sustainability vision. From a scientific practice perspective, we asked how to scale the impact of sustainability initiatives. We present our practical experience in the carrying out and operationalisation of the transdisciplinary process in Transylvania in two iterative and reflexive phases: the setting-up phase and the problem framing phase. Initially, the real-world focus is reflected in the setting-up phase. For example, the low level of commitment and decreased problem ownership in Transylvania poses difficulties to the application of an ideal typical transdisciplinary case study. There are higher transaction costs associated with a poor commitment that may lead to an altered transdisciplinary practice and design beyond its recursiveness. The co-designed goal in Transylvania is to support and enable sustainability-transformation processes according to the local (and normative) knowledge of place-based stakeholders and decision-makers. Sustainability grassroots initiatives are numerous and locally relevant, but lack in consistency and coordination. Our research focus therefore is on the identification and analysis of amplifying strategies that can increase the reach of existing initiatives and uncover context-specific pathways towards sustainability. The co-production of transferable solution-oriented knowledge takes place at the interface between non-governmental organizations leading the pathway to transformation, and our disciplinary and inter-disciplinary knowledge towards integrating, recognising and further advancing the progress already made in heterogeneous small-scale local sustainability initiatives. This problem framing makes a twofold contribution. First, framing sustainability transformation as amplifying strategies opens questions such as: How can these strategies be specified and operationalized to inform and encourage sustainability transformations in other cases, systems, or disciplinary contexts? While amplifying strategies are not yet a widely used approach to trigger transformational change, literature increasingly recognizes the importance of processes such as scaling for accelerating sustainability transformations. Second, our proposed amplifying strategies are designed to lever local contributions to sustainability in the direction of a broadly supported vision for Transylvania's future, within the contingencies and conditions of the case study, reaffirming the leveraging power of transdisciplinarity as a transformative practice.

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DESIGN-BASED INTERVENTIONS IN TRANSDISCIPLINARY RESEARCH

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Keywords: design methods, creative intervention, integration, co-creation, knowledge co-production and exchange

Transdisciplinary research addresses complex problems by combining different bodies of knowledge in heterogeneous project teams. Various professional and cultural perspectives help to create a richer picture in understanding the context of the problem of concern and to find new ways dealing with it. However, having more actors with diverse disciplinary and professional backgrounds in one team, can make communication and integration more difficult. To establish common ground, methods from design are being used in this research. Design is perceived as a discipline that changes the existing into desirable states and can be considered a transformative practice. Designed artefacts represent coded knowledge and thus work as epistemological tools; their tangibility provides an alternative to written and spoken words and level hierarchies, power, and rhetorical abilities. This poster introduces a novel method based on design prototyping used as an intervention for creating a shared understanding of the problem and increasing the level of integration within transdisciplinary processes. The research shows how design methods can

include heterogeneous perspectives and knowledge stocks to foster processes of knowledge co-production and exchange. By characterising design, design research and their methods, and exploring commonalities between design research and transdisciplinary research, a transfer of design practices is framed. An case study from Transylvania offers an insight into the use of design methods in transdisciplinary research and presents preliminary empirical findings. To analyse the empirical data, a concept of different integration dimensions from the transdisciplinary sustainability sciences serves as a basis for investigating the epistemic, social-organizational, and communicative integration performance of design methods. The proposed design-based method extends the methodological framework for integration and collaboration within transdisciplinary processes, by bridging different communicative skills, knowledge cultures, languages and methodological backgrounds. Consequently, the introduced approach facilitates epistemic, communicative, social-organizational and cultural integration among the involved actors. This design approach for co-creation in transdisciplinary processes actively contributes to solution-oriented, robust knowledge, as needed for future-oriented transformations. Considering design methods for transdisciplinary research practice as well as for research on transdisciplinary integration and intervention processes, opens up a promising methodological approach for working in heterogeneous teams.

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CULTURAL FACTORS FOR INTERDISCIPLINARY INSTITUTIONALIZATION AT UNIVERSIDAD DE LA REPÚBLICA (URUGUAY)

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Keywords: knowledge production, interdisciplinarity, epistemic living spaces, integrality of university missions

This poster seeks to identify the cultural factors that operate in inter- and transdisciplinary practices. We will try to uncover the particularities of interdisciplinary processes at the Universidad de la República (UdelaR, Uruguay), based on the notions of epistemic living spaces (Felt and Foher, 2010) and the researcher's perception of university (epistemic) spaces that produce interdisciplinary knowledge. The analysis presented is part of the project, "Challenges of interdisciplinary and transdisciplinary knowledge production: Institutionalization, cultures and communities", which seeks to study interdisciplinary and transdisciplinary knowledge production, by analysing institutionalization processes, (epistemic) cultures and communities. The general dimensions of this project are: (i) historical, (ii) current state and (iii) strategies and transformational effects of inter- and transdisciplinary knowledge production. This particular approach takes into account the processes promoted since the Second University Reform (2006 - 2014), during which the "integralidad" (comprehensiveness/completeness/integrality/ integrative process) of missions of the universities (education, research and outreach) became more important at UdelaR. The concept of integrality, according to the protocols produced by Udelar, is defined as the interdisciplinary perspective, both in terms of the epistemological level linked to the teaching (treatment of contents) and to the creation of knowledge (construction of the research object). In this research the following centers serve as case studies: Centro de Envejecimiento y Vejez (Interdisciplinary Center of Studies on Aging) and the Centro Interdisciplinario de Manejo Costero Integrado del Cono Sur (Interdisciplinary Center Integrated Coastal Management of the Southern Cone). The general objective of this paper is to assess the possible emergence of epistemic cultural communities from the exploration of these two interdisciplinary centers of UdelaR, and to analyze the relationship between integrality and interdisciplinarity in their work. For this purpose, we analyzed the practices and perceptions of students, teachers and other societal actors involved with these centers. The specific objectives are to study the characteristics of the centers considering: (i) the notion of epistemic living spaces (Felt and Foher, 2010); (ii) the perception of students, teachers and social actors/stakeholders linked to the case studies, regarding the integration of functions and disciplines; and (iii) the relationship between integrality and interdisciplinarity in the selected case studies. A qualitative methodological approach was implemented, which included semi-structured interviews and participant observation. Firstly, we carried out open interviews with key actors (students, teachers and societal actors). Throughout the project, participant observation was performed during events and activities related to the proposed cases. The main dimensions of analysis were: (i) methods and methodologies developed to carry out interdisciplinary work, (ii) participation (of teachers, students and stakeholders in the different stages of the knowledge production process and consolidation of epistemic living spaces, (iii) the theory-practice linkage, (iv) interaction between disciplines, (v) difficulties of the interdisciplinary/integral/integrative knowledge production process and (vi) lessons learnt from the centers' experience. The preliminary results of this study are organized around two themes: (i) the relationships between interdisciplinarity, integrality and the cultural factors that influence their development at our university and (ii) the consolidation of new epistemic living spaces at UdelaR as a means to foster better interdisciplinary and integral initiatives. We envision a model that is

applicable to different universities but based on the Universidad de la República's experience, where we integrate the dimensions of interdisciplinarity, cultural factors, integrality and epistemic living spaces.

PRINCIPLES, POLICIES AND PRACTICES OF TRANSDISCIPLINARY INSTITUTIONALIZATION IN HIGHER EDUCATION: THE LEUPHANA UNIVERSITY OF LÜNEBURG (GERMANY)

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In response to the ever increasing need for interdisciplinary (Id) and transdisciplinary (Td) knowledge, universities around the world have engaged in efforts to transform their organisational structures. Since 2007, the Leuphana University of Lüneburg has addressed this through structural reforms which encourage Id and Td. This poster focuses on the analysis of the institutionalisation process of transdisciplinarity at Leuphana University, specifically through its Methodology Center. The Center is in charge of supporting students from all levels (Bachelor, Master, and PhD) with respect to education and training. It offers different kinds of courses for interdisciplinary, transdisciplinary and un-disciplined methods. The Center is also structured as an interfaculty division of the University and as such, this gives the Center a flexibility outside the traditional constraints of faculties, therefore facilitating the growth and expansion of transdisciplinarity through all areas of the university. Such an institutional design is advantageous in overcoming obstacles identified in the scientific literature on the institutionalization of Id and Td at universities. To this end, we present the results of the document analysis of the Protocols of the Senate of Leuphana University and of the meetings of the Methodology Center, as well as exploratory interviews with scholars related to this center. This study is part of the project "Challenges of inter- and transdisciplinary knowledge production: institutions, cultures and communities", developed during 2016 and 2017 and financed by Leuphana University. Based on a neoinstitutionalist approach, our analysis took place on two levels: (i) one referring to the formal enactment of transdisciplinarity and the creation of the Methodology Center; and (ii) another focused on legitimacy, that is, on the realities of this process and the actual consolidation of the center in its everyday practices. This allows us to find out the reciprocities or disparities which exist between these two levels. Our results point out that the institutionalisation of transdisciplinarity in the Methodology Center is a process that started from the higher decision-making levels of the University (top-bottom perspective). However, such a beginning is not sufficient to achieve its consolidation, for this requires the broader involvement of all members of the University, especially the students (bottom-up perspective). Ultimately, our findings reveal that the institutionalization process of the Methodology Center is iterative, meaning that it does not end at the legitimacy level. Instead, the formal and practical levels interact and respond to the progress of each other to advance the institutionalization process.

THE EFFECTS OF FUNCTIONAL PLANT DIVERSITY IN THE UNDERSTORY OF APPLE TREES ON SOIL CHEMISTRY AND DIVERSITY OF ARTHROPODS IN A TRADITIONAL ORCHARD

Carla Rebecca Lüps, **Greta Harmssen**, **Sina Sommerfeld**, **Sara Jiménez Peredo**, **Maira Skupin**, **Valentin Rickert**, *Leuphana University of Lüneburg, Germany*

Biodiversity plays a central role in our ecosystems, affecting their functioning and delivery of ecosystem services. Due to land-use change and other factors (eutrophication, climate change, biological invasion) we are suffering from a pronounced loss of species and we know that higher biodiversity leads to an improvement in ecosystem functioning and services. Traditional orchards in Germany are important cultural landscapes, which entail very high biodiversity of flora and fauna, including woody and herbaceous vegetation, that provide many ecosystem services such as pollination, biodiversity, microclimatic conditions and climate change mitigation. Our research within the Leuphana Sustainability Minor is in a transdisciplinary project that is restoring a low diversity former horse paddock in Wendisch Evern (Lower Saxony, North Germany) to a high diversity traditional orchard as a contribution towards sustainability. Within the project we work closely with the Lüneburger Streuobstwiesen e.V, a traditional orchard club in Lüneburg, who own the land and are orchard experts. Biodiversity research in ecology has shown that legumes are important drivers for positive biodiversity effects on ecosystem functioning in grasslands, but there is barely any research on the impact of legumes in the understory of traditional orchards. By sowing a gradient of legume and forb species below 15 different apple tree varieties (in July 2017) that were planted in November 2016, we aim to both provide extra nitrogen (N) for the apple trees (enabling N facilitation) as well as attract a variety of different arthropods species, particularly ground beetles, hover flies, and butterflies/moths to the apple trees, thus promoting pollination as well as general biodiversity (OPTION 1 on our poster). During the planning of the project we also explored OPTION 2 which would have involved sowing different herbaceous species that differ in their flowering times and thus enabling us to investigate how the pollination of the trees may have been affected by this

factor. So far, we have measured soil carbon and N, leaf N in the apple trees, apple tree height, diameter at breast height (DBH) as well as assessed how many plant species there are in the grassland vegetation, in May 2017. This is a long-term TD project with many different partners providing key elements to the overall puzzle.

STUDIUM INDIVIDUALE

Mirjam Kamal, *student of Studium Individuale, Leuphana University Lüneburg*

Studium Individuale is an interdisciplinary study program at Leuphana University. Students are given the freedom and responsibility to design their own curriculum based on their broad academic interests, personal ideas and goals. The self-designed course is created through combining modules from the entire spectrum of academic fields at Leuphana, guided by one main academic research question the students set themselves. As an example, students can combine political sciences with economics, digital media with social sciences, or even environmental sciences with psychology. The spectrum of possible combinations is broad and allows the students to shape their own plan in the pursuit of their personal intellectual interests. Students are encouraged to engage with key questions and problems of our contemporary world. In addition to the self-designed course of study, each student takes part in the core curriculum of the Studium Individuale, a challenging interdisciplinary course where all students engage in central themes that are relevant for both understanding and taking action in the contemporary world, such as: What is valid knowledge? What are possibilities for, limits to and consequences of action? What is modern freedom? The Studium Individuale intends to create a space for intellectual as well as personal development. Important skills such as analytical and reflexive thinking, clear and persuasive communication and well-rounded judgement are cultivated. Through fostering curiosity, self-direction and independence, students are prepared to be creative, purposeful and responsible agents in many fields of life. Students from the Studium Individuale study modules in different study programs and thereby look at the same research question or issue from various perspectives. Specific knowledge, skills and methods from different knowledge fields are attained. At the same time, students are challenged to connect, bridge or simply observe different approaches, e.g. in knowledge production and evaluation of knowledge. In this way, students develop the ability to examine topics in detail, but are also able to understand them in a broader context. Part of the learning process in the Studium Individuale happens beyond the classroom in student-led activities like talks with guest speakers, practical projects, weekend workshops, excursions, and informal exchange. The knowledge and experience gained outside the classroom is then reflected on and integrated into the academic discussion. Thereby students in the Studium Individuale learn in the academic context and stay close to 'real-world problems'. In the poster presentation, students from the Studium Individuale will present their study program with a focus on its inter- and transdisciplinary orientation, and its relevance to academia and society. Additionally, they will present their self-designed courses of study, providing some background to their motivation and goals, and thereby give examples of possible realisation of inter- and transdisciplinary studies). In this way, the students offer insight into the benefits and challenges of learning with freedom and responsibility in the Studium Individuale.

PRESENTING THE TRANSDISCIPLINARY SETTING OF AUROVILLE, SOUTH INDIA, AS AN ACCESSIBLE REAL-WORLD LABORATORY FOR SOLUTION-ORIENTED SUSTAINABILITY RESEARCH.

Aditi Rosegger, *Auroville, South India*

Keywords: Transdisciplinarity, Real-World Laboratory, Sustainability Solutions, Auroville

The intentional international community of Auroville, located in South India, is presented as a potential real-world laboratory for transdisciplinary sustainability research. Auroville, constituted of about 2700 volunteers from over 50 nations, has been attempting experiments in the areas of transformational individual, social and environmental sustainability over the last 50 years. These experiments include the successful reforestation of wasteland, organic agriculture, water treatment, participatory self-governance, sustainable architecture and building technologies, renewable energies, diverse educational systems, and others. Auroville, a self-described „laboratory for a future society“, is protected through the Indian constitution in its autonomy and self-governance and has been endorsed by UNESCO through four resolutions. In spite of the participants' shared goal of human unity in diversity, many fields of complex problems arise within the community, addressing themes such as conflicting worldviews, intercultural communication, learning and uncertainty. These areas are often addressed using inherently and non-explicit transdisciplinary approaches, resulting in a laboratory setting with great potential for transdisciplinary research to be conducted. The unique Auroville context consciously represents a micro-scale system that reflects many of the challenges faced in the world at large, providing space for valuable and solution-oriented experimenting. As a point of entry into this system, water resources management within the community will be a topic for future study. The poster session will introduce listeners to the community,

its potential for transdisciplinary research in its real-world laboratory setting, possible theoretical frameworks and methods as well as invite researchers to participate.

Readings:

Blanchflower, P. (2005). Restoration of the tropical dry evergreen forest of peninsular India. *Biodiversity*, 6(1), 17-24.

Kapoor, R. (2007). Auroville: A spiritual-social experiment in human unity and evolution. *Futures*, 39(5), 632-643.

UNESCO (2007). Commemorative activities for the 40th anniversary of the establishment of Auroville, an international township (177 EX/70 and Add: 177 EX/INF. 11; 177 EX/78; 177 EX/79 Part II.).

‘LÜNEFOOD’ – MASTER’S STUDENTS’ PROJECT AS AN EXAMPLE OF TRANSDISCIPLINARY LEARNING AND TEACHING

Lotta Hagelmann, Anna Lütje, Sabina Dautaj, Omotunde Kasali, Julia Möller, Christopher Simon, Ewa Christiane Gackenholtz, Maud Vogel, Pia Scholz, Silke Dittmann, Yannik Gehlen, Florian Seppelt, Alexander Kinas, Birga Fischer, Stefanie Schramm, Martha Suplicki, Johanna Spies, Marie Sophie Hartinger, Leuphana University of Lüneburg, Germany

Leuphana University and the Hanseatic City of Lüneburg have a long history of cooperation, which is currently being amplified through the contest, ‘*City of the Future 2030+*’, a project sponsored by the German Government that brings together city government/administration, civil society, and the university to develop visions for a sustainable city by 2030. Driven by the question, ‘What does a sustainable city of Lüneburg look like, whose citizens actively engage in implementing the Sustainable Development Goal (SDG) out of awareness of their global responsibility?’, the project develops concrete ideas and procedures to make this happen. In phase I, 750 students, 30 scientists and over 200 actors from the City of Lüneburg developed visions for the year 2030 and beyond. Visions were developed for 25 different areas, such as the future of mobility and green spaces in the city, but also regarding the future of participation, work life and housing. One of the main challenges of this century, and also one of the major SDGs, is to address hunger by reducing food waste. Over one year, the transdisciplinary Master’s project ‘Lünefood’ (Master of Sustainability Science), investigated how the city of Lüneburg could contribute to improving food appreciation and reducing food waste. The pathway of the establishment a food policy council was analysed as a potential solution for a sustainable food system. Local stakeholders and student researchers worked together by integrating different methods, like social network analysis, expert interviews, backcasting, and workshops. Causal loop diagrams were developed to identify the cause and effect variables within the system. As a result, eight sub-visions show potential effects of a food policy council as a ‘think tank’ in order to gain ideas and solutions for a more sustainable food system locally as well as globally.

THE (BIO) DIVERSITY CORRIDOR: A TRANSDISCIPLINARY CASE STUDY IN THE OLDENBURG DISTRICT (LOWER-SAXONY, GERMANY)

Insa Winkler, Leuphana University of Lüneburg and artecology_network, Moritz Engbers, Ulli Vilsmaier, Leuphana University of Lüneburg, Germany

Keywords: transdisciplinary case study, artists, (bio) diversity corridor, leverage points, alliances

The transdisciplinary (Td) case study in the Oldenburg district is designed as an experiential, transformative, transdisciplinary research between the arts, sciences and representatives of diverse societal fields. The Oldenburg district is situated in Lower Saxony in North-west Germany. It is characterized by an intensive industrial agriculture. The region is facing challenges with regard to a loss of biodiversity, nutrient and pesticide exposure, a felt estrangement between communities and nature, and conflicts between agriculture, tourism, and nature conservation. The Td case study is running since January 2016. It focuses on building alliances to collectively shape an emergent and viable future for the Oldenburg region. It offers a unique opportunity for a cooperative research by artists, actors from the region, and academic researchers. Therefore, a “(Bio) Diversity Corridor” is established in the Oldenburg district. The ‘corridor’ symbolizes a membrane, a transitional space, a sluice or a room without a clear boundary. It opens up into various adjoining landscapes and cultural spheres with diverse ways of living, knowing and acting. Three main partners are cooperating within the Td case study: Firstly, researchers from the project Leverage Points for Sustainability Transformation (www.leveragepoints.org) at Leuphana University of Lüneburg. Secondly, artists from the artecology_network, an association dedicated to social tasks in environmental education, such as man - nature - culture - relationship in the landscape through interactions, so called Social Landart (www.artecology.eu). Thirdly, actors from the regional administration covering the fields of nature conservation, climate protection, culture, and the Nature Park Wildeshauser Geest (<http://naturparkwildeshausergeest.de>). Furthermore, a project of master students of Leuphana University of Lüneburg that is focusing on nature parks as levers for sustainability transitions forms part of the Td case study. A variety of research and arts based activities and interventions are realized

with partners and inhabitants of the region to conceptualize and establish the (Bio) Diversity Corridor. Within ‘Leverage Points for Sustainability Transformation’, the Td case study aims at identifying and applying potential levers for a sustainability transformation with regard to institutional structures, human-nature connectedness, and knowledge generation. The Td case study in the Oldenburg district allows for insights into the cooperative research of people from different ways of acting and reflecting on the issues of (bio) diversity, food, energy, and agriculture. This heterogeneity leads to a fruitful but also challenging cooperation. The poster presentation focuses on cooperative practises between academic researchers, artists and representatives of diverse societal fields. Major elements of the design, the development of a guiding question and a shared understanding of basic concepts as well as planning and decision making processes in a steering group will be presented. Finally, initial results and further steps are outlined.

FORMATIVE ACCOMPANYING RESEARCH WITH INTER- AND TRANSDISCIPLINARY TEAMS

Rebecca Freeth, Ulli Vilsmaier, *Leuphana University of Lüneburg, Germany*

To learn about both the benefits and challenges of and at the same time support inter- and transdisciplinary collaboration, we present a methodology we call ‘Formative Accompanying Research’ (FAR). FAR is conducted by a researcher located at the boundary of a collaborative team, strategically positioned to learn about, for and with the team by using both insider experiences and outsider perspectives. Our assumption is that instead of locating a formative accompanying researcher either inside or outside a collaborative team as two mutually exclusive positions, there is merit in moving between the perspectives afforded by being both inside and outside. Thus, FAR is constituted on the move. The positionality of a formative accompanying researcher is in the core of the methodology. We understand researcher positionality to comprise three inter-related aspects. At a practical level (i) positionality describes the physical location of a formative accompanying researcher, their temporal and spatial proximity to the research team they are working with, and their changing position in relation to the team. These movements indicate that (ii) positionality also represents methodological strategies a formative accompanying researcher can adopt to navigate degrees of proximity. Furthermore, it suggests that (iii) positionality is a reflexive research practice of adjusting proximity, taking seriously the ethical considerations of power inherent in the role of a participant-observer. This requires navigating positionality in the form of several balancing acts, between i) observing and participating; ii) curiosity and care; and iii) visibility and neutrality. In support of the development of a FAR methodology and ethic, we propose a series of principles and practices to work productively with each of the balancing acts. The principles are rigorous partiality, sensitivity and translucence. Their respective practices are dynamic proximity in relation to the inter- and transdisciplinary team, critical reflexivity to know when to get closer (without intruding) and when to move further away (without disappearing) and embedded relationality to make visible the power that comes with the FAR role. The FAR role is developed in and currently held by a team member of the Leverage Points for Sustainability Transformation project at Leuphana University, Lüneburg, Germany (www.leveragepoints.org).

SPECIAL MEETINGS

INTERDISCIPLINARY AND TRANSDISCIPLINARY CONNECTIONS AND COLLABORATIONS: AN OPEN MEETING HOSTED BY THE ASSOCIATION FOR INTERDISCIPLINARY STUDIES (AIS)

Organizers: *Julie Thompson Klein, Wayne State University, USA, Rick Szostak, University of Alberta, Canada and Machiel Keestra, University of Amsterdam, The Netherlands*

Monday, 11.09.2017, 9:15 – 10:45h & 11:15 – 12:45h

[C40.108]

Three former presidents of the Association for Interdisciplinary Studies (AIS) – Julie Thompson Klein, Rick Szostak, and Machiel Keestra – are hosting a two-part open meeting of this professional organization for interdisciplinarians founded in the US in 1979. They will begin with brief introductions to the mission and resources of AIS, followed by a transition to joint discussion with the audience of ways to expand inter-organizational resource sharing and collaborative projects. The introductions feature links on the AIS website (<https://oakland.edu/ais>), and the transition to discussion features two prior efforts to foster organizational cooperation (the International Network for Interdisciplinarity and Transdisciplinarity known as INIT and a panel at the 2015 td-net

conference presenting online resources of organizations that are advancing inter- and trans-disciplinarity). After Keestra's opening remarks, Klein will describe AIS efforts over time. She will highlight activities aimed at promoting a professional community for interdisciplinary studies; advocating best-practices for integration in teaching, curriculum development, and research; and sponsoring development of standards for program accreditation and tenure and promotion policies. She will also point to annual conferences and communication forums including a quarterly newsletter, annual journal, and the website, plus directories of programs, model course syllabi, assessment instruments, and a student honor society. And, Klein will raise the question of how AIS now positions itself given new developments in transdisciplinary research and team science: including the premise interdisciplinarity is reliant on disciplines, focus on understanding versus application and implementation, location in the academy versus the real world, and intellectual inquiry versus political and social activity. Szostak will then talk about some of the current activities of the Association. He will address some of the resources available on the Association's website. In particular the "About Interdisciplinarity" set of webpages provides an overview of the dispersed literature on interdisciplinary research, teaching, and administration. A more recent set of webpages on "Interdisciplinary General Education" shows how interdisciplinarity can and should infuse a university curriculum. Szostak will also discuss several important AIS-related publications, and in particular a set of textbooks developed by various authors to facilitate interdisciplinary education. He will also join Klein in discussing AIS efforts to network with kindred organizations. Finally, Keestra will review previous efforts to connect several organizations involved in inter- and trans-disciplinary research, education, and policy. AIS initiated INIT in 2009 to create a "network of networks." In addition, the current td-net and the former Center for the Study of Interdisciplinarity aimed to facilitate communication and collaboration among different organizations and individuals. INIT aimed to mitigate confusion over conceptual and practical issues by exchanging insights and best practices while considering pros and cons of differences in approaches. It also hoped to participate consistently in national and international discussions and policy advice. This effort was not sustainable. During the open meeting we hope to discuss with the audience the value of and need to rekindle such efforts including ways of strengthening presentation of inter- and trans-disciplinarity to other parties and facilitating collaboration between colleagues.

Julie Thompson Klein is Professor of Humanities Emerita in the English Department at Wayne State University and Affiliate of the TdLab at the ETH-Zurich university for science and technology. Her books include *Interdisciplinarity* (1990), *Interdisciplinary Studies Today* (co-edited 1994), *Crossing Boundaries* (1996), *Transdisciplinarity* (co-edited 2001), *Interdisciplinary Education in K-12 and College* (edited 2002), *Humanities, Culture, and Interdisciplinarity* (2005), *Creating Interdisciplinary Campus Cultures* (2010), and *Interdisciplining Digital Humanities* (2015). She is a past president of AIS and was also Associate Editor of *The Oxford Handbook on Interdisciplinarity* (2010, 2017). Klein has received numerous honors, including the Kenneth Boulding Award for outstanding scholarship on interdisciplinarity.

Rick Szostak is Professor and Chair of the Department of Economics at the University of Alberta. He was President of AIS 2011-4 and has served on the AIS Board of Directors for over a decade. He co-authored the third edition of *Interdisciplinary Research: Process and Theory* and the second edition of the *Introduction to Interdisciplinary Studies*, both in 2017. He co-authored *Interdisciplinary Knowledge Organization* in 2016. He has published several articles about interdisciplinary research, teaching, and program administration. He has taught courses on how to perform interdisciplinary research, and served as a consultant to interdisciplinary research groups. And, he has long sought to encourage international collaboration in the study of and support for interdisciplinarity.

Machiel Keestra is assistant professor of philosophy at the Institute for Interdisciplinary Studies of the University of Amsterdam, a researcher at the Institute for Logic, Language and Computation, and a member of the research group Neurocultures & Neuroaesthetics. He has published several articles and books chapters on the philosophy of interdisciplinary research and education, as well as *Sculpting the Space of Actions. Explaining Human Action by Integrating Intentions and Mechanisms* (2014), and the edited and coauthored books *Ten Western Philosophers* (2000), *Major Breakthroughs in Physics* (2001), *A Cultural History of Mathematics* (2006), and *An Introduction to Interdisciplinary Research: Theory and Practice* (2016). Keestra was convenor of the International Network for Interdisciplinarity and Transdisciplinarity and is immediate past president of AIS as well as a continuing board member.

THINKING ABOUT THE FUTURE OF UNIVERSITIES

Organisers: *Olivia Bina, Marta Varanda, Andy Inch, University of Lisbon, Portugal*

Monday, 11.09.2017, 9:15 – 10:45h & 11:15 – 12:45h

[C40.146]

Across Europe, the future societal roles of Universities as producers of knowledge are in question. The perceived needs of the knowledge economy have generated instrumental pressures to build skills for employability and act as anchors for regional economic competitiveness and innovation. In this context, alternative understandings of higher education as core to building citizenship, social justice and environmental sustainability seem to be marginalised. These two sessions will therefore be dedicated to reflective “Thinking about the Future of Universities (part I & II)” through facilitated discussion and debate of different visions of higher education futures and their potential contributions to knowledge production. The first session will take the form of a roundtable discussion featuring contributions from four scholars and practitioners prominently involved in thinking, shaping and contesting these futures. The second session will follow on from these contributions, using them as a basis to debate probable, possible and preferred futures for universities as centres of knowledge production. Discussion will therefore be focused around (some) of the following key orienting questions: (1) How will HEIs relate to, and engage with, the world around themselves (locally, regionally and globally)? (2) What will be the driving ethos of the future university: the character and values of its educational project? (3) What purposes and goals will define Universities in the future? What future for the UN agenda on Education for Sustainable Development? (4) What are the most likely drivers of change and related uncertainties? And finally (5) what obstacles and challenges are to be expected? The overall idea of these linked sessions is to make a contribution towards shaping the space and terms of debate about universities as producers of knowledge with the potential to promote sustainable and just development (UNESCO 2016), as well as wisdom (Maxwell and Barnett 2007) and character (Fadel et al. 2015). Considering inter- and trans-disciplinarity, and processes of mutual learning as key enablers (Steiner and Posch 2006; Warburton 2003), we hope to enable discussion of how core institutional processes that structure research agendas and pedagogical practices might be reshaped. The sessions will contribute to the COST Action INTREPID, and its Futures Initiative, building on discussions at previous INTREPID workshops in Barcelona (February 17th) and London (March 24th) that drew together experts and practitioners with diverse experience and disciplinary backgrounds.

References:

Steiner G and Posch A (2006) Higher education for sustainability by means of transdisciplinary case studies: an innovative approach for solving complex, real-world problems. *Journal of Cleaner Production*, Elsevier 14(9): 877–890.

UNESCO (2016) Education for People and Planet: Creating Sustainable Futures for All, UN Educational, Scientific and Cultural Organisation (UNESCO), Paris, <http://unesdoc.unesco.org/images/0024/002457/245752e.pdf>

Warburton K (2003) Deep learning and education for sustainability. *International Journal of Sustainability in Higher Education*, MCB UP Ltd 4(1): 44–56.

MODES OF SUSTAINABILITY RELATED RESEARCH IN COMPARISON (MONA) – FINAL SYMPOSIUM

Organizers: *Daniel J. Lang, Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University of Lüneburg, Jens Newig, Institute for Environmental and Sustainability Communication, Research Group Governance and Sustainability, Leuphana University of Lüneburg, Judith Kahle, Institute for Ethics and Transdisciplinary Sustainability Research, Leuphana University of Lüneburg, Stephanie V. Jahn, Institute for Ethics and Transdisciplinary Sustainability Research & Research Group Governance and Sustainability, Leuphana University of Lüneburg, Matthias Bergmann, ISOE - Institute for Social-Ecological Research, Frankfurt a.M., Germany*

Monday, 11.09.2017, 13:15 – 17h

[C40.704]

Keywords: research mode, sustainability research, interdisciplinarity, transdisciplinarity, societal and scientific impact

For about two decades, new modes of scholarly research have been promoted under labels such as 'post-normal science', 'new modes of knowledge production' and 'transdisciplinarity'. They aim to effectively deal with societally relevant problems, to produce 'socially robust' knowledge. Key elements include collaboration across scientific disciplines, a focus on real-world problems and the involvement of actors from government, administration, business and/or civil society in the research process. Research programs focusing on sustainability issues have been particularly active in adopting these new research modes. Whereas sustainability-oriented research projects have often been evaluated individually, no comparative study on the actually employed research modes and the scholarly as well as societal outcomes of a larger number of research projects is available to date.

The research project 'MONA' has been funded from 2013 until 2017 by the German Research Foundation (DFG). MONA is providing the to date most comprehensive comparative analysis of completed sustainability-related research projects, studying research

modes, their outputs, impacts and outcomes. In a broad study, MONA has analyzed 60 completed sustainability-related research projects funded by the German Federal Ministry of Education and Research (BMBF) (funding lines 'Research for Sustainable Development' and 'Social-Ecological Research') and by the German Research Foundation (DFG) (individual projects and those in coordinated programs). At our final symposium we will share insights and early results of our empirical analysis regarding:

(I) Research design: By operationalizing theoretical concepts on inter- and transdisciplinary research we worked out criteria and indicators to systematically investigate research modes as well as scholarly and societal research outputs and outcomes.

(II) The topography of research modes in German sustainability-related research between 2000 and 2012: We delimited a field of research projects that shows a high degree of diversity in research modes and is strongly shaped by the German funding structure. Moreover, we find specific types of research versus practice-driven projects.

(III) The link between research modes and outcomes: Combining quantitative and qualitative data, we elucidate how different research modes affect scientific and societal outcomes. Overall, we find that collaboration with non-academic actors increases the societal relevance of research but does not have a measurable effect on academic outcomes. However, we find a great variation of individual pathways between research mode and outcomes.

The presentation of MONA research results will be followed by a discussion forum, seeking for open questions, critical comments, subsequent feedback and connections to attendees' personal research experience and knowledge. The event will conclude with a panel discussion about implications of MONA's research findings for inter- and transdisciplinary sustainability research in Germany and beyond. The MONA final symposium will be held in German! Persons having been involved in the project will be personally invited but conference participants are very welcome!

EXPLORING INTERDISCIPLINARY CAREERS: AN INTERACTIVE DISCUSSION WORKSHOP

Organisers: Catherine Lyall, *University of Edinburgh, United Kingdom* and Laura Meagher, *Technology Development Group, United Kingdom*

Monday, 11.09.2017, 13:45 – 15:15h & 15:30 – 17h

[C40.146]

Keywords: careers, training

Interdisciplinarity has become a cornerstone of research policy with many national and international funding schemes now supporting interdisciplinary research at various stages of the academic life course. Yet, young academic investigators/early career researchers receive very mixed messages about whether this is a desirable career choice. In most countries, doctoral training is still largely bound within disciplines and there are well-documented challenges to pursuing an academic career based on interdisciplinary research and teaching when the majority of reward and recognition systems are still single discipline based. Through a series of three interrelated exercises, this workshop will engage with an audience of young (and perhaps not so young!) researchers and teachers to explore the rewards and challenges of following an interdisciplinary career path. Our goal is to jointly produce a short guidance note on interdisciplinary academic careers that will be disseminated via the Intrepid website.

This workshop is sponsored by the EU COST Action Intrepid <http://www.intrepid-cost.eu>

Objectives:

- To explore the rewards and challenges of following an interdisciplinary career path
- To identify 'mixed messages' sent by typical reward and recognition systems (in different institutions, in different countries)
- To identify positive and negative factors at an institutional level, and implications for career progression strategies
- To provide input for a useful Briefing Note on Interdisciplinary Careers

Key reading

Lyall et al (2011) Chapter 6 Charting a Course for an Interdisciplinary Career in *Interdisciplinary Research Journeys: Practical Strategies for Capturing Creativity*. Read online <https://www.bloomsburycollections.com/book/interdisciplinary-research-journeys-practical-strategies-for-capturing-creativity/ch6-charting-a-course-for-an-interdisciplinary-career>

LEUPHANA-KLASICA WORKSHOP OF THE KNOWLEDGE, LEARNING, AND SOCIETAL CHANGE ALLIANCE FOSTERING COLLECTIVE BEHAVIOUR CHANGE TOWARD SUSTAINABLE FUTURES: MODELS, NARRATIVES AND EXPERIMENTS

Organizers: *Ilan Chabay, Head of International Fellowships, Incubator, and the Knowledge, Learning, and Societal Change International Research Alliance at the Institute for Advanced Sustainability Studies, Germany* and **Daniel J. Lang, Leuphana University of Lüneburg, Germany**

Friday, 11.09.2017, 9:15 – 17h

[C40.704]

Humanity faces tremendous challenges and systemic risks, including climate change, resource limitations, and food insecurity. The well-being and perhaps survival of human society depends upon transforming society to just and equitable sustainable futures, particularly in local contexts. A key issue for this transformation is the question of how collective behaviour change toward sustainable futures occurs or can be fostered in diverse communities at different temporal and spatial scales. Addressing this question is at the core of the international research and action alliance KLASICA (www.klasica.org). KLASICA has sought to identify underlying principles of collective behavior change (CBC) to sustainable futures by examining multiple cases in diverse contexts regarding the pre-conditions, success factors, and barriers in these cases (see link below). This workshop at Leuphana University is an excellent opportunity to further develop this effort with a focus on models, narratives, and experimental data from real world contexts. We will ask how to make best use of different methods and tools to move from theory to practice and examine how information from studies of Asian and European communities can be used as data for agent-based modeling of complex socio-environmental systems. Models which are run on contextually relevant empirical data can provide sound, plausible options and corresponding consequences for use in decision making by stakeholders. Specifically, we will aim to a) identify the kind of empirical data, including motivational narratives, needed to furnish relevant data for socio-environmental models, b) consider how to experimentally test the principles and models of CBC, and c) plan how to use the insights gained in a) and b) to foster CBC. At the start of the workshop, international experts will provide short inputs that will be followed by discussion in small working groups on how case studies can inform modeling, narratives and experimentation and foster CBC. The workshop will end with a fishbowl discussion synthesizing the insights of the breakout groups and outlining the next steps. This KLASICA-Leuphana workshop follows on the examination of cases of island and isolated communities in Asia and Pacific Islands in the Taipei KLASICA symposium in November 2016, which resulted in a preliminary framework document (see <http://klasica.org/a-framework-from-the-klasica-taipei-symposiumklasica-taipei-framework/#more-775>). A series of webinars stemming from the Taipei symposium, in conjunction with other case studies, symposia, and workshops, will form the basis for developing a synthesis of observations and generalizations across the tapestry of diverse contexts, cultures, and locations and lead to practical outcomes in supporting community efforts of CBC for sustainable futures. The workshop will be part of KLASICA and the research project „Bridging the Great Divides“ funded by the State of Lower Saxony and the Volkswagen Foundation and will inform the pilot studies of the latter project.

WORKSHOPS

TRANS-PLACE-MAKING: A ‘WALKING WITH VIDEO’ WORKSHOP

Facilitator: *Sacha Kagan, Institute of Sociology and Cultural Organization, Leuphana University of Lüneburg, Germany*

Monday, 11.09.2017, 9:15 – 10:45 & 11:15 – 12:45h

[C40.152]

Keywords: walking with video, spaces of possibility, place-making

How can we sense and probe the spaces of possibility that urban actors are opening up in their search for sustainable forms of living together and urban development, recognizing their aesthetic qualities? This workshop introduces an empirical approach to urban life that is rooted in walking-based transdisciplinary research (at the convergence of art, phenomenology and social sciences) and in sensory ethnography.

Extracts from my notes, at a walk through Hayle and Camborne (UK) in April 2015 with the Footwork research group of the Walking Artists Networks:

10:30 (Hayle): Identify by diff-erring, disidentify by conf-erring. Walk as an ecosexual intercourse: engage into encounters de- re-locating the body's sexual sites. Mistake dune-grasses for play-toys. Follow dogs' footsteps

so I am wearing the collar. Engage in de-re-posturing, kneeling-up and kneeling-down. Consensus is a walk without knees. Acknowledge the political, enjoy the pain.

15:45 (Camborne): Acknowledge the political, enjoy the pain. Mistake churches for piercing shops. De-re-organize all hegemonies, walk agonistically.

The workshop will combine an introductory autobiographic presentation of 30 minutes (“Retracing my Steps: a 10-years journey to walking-based transdisciplinary research”), a practical exercise of outdoor “walking with video” (with a double focus on ‘sensing and probing spaces of possibility’ and on intercultural difference and transculturality in walking) in teams over 90 minutes (30 minutes preparation and 60 minutes implementation), and a final feedback and discussion session of 45 minutes. During the practical exercise, in small teams, participants will practice “walking-with-video” (after Sarah Pink) with students from Lüneburg, sharing place-making through sensescape lines. All teams will then convene again for a shared feedback session, showing bits of videos to each other and sharing experience, as well as opening up the discussion to a consideration of the inter- and transcultural relevance of ‘walking with video’ (and of walking-based approaches in general). We will look together for shared insights and explore their potential relevance for transdisciplinary research on place-based differences.

Key Readings:

Ingold, Tim (2012). *Being Alive. Essays on Movement, Knowledge and Description*. Routledge.

Kagan, Sacha (upcoming). “Retracing my Steps: a 10-years journey to walking-based transdisciplinary research”. In Claire Qualmann, Misha Myers (Eds.): *Where To? The future of walking arts*. Triarchy Press.

Pink, Sarah (2007). “Walking with video”. *Visual Studies*, 22 (3): 240-252.

DOING TRANSDISCIPLINARY RESEARCH | ADDRESSING CHALLENGES FACED BY EARLY CAREER RESEARCHERS

Facilitators: **Marco Sonnberger**, *University of Stuttgart*, **Johanna Kramm**, *Institute for Social-Ecological Research*, **Carolin Völker**, *Institute for Social-Ecological Research*, **Antonia Graf**, *University of Münster*, **Christian Albert**, *Leibniz University Hannover*, **Kathleen Hermans**, *Helmholtz Centre for Environmental Research*, **Melanie Jaeger-Erben**, *Technische Universität Berlin*, **Steffen Lange**, *Institute for Ecological Economy Research*, **Tilman Santarius**, *Institute for Ecological Economy Research*, **Barbara Schröter**, *Leibniz Centre for Agricultural Landscape Research*, **Stefanie Sievers-Glotzbach**, *University of Oldenburg*, **Janis Winzer**, *Fraunhofer Institute for Reliability and Microintegration, Germany*

Monday, 11.09.2017, 11:15 – 12:45h

[C40.153]

Keywords: early career researchers; interdisciplinary cooperation; stakeholder involvement

This workshop is organized by seven junior research groups funded under the program of social-ecological research of the German Federal Ministry of Education and Research. It aims at fostering exchange among Ph.D. students and early career Postdocs working in the field of transdisciplinary social-ecological transformation research. Particularly, early career scientists are faced with a number of complex and ambivalent challenges going along with their involvement in transdisciplinary research. On the one hand, they are supposed to build capacities and develop skills in the fields of interdisciplinary knowledge integration, collaboration between academia and societal actors (e.g. stakeholder and citizen involvement) and science communication. On the other hand, such skills and capacities are already required when carrying out and managing transdisciplinary research projects. Demands of scientific excellence, generation of practice-oriented results and development of individual research profiles impose further challenges. The workshop focuses on strategies to meet these challenges and to guide transdisciplinary research between theoretical pretense and pragmatic reality. Challenges and respective solutions are discussed focusing the following aspects of transdisciplinary research:

- Integration of natural and social sciences
- Collaboration between academia and society
- Science-policy interface and science communication
- Balancing of societal and disciplinary academic impact

Each of the four topics will be thoroughly elaborated in moderated breakout groups during the workshop. In the breakout groups, participants’ personal experiences with challenges concerning the four topics will be systematically gathered. Then, solutions to these challenges will be jointly identified, discussed and specified taking into account participants’ knowledge of best as well as worst practice examples. The workshop results will be compiled in form of recommendations for early career researchers working

in transdisciplinary research. Options for disseminating the outcomes of the workshop, for example in a joint paper, will be discussed with the workshop participants. The workshop will contribute to the further development and application of transdisciplinary research.

The following bullet points illustrate the proposed workshop agenda:

- General introduction [objectives, scope, procedure] (5 min)
- Input statements [on each of the four topics by members of the junior research groups] (10 min)
- Breakout groups [each working on one of the four topics] (45 min)
- Presentation of group results and plenary discussion (20 min)
- Synopsis (10 min)

DESIGN THINKING, SYSTEMS MODELING, AND TRANSDISCIPLINARY RESEARCH FOR COMPLEX ENVIRONMENTAL PROBLEM SOLVING IN HIGHER EDUCATION: AN INTRODUCTORY WORKSHOP ON INTEGRATIVE DESIGN-BASED INQUIRY

Facilitators: BinBin J. Pearce, Lisette Senn, Christian Pohl, Pius Krütli, *ETH Zurich, Department of Environmental Systems Sciences, Switzerland*

Monday, 11.09.2017, 13:45 – 15:15 & 15:30 – 17h

[C40.147]

Keywords: systems thinking, teaching methods, design thinking, transdisciplinary curriculum

Universities are increasingly expected to create knowledge that has direct relevance to society. At the same time, the increasing inflow of students in past decades (OECD 2014) makes the experience of going to university an important part of the lives of a greater percentage of the population than ever before. It is of particular concern, then, that this education adequately equips students with the ability to thrive in the world into which they will matriculate – a world that is increasingly complex and interconnected. The current response to these conditions within higher education has been: increasing specialization of knowledge, adherence to, at-times, reductionist solutions of techno-centric research and publication of research in "high-impact", academic journals. In this race towards greater academic prestige, the quality and effectiveness of students' education for the real world has taken a backseat. The main purpose of this workshop and accompanying paper is to propose an alternative approach to university education, broadly labeled integrative design-based inquiry. The goal of such an approach is to bring together methods from design thinking, soft systems methodology, systems modeling and transdisciplinary research to enable students to not only acquire cognitive knowledge of a subject area, but also to become effective agents in solving complex problems in the real world. Central to the approach is a focus on developing the ability to frame problems in an environment of conflicting interests, understanding how these problems operate in a specific context, to take effective action in this context, while being aware of the danger of unintended consequences of such action. This type of inquiry was developed over a period of several years at ETH, through a process of theory development, and then testing these theories in the classroom and real-world settings. With this workshop, we hope to not only talk about, but also show in action how it is that we integrate these different approaches. In addition to providing an introduction to the conceptual framework of integrated design-based inquiry, participants will also experience the methods firsthand and present prototypes, with the aim to inspire collaboration, exchange values and beliefs and to jumpstart societal transformation. The structure of the workshop will include a short conceptual input to integrative design-based inquiry. Participants will be given a complex problem to solve as a group using a selection of the concepts that have been introduced. The participants will then have the opportunity to present the outputs of their work and also to reflect on the positive and negative aspects of their experience. It is possible that the workshop organizers plan use these reflections in designing future learning activities.

CHALLENGING MY AND YOUR WORLDVIEW – RECOGNIZING ONTOLOGICAL (BELIEFS), EPISTEMOLOGICAL (KNOWLEDGE) AND AXIOLOGICAL (VALUES) ASSUMPTIONS TO ENRICH TD RESEARCH AND PRACTICE

Facilitators: Dena Fam, Cynthia Mitchell, Katie Ross, Emilia De La Sienna, *Institute for Sustainable Futures, UTS Sydney, Australia*, Martina Ukowitz, *Institute for Palliative Care and Organizational Ethics, University of Klagenfurt, Austria*

Friday, 15.09.2017, 9:15 – 11h

[C40.147]

Keywords: Worldview, beliefs, values, knowledge, assumptions

In TD processes we are challenged by complex mixes of paradigms, posing both opportunities and risks, with consequences on communicative processes and end results. How might we explore diverse stakeholders-/disciplines- worldviews? What can we learn and share from each other's approaches, tools, methods, processes, tips and tricks for meta-reflection within the TD process? Within a TD group, how might such processes support humility, grace, improved collaboration, and satisfying results?

Learning outcomes from this workshop :

- To characterize the main components of a personal worldview: ontological (beliefs), epistemological (knowledge) and axiological (values) perceptions
- To experience the self-exploration of a personal worldview
- To experience the exploration of someone else's worldview
- To explore how results of TD projects are influenced by characteristics of TD processes
- To practice the deconstruction (unlearning) of a specific paradigm
- To articulate the significance of meta-communication about paradigms
- To strengthen our collective muscles for constructing TD common ground

Objectives:

This workshop aims to investigate how TD research projects might be designed and structured

- to help project participants identify, make explicit, and reflect on personal and collective beliefs, knowledge and values;
- to harness divergences as a valuable resource within TD processes, influencing meaning making and results.

Workshop Design:

- We will briefly explore today's major paradigms of being, thinking, knowing and how they have changed through history;
- You will participate in an activity to meet workshop participants and highlight the value of relationships and human interactions in the process of meaning making (learning);
- We will share meaningful stories of how worldviews have been explored, revealed and experienced in our own TD projects/research, both successfully and unsuccessfully;
- We will experience processes for critical reflection, on your own projects, to compare different approaches and the range of insights arising from applying these different tools;
- Finally, we will make meaning of these experiences, adapting/synthesising experiences into plans for current and future projects

What does this mean for the design of and results from TD research?

Recognizing (becoming more aware of) our individual, ingrained (mostly unconscious) assumptions (ontological, epistemological and axiological perceptions) and collective paradigms (which highly influence if not determine our individual perceptions) allows us to exchange, fuse and potentially construct new meanings for our own human existence, which could be translated into possible alternatives to the wicked problems we experience today one of the overarching goals of TD research, practice and education.

HOW COULD ACTORS FROM PRACTICE AND SOCIETY EVALUATE APPLIED AND TRANSDISCIPLINARY RESEARCH?

Facilitators: Birge Wolf, *University of Kassel, Germany*, Thorsten Michaelis, *Germany*

Friday, 15.09.2017, 9:15 – 11 & 11:30 – 13h

[C40.152]

Keywords: research evaluation, societal impact, stakeholder involvement

The workshop will provide insights into a documentation and evaluation concept that supports the increased acknowledgement of researchers' contributions related to societal impact. This approach ought to extend the established evaluation of scientific quality and impact, and shall serve the fair evaluation of applied/transdisciplinary research and facilitate the contribution of research to the solution of societal problems. The concept, developed in the context of the project Practice Impact II (Wolf et al. 2014, 2015, 2016) in the field of agricultural research, includes:

- a) a broad set of evaluation criteria,
- b) a documentation approach connected with funding processes, and
- c) a draft concept for the evaluation process that includes researchers, practitioners and societal actors.

The leading design principle for the concept was to provide benefits for researchers, research funding, evaluation processes and the exchange with practice and society. The objective of the first part of the workshop is to identify the concept's strengths, weaknesses, opportunities and risks. We will start with a short presentation of the main features of the current concept, followed by an interactive reflection and brainstorming in small teams using cards and a discussion in the plenary.

The second part of the workshop will focus on different ideas on how to involve practitioners and societal actors in evaluation processes. This involvement aims at enriching the researchers' documentation with a robust and valuable feedback regarding the applicability of the results and/or outputs in practice. It shall also allow insights on the potential societal impact of an evaluated project. The aim of the second part is to collect and develop good practices for the involvement of actors from practice and society in research evaluation processes. We will present some potential formats for stakeholder involvement in evaluation processes as a general inspiration for the subsequent work process in small groups. The group work will focus on the development of ideas for a suitable process design along the following guiding questions:

- How might dialogue, mutual learning and facilitation of the innovation system be a part of the evaluation procedure?
- How to deal with evaluation principles like transparency, independence and reliability in such procedures?
- Which procedures might be suitable for all disciplines and types of actors? And when are case specific procedures needed?

In the final phase of the workshop, working groups will present their results in a plenary discussion that will focus on which procedures yield the greatest possible benefit with a reasonable amount of effort. The discussion process will include interactive methods to prioritise ideas. We will document the workshop outcome photographically for all participants. The results will be helpful for various evaluation approaches. In particular, we will use the workshop results for the design of concrete scenarios for useful evaluation processes, which we will also share with the participants.

Literature:

Wolf B, Szerencsits M, Gaus H, Müller C, Heß J, Stockmann R (2016) Weiterentwicklung und Erprobung eines Konzeptes zur Dokumentation und Evaluierung von Leistungen der Agrarforschung für Praxis und Gesellschaft: Schlussbericht. <http://orgprints.org/30699/>

Wolf B, Szerencsits M, Gaus H, Müller CE, Heß J (2014) Developing a Documentation System for Evaluating the Societal Impact of Science. In: CRIS (ed) *Managing Data-Intensive Science: the Role of Research Information Systems in Realising the Digital Agenda: Proceedings of the 12th International Conference on Current Research Information Systems (2014)*, vol 33, pp 289-296

Wolf BM, Häring A-M, Heß J (2015) Strategies towards Evaluation beyond Scientific Impact. Pathways not only for Agricultural Research. *Organic Farming* 1(1):3-18.

THE OUTCOMES OF TRANSDISCIPLINARY RESEARCH WITH URBAN LABS: THE URB@EXP LAB – KIT IN ACTION

Facilitator: Christian Scholl, *ICIS – Maastricht University, The Netherlands*

Friday, 15.09.2017, 11:30 – 13h

[C40.153]

Background: The URB@Exp project (www.urbanexp.eu) looked at urban labs and new forms of urban governance and city development. Urban labs appear to be a particularly promising, innovative form of governance to address complex urban challenges and create public value. However, policymakers and other urban actors struggle with the implementation of urban labs and seek guidance for their further development. Evidence-based guidelines and design principles are still lacking concerning types of issues for which urban labs are most suited, how urban labs can best be organized in terms of structure, process, and participation, and how urban labs can best be combined and integrated with formal local government structures. The overarching aim of the URB@EXP project was to develop such guidelines, in order to enhance the successful uptake of this new form of urban governance and contribute to improved governance of urban complexity, creating more sustainable, inclusive, attractive, and economically viable cities. The URB@Exp consortium strategically merged a transdisciplinary set of partners including four universities, five cities and one SME. These partners contributed a wealth of scientific, professional and experiential knowledge to the collaboration. Under the lead of Prof. René Kemp at ICIS (Maastricht University's scientific institute for sustainable development), the consortium consisted of eight further partners: the universities of Graz, Malmö and Lund, the cities of Antwerp, Graz, Leoben, Maastricht and Malmö, and the foresight and design company Pantopicon. The guidelines are intended for team members and managers of urban labs and, more generally, for civil servants and facilitators in cities working with experimental urban governance processes to tackle complex challenges. These guidelines do not provide a single definitive answer on ways to organize and run an urban lab or

its experimental activities, but rather they offer, through frameworks and examples, guidance for ways to act in relation to, and reflect on, key issues. The toolkit (including a printed version of the book with guidelines) is aimed at municipalities or other stakeholders in a city who are toying with the idea to set up an urban lab. Through guidelines and materials, the kit supports, inspires and helps to structure multi-stakeholder discussions in a three-phased workshop setting to lay the groundwork for an urban lab for sustainable development in cities.

Scope:

In this workshop, the URB@Exp project, its transdisciplinary way of working and the output directed to practitioners will be presented. Afterwards, participants will try out the toolkit for Urban labs and critically reflect on the application. The aim is to open a productive conversation on new avenues for output of transdisciplinary research projects

Format:

Presentation (ca. 20 minutes), interactive application of LAB kit in small groups (ca. 45 minutes), plenary reflections (ca. 20 minutes)

EMBODYING POSITIONALITY IN INTER- AND TRANSDISCIPLINARY RESEARCH

Facilitator: Rebecca Freeth, *Leuphana University of Lüneburg, Formative Accompanying Researcher working with the inter- and transdisciplinary project: Leverage Points for Sustainability Transformation*

Friday, 15.09.2017, 11:30 – 13h

[C40.147]

Keywords: Positionality, experiencing collaborative relationships, navigating power, embodying assumptions

Objective: To experience dynamics of power, difference, similarity and discovery of self-in relationship in inter-cultural collaborations. This workshop includes both theoretical and experiential content. Working with the theme of positionality in inter- and transdisciplinary research, it will address the questions: If working inter-culturally involves finding each across different ways of thinking, knowing, seeing, being and doing, how do we navigate these differences in our research work? What does this mean for our research designs and methodologies? Theoretical input will be based on the presenter's current role as a formative accompanying researcher in an interdisciplinary team engaged in transdisciplinary research. As a methodology designed not only to learn about, but also to learn with and for collaborative teams, the question of the formative accompanying researcher's positionality is a core consideration. Instead of being located either inside or outside the team as two mutually exclusive positions, we propose formative accompanying research (FAR) as a methodology constituted on the move between perspectives afforded by being both inside and outside. We also pay attention to three balancing acts implicit in this methodology, between competing roles (of participant and observer), competing orientations (towards curiosity and care) and competing demands (to be neutral and visible). Drawing on the theoretical work of Donna Haraway and our own experiences to date, we propose some principles and practices for navigating these balancing acts. The theme of researcher positionality will also be explored in an experiential way. Participants will have the opportunity to experiment with embodied forms of positionality in relation to one another, through a series of silent exercises in pairs, small groups and the full group. It can be anticipated that dynamics of power, proximity, centrality and peripherality will surface, alongside assumptions about a researcher's role in inter-cultural collaboration. Therefore, the final part of the session will be reflective, putting words to these experiences of positionality and discussing implications for researcher practices of positionality in inter- and transdisciplinary work.

HOW DOES TRANSFORMATIVE LEARNING CONTRIBUTE TO TRANSDISCIPLINARY HIGHER EDUCATION?

Facilitators: Ruth Förster, *Co-leader saguf WG ESDberatung & training*, **Clemens Mader**, *University of Zurich, Sustainability Team; Empa, Technology and Society Lab*, both authors are members of the SAGUF working group on Education for Sustainable Development (saguf WG ESD, www.bne.saguf.ch)

Friday, 15.09.2017, 11:30 – 13h

[C40.108]

Keywords: Transformative learning (TL), Transdisciplinary (TD) education, value change, change of mind sets

To continue fostering Education for Sustainable Development in Higher Education (HESD) and its contribution to individual and societal, resp. collective, transformation towards sustainability, in particular in intercultural settings, new pathways in teaching and learning are essential (Mader & Mader, 2012; Tilbury, 2011; Sterling, 2011). In particular, the reflection and change of values and mental models, and how to put them into action for transformation, are core topics. Transdisciplinary (TD) research and education (e.g. td-net, 2017; td-lab, 2017) and Transformative Learning (TL) (e.g. Sterling 2011) offer such pathways. The relation

between Transformative Learning and Transdisciplinary research and education need to be further explored in order to better understand how they can inspire or complement each other in practice (Fischer et al. 2016). The aim of this workshop is to explore and exchange experiences and possibilities of TL in relation to TD education with a focus on TD practice. A core topic will be how to address the reflection and change of values and mental models in HESD. The workshop will provide participants a foundation to develop capabilities for the understanding and application of TL and to foster and promote transdisciplinary - transformative higher education for ESD. In a short introduction, we will outline a first conceptual framework for relating TL and TD as learning and teaching approaches needed to promote sustainable development because they are inherently normative and value oriented. We conceive of TL and TD as approaches that have to be applied and adapted context-specifically. Following this initial input, an interactive session (e.g. World Café or GIVE) will collect participants' experiences and findings on TL and TD. Outcomes of this interactive session will be summarized and fed back (e.g. opened to further discussion) to the participants. The workshop also aims more broadly at anchoring and encouraging ESD and TD in Higher Education. Thanks to the interactive form of the workshop, participants will get a variety of insights into the concepts and practices of TL and TD in the context of higher education and research. They will moreover have the opportunity to benefit from each other's professional experience. This workshop will build on the results of a World Café discussion in the "Transformative Learning: A space for innovation at universities" workshop which focused on the experiences of TL in research, teaching and practice, and was organized by members of the saguf WG ESD and offered in April 2017 at the Sustainable University Day in Switzerland. Addressees: Lecturers and researchers working on and with transformative learning and TD-practices in higher education and research, students with transformative learning experiences, and anyone interested in learning from these experiences and willing to contribute.

Literature:

Fischer, D., Grunenberg, H., Mader, C., Michelsen, G., (2016) Transdisziplinäre Bildungsforschung für nachhaltige Entwicklung, in Filho W.L. Forschung für Nachhaltigkeit an deutschen Hochschulen, Springer, pp. 25-42.

Mader, C. and Mader, M. (2012), "Innovative teaching for sustainable development - approaches and trends". 228-229. In: Global University Network for Innovation (ed.): Higher Education in the World 4: Higher Education's Commitment to Sustainability: from Understanding to Action. Palgrave Macmillan, GUNI Series on the social commitment of universities.

Tilbury, D. (2011), Education for Sustainable Development: An Expert Review of Processes and Learning, UNESCO, Paris.

Sterling, S (2011), "Transformative learning and sustainability: sketching the conceptual ground", Learning and Teaching in Higher Education, Issue 5, 2010 -11, pp. 17-33.

td-net (2017) http://www.naturwissenschaften.ch/topics/co-producing_knowledge/methods, View: 6.3.2017

ETHZ USYS-Lab (2017) http://www.naturwissenschaften.ch/topics/co-producing_knowledge/methods, View: 6.3.2017

TRAINING WORKSHOPS

GENERATIVE PICTURING – A METHODOLOGICAL FRAMEWORK FOR TRANSDISCIPLINARY BOUNDARY WORK

Facilitator: Vera Rosamaria Brandner, *Leuphana University of Lüneburg (DE), University of Vienna and ipsum (AT)*

Monday, 11.09.2017, 9:15 – 10:45 & 11:15 – 12:45h

[C40.147]

Key words: photographic practice, boundary work, cultural difference, transformative research, mutual understanding, knowledge generation and integration

In transdisciplinary research, people have to work together, despite and in consideration of their cultural differences. The major challenge lies in reflectively developing a common research interest for people from different backgrounds and to carry out a collective research process that is sensitive with regards to existing power structures. In order to face this challenge, tools, methods and methodologies are needed that can spark off critical discussions on apparently straightforward answers. In this training workshop, a photography-based methodological research framework enabling transdisciplinary boundary work will be presented and made accessible: Generative Picturing. Through Generative Picturing, photography becomes a tool for knowledge production, mutual understanding and transformation in situations of cultural difference. It is based on a combination of participative visual methods that are used in social science and project experience in the field of emancipatory education. Theoretically, it refers to positions of postcolonial theory, photo-theoretical and socio-cultural positions. Conceptualized as such, Generative Picturing goes fundamentally beyond using photos as proof of epistemic evidence. It offers the opportunity to make use of all interaction levels of photographic practice: Acting, perceiving, reading and communicating with and through photography can be used to approach questions and insights that are relevant to the people who have to work together in a specific transdisciplinary context.

When they are constantly switching between the position of taking, being part of, looking at and talking about pictures, people are mutually revealing and reflecting upon the Own and the Other's experiences and knowledges. Thereby, they are creating and sustaining a collective research space that allows for a recursive and performative process and enhances knowledge integration through dynamic subject and object positions. This manifestation of space is constituted as heterarchic and polyphonic in terms of cultural differences, such as professional backgrounds, origins, gender and responsibilities. Cultural and social boundaries become more visible, understandable and accessible.

Objectives of the Training Workshop:

- Experiencing photography as a means of expression, dialogue and qualitative research.
- Learning about photography-based approaches that can be useful in transdisciplinary projects.
- Focusing on research elements, such as process-orientation, recursion, participation and performativity in order to open up a research space in which the interpretative authority does not remain within the realms of scientists alone.
- Experiencing Generative Picturing as an approach in the context of research and mutual learning, that goes beyond procedures of pure depiction and production of evidence.

Literature:

Brandner, Vera/Vilsmaier, Ulli (2014): Das Bild der Anderen erforschen. Fotografisch-visuelle Methoden zum partizipativen Erforschen von Lebenswelten. In: Petra Dannecker/Birgit Englert (Hg.): Qualitative Methoden in der Entwicklungsforschung. Wien: Mandelbaum, 197-214.

GAME LAB ON RESILIENCE

Facilitator: Sabine Toussaint, *The interdisciplinary Bavarian Research Consortium Fit for Change (ForChange)*, LMU Muenchen, Germany

Monday, 11.09.2017, 13:45 – 15:15h

[C40.108]

Keywords: Resilience, game as transition tool, intercultural aspects of game-playing

A. Introduction: (15 min)

Transferring research questions and results into a game deals

- a.) as a method for interdisciplinary collaboration
- b.) as a method for knowledge transfer
- c.) as transition tool to involve societal groups of different dimensions of cultures into research

Short outline of the internal working process of ForChange: 13 research groups at 5 universities (LMU Munich, Augsburg, Wuerzburg, Erlangen-Nuremberg, Regensburg) working on very heterogeneous research questions, all related to disruptive societal change (individual, group, institution, systems like financial markets or energy system) with the task to transfer research findings in the discourse in society. Transfer tools were elaborated in collaboration with MA students of Advanced Design (University of Applied Studies Munich) and game designers (students and freelancers). Together, researchers and designers created a set of games, each containing the input of at least two different research projects. This approach strongly supported both the interdisciplinary exchange and understanding in the consortium. These games will be set into action by student teachers at different schools and in various settings at university and NGO events, drawing the attention on effects of decision making in situations of change, considering the individual wellbeing, the resilience of the surrounding system/s, experiencing diversity of perspectives of the players and how crisis is being dealt with in the setting of the game as a training tool for dealing with crisis in everyday life.

B. Game-playing: (45 min)

The participants are invited to play the games (three games will be offered, two analog, one digital), preferably in intercultural diverse pairs per player's slot (4 players = 8-10 persons per game), each group moderated by a project member.

About the games:

- a.) Resilience Earth deals with the increase of resources (material and immaterial), the related question of quality of life and the consequences of consumption: pollution and the imminent collapse of the planet. Is there a way to win, taking into account neighbors and nature while together avoiding earth from imminent collapse?
- b.) Balance of Civilizations: A liberal society lives and develops by friction and regulated conflicts between its societal groups and systems (e.g. economy, science, politics). When this balance gets lost, one of the groups or systems dominates the others

and society, finally, might collapse. How can we see the imminent imbalance early in advance and actively work against the collapse?

c.) Lorem ipsum: Mass media construct reality by its own logic. To orient oneself in a more and more complex world, people need media information. But how to deal with selective reporting and how to judge the reliability of information, maybe using different sources to check the validity of news?

C. Discussion and evaluation: (30 min)

Short evaluation of the playing process in each group, wrap-up of the situation and outcome for the players. (10 min.)

Gathering all participants, discussing pros and cons of the method with special emphasis on cultural diverse settings. Giving advice for the further development of the games and their didactical framework. (20 min.)

www.forchange.de

UNDER PRESSURE: A TRANSDISCIPLINARY EDUCATION METHOD

Facilitators: *Linda de Greef, University of Amsterdam, Machiel Keestra, University of Amsterdam, Coyan Tromp, University of Amsterdam, The Netherlands*

Monday, 11.09.2017, 13:45 – 15:15 & 15:30 – 17h

[C40. 152]

Keywords: learning activity, teaching, education method, authentic learning, transdisciplinarity

Many transdisciplinary programmes, courses and projects engage potential users or external organisations and enterprises such as business and NGO's. Doing so, they provide students with opportunities to practice broad and integrative thinking in real-world situations. The Pressure Cooker is an intensive two and a half day learning activity in which students from different disciplines take on a real-life challenge from an external client, and receive skills training regarding teamwork, problem analysis, problem solving, and creativity. The Pressure Cooker is not about finding the right solution to a question but learning how to engage with an external client, develop alternative solutions and work in interdisciplinary teams. The Pressure Cooker has already been successfully carried out in several courses at the University of Amsterdam, at the Bachelor's and Master's level. In this trainer-workshop, you will be introduced to this education method and experience what it is like to take part in a Pressure Cooker. Furthermore you are supplied with ideas to integrate a Pressure Cooker in your own classroom. We will work on a question that is related to the conference theme; How to involve a diverse range of people in our research?

IMPROVING TRANSDISCIPLINARY COMMUNICATION: AN INTRODUCTION TO THE TOOLBOX DIALOGUE METHOD

Facilitators: *Michael O'Rourke, Director of the Toolbox Dialogue Initiative and Professor of Philosophy at Michigan State University and Julie Thompson Klein, Wayne State University, USA*

Monday, 11.09.2017, 15:30 – 17h

[C40.153]

Addressing intercultural problems collaboratively requires interaction with members of multiple, heterogeneous communities, e.g., researchers from other disciplines, government officials, community members. In order to ensure just responses to these problems, transdisciplinary collaboration should involve the meaningful participation of as many of the affected communities as possible. Since complex, heterogeneous projects such as these typically include multiple perspectives and differences in belief and value, the potential for misunderstanding is rife, and the consequences of misunderstanding can be great. The Toolbox Dialogue Initiative, a US NSF sponsored project, has developed an approach – the “Toolbox dialogue approach” – that is an established way of enabling heterogeneous groups to avoid debilitating misunderstandings. This method uses structured, dialogue-based workshops to enhance communication and collaboration in cross-disciplinary teams. Grounded in philosophical analysis, the Toolbox workshop enables collaborators to engage in a structured dialogue where they share their research and practice worldviews. An evidence-based approach, the Toolbox dialogue method has both proximal and distal effects. Proximally, structured dialogue about research assumptions enhances self-awareness and mutual understanding, strengthening the collective epistemic foundation needed for effective collaborative research. Distally, these cognitive effects can increase team cohesion and communication effectiveness by enabling collaborators to avoid both unreasonable agreement and unreasonable disagreement. In a Toolbox workshop, structured dialogue enables participants to achieve three learning outcomes:

1. Identify habits that guide research, influencing it in ways that can reflect differences in concept and value that are grounded in training and experience,

2. Share habits by articulating them – perhaps for the first time – and subsequently enabling their collaborators to learn more about how they operate, and
3. Coordinate habits by harnessing the differences among them through dialogue, negotiation, and compromise.

The agenda for a Toolbox workshop at ITD Conference 2017 is as follows:

- (1) Preamble. Initial plenary presentation highlighting the motivation, background, and procedures of the Toolbox dialogue method. (15 min.)
- (2) Breakout dialogue sessions. Participants will divide into breakout dialogue groups. These sessions begin and end with participants filling out the Toolbox instrument (i.e., scoring the Likert scales associated with the survey items) using the new Toolbox web interface, with a 90-minute dialogue in between. These sessions will be facilitated by members of the Toolbox Project. Participants can opt to receive a copy of their pre- and post-dialogue Toolbox instruments. (45 min.)
- (3) Workshop co-creation activity and debrief. Small group discussions (with report out) of ways in which structured dialogue can work to support transdisciplinary research and teaching projects that are both effective and just will precede a general workshop debrief discussion (30 min.)

CO-CREATION IN TRANSDISCIPLINARY PROCESSES – A DESIGNERLY APPROACH

Facilitator: Daniela Peukert, *Leuphana University of Lüneburg, Germany*, Jana Thierfelder, *Zurich University of the Arts, Switzerland*

Friday, 15.09.2017, 9:15 – 11 & 11:30 – 13h

[C40.154]

Keywords: design methods, integration, co-creation, knowledge co-production and exchange

Transdisciplinary research addresses complex problems by combining different bodies of knowledge in heterogeneous project teams. Various professional and cultural perspectives help to create a richer picture in understanding the problem context and find new solutions to it. However, having more actors with diverse disciplinary and professional backgrounds in one team, can make communication and integration more difficult. One major challenge is to set up a shared problem understanding to find solutions towards a future-oriented transformation. In our workshop introduction we present a novel participatory method based on design prototyping for creating a shared problem understanding and raising the level of integration within transdisciplinary processes. Design is perceived as a discipline that changes the existing into desirable states and thus can be considered a trans-formative practice. Designed artefacts represent coded knowledge and thus work as epistemological tools; their tangibility provides an alternative to written and spoken words and level hierarchies, power, and rhetorical abilities. The workshop will give an insight into design methods and shows how they can be used within transdisciplinary processes to set up a shared common ground and communicative base for knowledge co-production and exchange. The proposed design-based method extends the methodological framework for integration and participatory collaboration within transdisciplinary processes, by bridging different communicative skills, knowledge cultures, languages and methodological backgrounds. Consequently, the introduced approach facilitates cognitive, communicative, social-organizational and cultural integration among the involved actors. This designerly approach for co-creation in transdisciplinary processes actively contributes to solution-oriented, robust knowledge, as needed for future-oriented transformations. Based on a specific problem the participants will experience themselves in a very hands-on way how to individually and collaboratively work with design methods in transdisciplinary processes. After a short introduction to the methods, the participants will visualize the standpoint, wishes and conflicts of a certain actor and present their outcomes to the group. Interfaces and boundaries between the different participants are made visible through the designed artefacts. Subsequently the group discusses and co-designs a possible solution for the certain problem, trying to balance different perspectives, searching for similarities and bridging differences. The workshop ends with a presentation of the co-designed artefacts, a discussion, and feedback round on the learning experiences using design methods in transdisciplinary processes.

MEANINGFUL CO-CREATION IN INTER- AND TRANSDISCIPLINARY RESEARCH – EXPERIMENTING WITH DRAGON DREAMING PROJECT DESIGN

Facilitators: Antje Disterheft¹, Sandra Caeiro^{1,2}, ¹*Center for Environmental and Sustainability Research (CENSE), Department of Science and Environmental Engineering, Faculdade de Ciência e Tecnologia, Universidade NOVA de Lisboa, Campus da Caparica, Portugal,* ²*Department of Science and Technology (DCeT), Universidade Aberta, Rua Escola Politecnica, Lisbon, Portugal*

Friday, 15.09.2017, 9:15 – 11 & 11:30 – 13h

[C40.146]

Key words: co-creation, method, Dragon Dreaming, transdisciplinary research, group processes

The concept of co-creation is nowadays often associated to transdisciplinary research and used in a variety of theories of education, creativity, management and innovation. Hereby, it is important to ask who creates something together, what is created jointly, what does it serve for and how is it or should it be realized. Critical voices say "We are creating collective results that nobody wants" (Scharmer, 2013), with reference to e.g. Climate change, poverty and inequalities, violence and destruction. While transdisciplinary research approaches seek to address these problems with a focus on bridging the gaps between science and society and transform collective actions towards sustainability, researchers are confronted with enormous challenges, e.g.: (i) Participatory approaches are requested; however, there is little knowledge how to conduct effectively such kind of research for societal transformation; (ii) Researchers often enact multiple new roles, such as the 'reflective scientist', 'process facilitator', 'knowledge broker' and 'change agent', but they have little space for specific skills development and training; (iii) new facilitation approaches and methods are needed to address contested, wicked problems inherent to sustainability, yet there is a lack of experience in academia with collaborative methods. In this workshop, we aim to address these challenges by introducing the project management method Dragon Dreaming that is considered useful for developing meaningful co-creation processes and that may enhance inter- and transdisciplinary research. What is Dragon Dreaming? Dragon Dreaming is a project management method based on complex systems theory that integrates ideas from participatory democracy, mindfulness and indigenous wisdom from the Aborigines. The method design opts for circular structures, where processes are divided into the phases dreaming - planning - doing - celebrating. Diversity is regarded as a valuable resource, and differences and conflicts constitute opportunities for enhancing the final outcome. The method can be applied to small scale up to big scale projects and can be very useful for highly heterogeneous groups. This session's objectives are:

- To introduce the method Dragon Dreaming and explore practically some of its elements;
- To show and experience how this method can help fostering meaningful co-creation, happier processes and outcomes;
- To provide the participants with ideas how they could use Dragon Dreaming in their work;
- To connect with others and have fun together.

What will this training workshop offer to its participants?

I. An overview of the method in general and its philosophy;

II. Introduction to the project wheel and exploring the phases dreaming – planning – doing - celebrating;

III. Practical exercises on how to work with heterogeneous groups.

The session's design is highly dynamic and aims to engage both sides of our brains.

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EXCURSIONS

[Meeting Points*]

CITY OF THE FUTURE – ZUKUNFTSSTADT LÜNEBURG 2030+

Excursion guides: Daniel J. Lang, Annika Weiser, Antje Seidel, *Leuphana University Lüneburg, Germany*

Monday, 11.09.2017, 9:15 – 12:30h

[City hall*]

This excursion will explore the close cooperation between Leuphana University and the Hanseatic City of Lüneburg. The two institutions have a long history of cooperation, which is currently being amplified through the 'City of the Future - Lüneburg 2030+' project. It is driven by the question: "What does a sustainable city of Lüneburg look like, whose citizens actively engage in implementing the SDGs in awareness of their global responsibility?" and aims for developing concrete ideas towards making this happen. In phase I, 750 students, 30 scientists and over 200 actors from the city of Lüneburg developed visions for the year 2030 and beyond. Visions were developed for 25 different areas such as the future of mobility and green spaces in the city, but also regarding the future of participation, work life and housing. In a process that involved the broader public, these diverse fields were then integrated to formulate a shared vision. The resulting shared set of visions serves as a robust resource to guide future urban planning that is concrete, science-based and agreed upon by many actors. It is also the basis to develop concrete implementation strategies, which is the focus of the currently on-going project phase II. Lüneburg 2030+ brings together representatives of the university, the city administration, enterprises and the civil society, which – in a way – makes the cooperation an intercultural endeavour. The excursion will focus on visiting project-related places in the city centre of Lüneburg and engage in discussions about transdisciplinary research at several different locations. Starting from the city hall, we will meet with project partners from the city administration – namely Lüneburg's sustainability officer – as well as the civil society working in the area of environmental conservation, the local economy, or culture. Students will join us to share their experiences from working in transdisciplinary projects in Lüneburg. Somewhat framing the excursion, we will address the following project-related issues in particular: 1. The steering group of the transdisciplinary project, specifically its composition, function and working mode, roles and responsibilities. 2. The students' involvement in the research process. 3. The presentation of a concrete vision and the work of a related student project as an example for transdisciplinary learning and teaching.

The project 'City of the Future - Lüneburg 2030+' is funded by the German Federal Ministry for Education and Research.

Daniel J. Lang is Professor for Transdisciplinary Sustainability Research at Leuphana University Lüneburg at the Faculty of Sustainability and President's Special Advisor for Sustainability. He is co-heading the 'Lüneburg 2030+' project. In his research and research based teaching projects he has been collaborating with a large range of partners from the Hanseatic City of Lüneburg, including the city administration, civil society organizations and enterprises. **Annika Weiser** is a research associate at the Transdisciplinary Sustainability Research lab and within 'Lüneburg 2030+'. She has been actively involved in the visioning process and is currently responsible for developing actions for implementing the visions. Annika has taught graduate and undergraduate students in several year-long inter- and transdisciplinary projects. **Antje Seidel**, Leuphana University is a research associate within the 'Lüneburg 2030+' project and focuses on stakeholder communication of the transdisciplinary process. Antje has a background in cultural geography und cultural studies. She has been teaching inter- and transdisciplinary methodology at Leuphana University for several years.

Duration: approx. 3h 15min

Meeting Point: In front of the tourist information office at the city hall (Address: Am Markt 1, Lüneburg)

Transport: walking excursion

Number of Participants: 20

TRADITIONAL ORCHARD RESTORATION AND PERMACULTURE GARDENS AS A FORM OF RESTORATION FOR SUSTAINABILITY: TRANSDISCIPLINARY COLLABORATIONS OF SUSTAINABILITY STUDENTS AT LEUPHANA UNIVERSITY

Excursion guides: Vicky Temperton, *Leuphana University Lüneburg, Institute of Ecology*, Olaf Anderson, *Board of Streuobstwiesenvereins Lüneburg e.V.*, N.N. (sustainability students)

Friday, 15.09.2017, 9 – 13h

[Foyer*]

TRADITIONAL ORCHARD RESTORATION PROJECT:

This trip is to a newly established (“ecologically restored”) traditional orchard 5 km from Lüneburg, owned and run by the local traditional orchard club (Streuobstwiesenverein Lüneburg e.V.). In cooperation with people in the sustainability minor at Leuphana University, we are together as a group testing the effects of plant biodiversity on other components of diversity, including biological and human perceptions of the restored orchard. 15 different apple varieties were planted in November 2016 and in spring 2017 three different levels of herbaceous plant species (with different plant functional group composition, e.g. different levels of clover and other nitrogen-fixing plants) were sown to see how this biodiversity treatment would affect insect and arthropod diversity (including pollinators), apple tree performance and soil chemistry over time, as the apple trees. The site is grazed by sheep at specific times of the year. You will have a guided tour of the site and get to meet some of the students involved as well as members of the orchard club, and discuss the opportunities and challenges of such a project, with active participation from the start of academic and non-academic stakeholders. Various apple products will also be available.

PERMACULTURE PROJECT (Kleingärtnerverein am Pferdeteich):

Come visit a permaculture garden in Lüneburg that has existed since early 2016 and in which a group of students in the Leuphana sustainability minor have committed to help the continued running of the garden. As with Project 1, the students asked specific research questions that they are endeavouring to answer by experimentally manipulating specific vegetable plots in the garden. They are testing whether growing certain combinations of plant species next to each other (polycultures) has a better effect on harvest yield as well as soil fertility than growing traditional rows of species in monoculture. A guided tour of the garden will include plenty of opportunity to discuss the developments of this project with students and other stakeholders involved. In addition to investigating effects of differently diverse plantings, a second group of students will also present outcomes of their investigation into the nature of decision making within permaculture gardens in the state of Lower Saxony.

Vicky Temperton is professor of ecology within the faculty of Sustainability at Leuphana (since 2015) with a strong interest in linking theoretical and practical aspects of ecology and ecological restoration. Her work focuses on testing ecological theories and knowledge related to the ecological field of biodiversity and assembly for their potential as tools and aids in restoring degraded habitats. Multi-faceted components of restoration are increasingly included in her work.

Duration: 4h

Meeting Point: Conference registration desk

Transport: car trip (organised)

Number of Participants: 15

Additional information: <https://www.landeszeitung.de/blog/lokales/302491-302491>

Address: Kleingärtnerverein Am Pferdeteich e.V., Bleckeder Landstraße 68, 21337 Lüneburg

EXPLORING LEUPHANA'S UNIVERSITY AND STUDY MODEL

Excursion guide: Bastian Hagmaier and representatives of Faculties and Schools, *Leuphana University of Lüneburg, Germany*

Monday, 11.09.2017, 13:45 – 17h, Friday, 15.09.2017, 9 – 12h

[Foyer*]

Leuphana University is a young university and has incorporated inter- and transdisciplinarity on the organisational level and in all study programs. During the excursion, you will be introduced to Leuphana's study and university model and have the opportunity to meet with representatives and students of the Leuphana College, Graduate School and Professional School. You will be introduced to the inter- and transdisciplinary structure and selected modules that are incorporated in the study programmes, in particular the Leuphana Semester and the Complementary Studies Program. You will meet with students from Studium Individuale, and the Transdisciplinary Projects of the Master of Sustainability Science will be introduced. Finally, we will visit the Methodology Center, an interfaculty center that supports students and researchers with methodological questions and realises research on methods for boundary-crossing research.

Duration: 3h

Meeting Point: Conference registration desk

Transport: walking excursion

Number of Participants: 20

OPEN STAGE

IT MIGHT BE WINDY, IT WILL BE DARK – A TACTILE SEARCH IN VISUAL SILENCE

Lisa Hinterreithner, *Vienna, Austria* and **Laura Navndrup Black**, *Copenhagen, Denmark*

Tuesday, 12.09.2017, 18 – 19:30h, a 15 minute performance loop for 15 participants

Wednesday, 13.09.2017, 11:30 – 13h, a 15 minute performance loop for 15 participants

[Kunstraum]

In *It might be windy it will be dark* the participant's attention is turned to a non human agent: air as a moving body. Air is visually perceived as see-through and perhaps therefore often overlooked as a material. Yet we sense it (unusually hot/cold/moving/still/damp/dry air may catch our attention), we move through it, we breathe it. It supports our bodies and literally holds us together. It makes up the void between. It connects us to each other, to all other objects, places and spaces in the world, across the most minuscule and the vastest of distances. In this manifestation of the ongoing artistic research project 'WIND', visitors are invited into a darkened space, where streams of air touching the visitors' body parts allow for a sensorial experience exploring the effects of wind and its affects on humans. We are concerned with how air can produce a spatial, choreographic composition to be felt, not seen. Purely bodydriven mechanical movement of air gives the audience a tangible and sensual experience of wind, as we strive to shift the attention to the state of a matter which is - with or without our human presence - present in the space. It might be windy....

Laura Navndrup Black is a Copenhagen-based choreographer working with performance, film, installation, and education. Equally concerned with participation, pedagogy and performance, her current research concerns the construction of choreographic problems which allow intergenerational groups of performers and participants to collaborate. Laura Navndrup Black is Head of Education at the Dance Partnership course at The Danish National School of Performing Arts.

Lisa Hinterreithner was born in 1970 in Salzburg and works as a performance artists. In her works she addresses body, text and objects. Since 2013 she has been exploring on the performativity on things and researched on diverse formats of participatory performances. 2006-2008 she was Head of the Training and Workshop programme at Tanzquartier Wien and she has previously taught performance and research at the Vienna Academy of Fine Arts, at SEAD, at the University of Vienna and at the Den Danske Scenekunstscole Copenhagen.

FLOWERS OF TRANSDISCIPLINARITY

Insa Winkler, *Wüsting and Lüneburg, Germany*

Anytime

[everywhere]

Flowers of Transdisciplinarity (TD) is an all-together intervention during the ITD Conference 2017. The Flowers of TD are conceptualized as catalysts for communication and contribution to the conference and form an aesthetic way of documenting and thinking. These ten-petal Flowers are an interactive organism of communication where different viewpoints and shared understanding can be displayed. They are an invitation to document your thoughts, to take notes, to express your point of view. You can also use the Flowers of Td posters for conversations during the coffee/tea breaks. Some ITD Flowers are dedicated to specific topics that are dealt with in plenary sessions. Moderators will take Flowers of TD contributions into consideration during the panel. The effective communication method with "The Flowers" has already been successfully applied internationally several times: www.flower-of-sustainability.eu.

Insa Winkler, M.Sc. in Architecture and Environment (University of Applied Science Wismar), Diploma of Fine Arts (Muthesius University of Fine Arts and Design, Kiel), dedicates herself internationally in themes and goals of social transformation and nature human relation. As an Environmental Artist, Landscape Planner, Artistic Researcher and Social Landart Curator, her approach of Cultural Sciences and "Social Landart" is entire transdisciplinary. Among others, her art oeuvre has been distinguished from the German Minister for Culture and Science (1986) and the County District of Oldenburg in 2003. She is doing her Ph.D. in Art and Sustainability at Leuphana University Lüneburg, Institute for Sociology and Cultural Organisation. Recently she also is a Visiting Lecturer for Transdisciplinary Practice and she is associated in the Project "Leverage Points for Sustainability Transformation".

SIDE EVENTS

MORNING COFFEE

Monday – Friday, 8:30 – 9h

[Forum]

Start the day with an informal exchange and a cup of coffee with colleagues...

- Monday with *td Methods Team, Leuphana University of Lüneburg*
- Tuesday with *td-net Team*
- Wednesday with *td-net Team*
- Thursday with *td Methods Team, Leuphana University of Lüneburg*
- Friday with *Cynthia Mitchell, Dena Fam, UTS, Australia*

MORNING STRETCH with *Rebecca Freeth*

Tuesday, Wednesday, Thursday, 8:30 – 9h

[Bridge, 1st floor]

Easy movement, stretching and breathing exercises, designed to counteract Conference Body Syndrome ... a result of lots of sitting down, mental labors, coffee and sweet things. You don't need to wear anything special, or bring anything except your body.

MORNING MEDITATION – STARTING THE DAY WITH CLARITY with *Mirjam Kamal*

Tuesday, Wednesday, Thursday, 8:30 – 9h

[Room of Silence, 3rd floor, elevator at the main entrance]

Meditating in the morning helps us to start the day with calmness, clarity and focus. This simple morning meditation consists of a guided meditation for body awareness and relaxation and simple breathing exercises. Thereby we can start the day with a clear and focused mind and an energized body. The meditation is open to everybody - no previous experiences are necessary and no special clothing is needed. Please make sure to be on time; an undisturbed meditation is most beneficial to everybody. Thank you.

AFTER-WORK-WALK

Tuesday, 12.09.2017, 18 – 19:30h

[Meeting Point: in front of the main building]

FRISBEE with *Maritz Engbers*

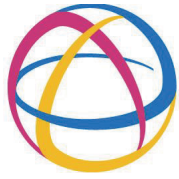
Thursay, 14.09.2017, 18 – 19:30h

[Meeting point: Mensawiese (sport lawn next to the Mensa)]

GAMES, GAMES, GAMES

And for those of you who love to play before, during or after work: find table-soccer and table-tennis in the foyer and on the terrace (with sunshine).

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