td-conference 2009

Integration in Inter- and Transdisciplinary Research
Berne, 19 to 21 November
Institute of Geography, University of Berne

Institutional partner 2009:
Institute of Geography (GIUB)

Financial support of the conference:

GIUB, Hallerstrasse 12

University Main Building,
Hochschulstrasse 4
Friday Plenary 1: Kuppelraum

Conference Dinner
Friday evening
«Moléson», Aarbergergasse 24

Train station

Location: all the events will take place at the GIUB, Hallertrasse 12, except for Plenary 1 which will take place in the Kuppelraum, 5th floor of the Main Building, University Berne, Hochschulstrasse 4

From the station, there are two ways to get to the GIUB: as you stand on the platform, you either take the escalators or staircase up to the so-called ‚Welle' (an open gallery with a wooden wave roof) and right into the main road Schanzenstrasse. Follow this road uptown into Falkenplatz and then Länggasse. Turn right into Hallerstrasse. Or you go down to the station hall, follow the sign „Universität" and take the elevator to the top („Schanze"). This is where the Main Building of the University is located and the Friday morning lectures take place, in the Kuppelraum on the top floor. Behind the University turn left into Malerstrasse which will lead you right to the entrance of the GIUB.

td-conference 2009

Integration in Inter- and Transdisciplinary Research

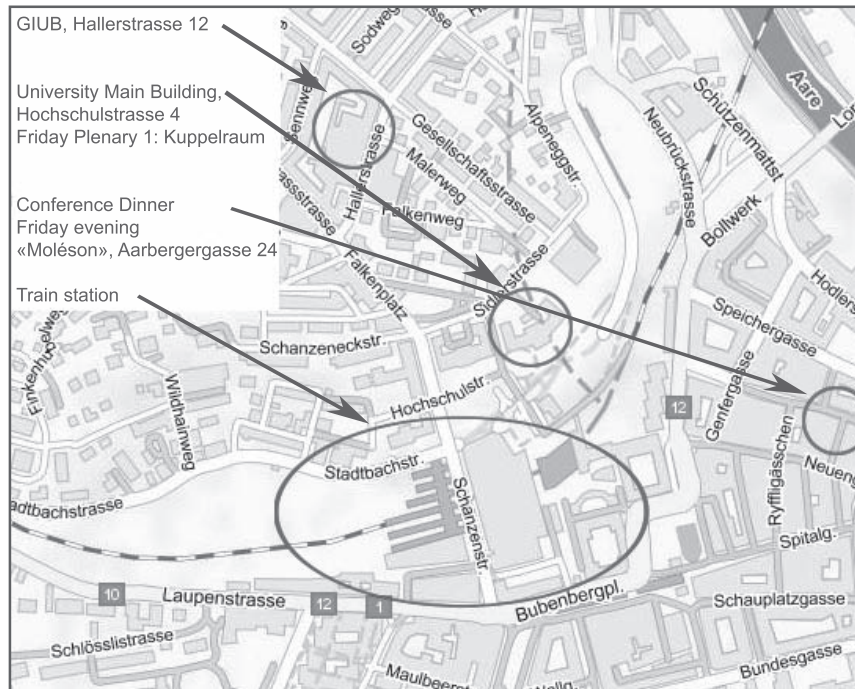### Welcome at the Institute of Geography of the University of Berne

Theme
Very broadly speaking, integration refers to the process of relating experience- and research-based knowledge and perspectives of academic and non-academic experts and stakeholders involved in the project. Such integration can be more or less targeted to an overall synthesis, ranging from mutual exchange and learning about different values, standpoints and approaches to jointly developing a theoretical understanding or a quantitative model of the issue at stake. Integration cuts across the whole research process, from problem framing and problem analysis to bringing results to fruition/implementation. The status of integration as one of the core elements of inter- and transdisciplinarity explains why the label „Integrative Studies" often figures as a synonym for inter- and transdisciplinary research.

By not only transgressing disciplinary boundaries but including knowledge from academic and non-academic experts, an approach to integration has to support two major integrative moves: first, academic expert knowledge has to be linked to non-academic expert knowledge in ways that are conducive to problem solving and, second, the specific knowledge from highly specialised disciplines has to be made accessible and transferable to concrete life-world contexts.

There haven't been many attempts to develop a structured, systemic and comparative approach to integration concepts and methods in order to facilitate the successful fulfilment of these principle tasks.

The major aims of the td-conference 2009 are therefore:

– to learn about practical experiences of integrating concepts, methods and practices from research and teaching on issues of gender, health, environment, new technologies or science-and-literature/arts, among others;
– to self-reflectively address the norm, values and institutional factors that drive and enable or hinder integrative frameworks;
– to present and critically discuss theoretical, conceptual and methodological models and ‚tool kits' for integration;
– to collectively forge theories, concepts and practices to integration in inter- and transdisciplinary research.

Programme

Thursday, November 19

16:00	Registration (open throughout the conference) GIUB

17:30 – 19:30
GIUB

Welcome
Doris Wastl-Walter, GIUB and IZFG, Berne
Pasqualina Perrig-Chiello, td-net and Institute for Psychology, Berne

Introduction: Framing Integration
Christian Pohl, Co-Director td-net

Multi-, Inter- and Transdisciplinarity: Integrated Biodiversity Projects and the SNF as Case Studies
Opening Keynote 1:
Bernhard Schmid, Swiss National Science Foundation

Taking Stock of Integration at the Century Mark
Opening Keynote 2:
Julie Thompson Klein, English and Interdisciplinary Studies, Wayne State University

19:30	Conference Reception/Apéro

Friday, November 20

09:00 – 10:30
Kuppelraum

Tempor(e)alities in Transdisciplinary Working Contexts
Keynote 3:
Ulrike Felt, Department of Social Studies of Science, Vienna

A Collection of Methods and Examples for Integration in Transdisciplinary Research
Keynote 4:
Matthias Bergmann/Thomas Jahn, Institute for Social-Ecological Research (ISOE), Frankfurt a.M.

10:30 – 11:00	Coffee break

11:00 – 12:30	Parallel Sessions I: Workshop 1, Papers 1-3
GIUB, 007	W1: **Integrating the Arts and Design** (Dombois)
GIUB, 207a	P1: **Designing Integrative Systems** (Störmer/Truffer, Wimmer/Tusnovics, Gallati/Kiteme)
GIUB, 302	P2: **Analyzing Integration** (Dinkel, Di Giulio/Defila, Michel et al.)
GIUB, 308	P3: **Teaching Integration** (Lyall/Meagher, Jaikiran, Haas/Smetschka)

Friday, November 20

12:30 – 13:30	Lunch break

13:30 – 15:00	Parallel Sessions II: Workshop 2, Papers 4-6
GIUB, 007	W2: **Practical Approaches to Integration** (Pohl, Bammer, Stauffacher, Ukowitz)
GIUB, 207a	P4: **Integrating Academic and Life-World Perspectives I** (Polk/Kain, Binder/Schoell, Zingerli et al.)
GIUB, 302	P5: **Tools for Integration I** (Aenis, Freyer et al., Badley)
GIUB, 308	P6: **Theorizing Integration I** (Frodeman, Vilsmaier, Schmidt)

15:00 – 15:30	Coffee break

15:30 – 16:30
GIUB

Dialogue Methods for Research Integration: Developing a Compilation as Proof-of-Concept for Integration and Implementation Sciences (I2S)
Keynote 5:
Gabriele Bammer, National Centre for Epidemiology and Population Health, The Australian National University

16:30 – 17:30
GIUB

Book launch:
G. Bammer et al., Research Integration Using Dialogue Methods

Pre-publication announcement:
R. Frodeman et al., Oxford Handbook of Interdisciplinarity

19:30	Conference Dinner

Saturday, November 21

09:00 – 10:30	Parallel Sessions III: Workshop 3, Papers 7-9
GIUB, 007	W3: **The Longterm Evolution of Integrative Frameworks in Problem-Oriented Research Fields: Case Examples of Invasive Species Research** (Küffer, Edwards, Hirsch, Kurath)
GIUB, 207a	P7: **Integrating Academic and Life-World Perspectives II** (Darbellay/Hanson, Nuijten, Zemp et al.)
GIUB, 302	P8: **Tools for Integration II** (Burke/Hoppe, Lord, Keestra)
GIUB, 308	P9: **Theorizing Integration II** (Beecroft, Holbrook, Meumann)

10:30 – 11:00	Coffee break

Saturday, November 21

11:00 – 12:30	Parallel Sessions: Workshop 4, Papers 10-12
GIUB, 007	W4: **Integrative Research Curricula for the Humanities and Social Sciences** (Rossini, Klein, Panese)
GIUB, 207a	P10: **Integrating Academic and Life-World Perspectives III** (Kastenhofer, Dongo et al., García/Jacquo)
GIUB, 302	P11: **Tools for Integration III** (Wülser et al., Szostak/Gnoli, Bearth)
GIUB, 308	P12: **Integrative Research Programmes** (Holländer, Mobjörk, Jost)
12:30 – 13:30	Lunch break
13:30 – 15:00	**Panel: Gender Studies and Transdisciplinarity**
GIUB	**Brigitte Liebig**, Hochschule für Angewandte Psychologie (U of Applied Psychology), Olten, **Ulrike Schultz**, FernUniversität in Hagen, **Elisabeth Zemp**, Institute of Social and Preventive Medicine at Swiss Tropical Institute Basel
	Moderator: **Pasqualina Perrig-Chiello**, td-net
15:00 – 15:30	Coffee break
15:30 – 16:30	**What, Who, How and When?** **Experiences, challenges and perspectives of integration in transdisciplinary research**
GIUB	Keynote 6: **Urs Wiesmann**, Center for Development and Environment (CDE), Berne; Respondent: **Roderick Lawrence**, Human Ecology Group, Geneva
16:30 – 17:30	**Info on td-award, wrapping up, looking ahead**

19:30	**Post-conference social programme (in German only):**
Botanischer Garten	«Darwins Beichte» – a play by Dominique Caillat, directed by Martin Burr (Ensemble Imprimerie Basel)

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Keynote speakers

Gabriele Bammer is a professor at the National Centre for Epidemiology and Population Health at the Australian National University and a Research Fellow in the Program in Criminal Justice Policy and Management, John F. Kennedy School of Government, Harvard University. She is developing a new cross-cutting discipline of Integration and Implementation Sciences (I2S) which covers three domains: synthesis of disciplinary and stakeholder knowledge, understanding and management of unknowns, and providing integrated research support for policy and practice change. She is involved in the application of these ideas in problems of population health, policing and security, and environment. She is co-author of *Research Integration Using Dialogue Methods* (with David McDonald and Peter Deane, 2009, ANU E-Press) and co-editor of *Uncertainty and Risk: Multidisciplinary Perspectives* (with Michael Smithson, 2008, Earthscan).

Matthias Bergmann received his degree in Electrical Engineering in 1976 at the Technical University of Berlin. Being a research and teaching assistant until 1984, he completed his PhD in 1979 at the University's Department for Technical Environment Protection. From 1984 to 1989 he was managing director of the Green Party in the Berlin Parliament. From 1989 to 1998 he worked as managing director and senior researcher at the private research and consulting *Oeko Institute – Institute for Applied Ecology Freiburg/Darmstadt/Berlin* (www.oeko.de). Joining the Wissenschaftskolleg zu Berlin – *Institute for Advanced Study Berlin* (www.wiko-berlin.de) in 1998 he first was the scientific coordinator for the project *AGORA – Work, Knowledge, Social Cohesion* directed by Wolf Lepenies. Currently he is a coordinator for EU research projects and responsible for internal quality management and evaluation at this institute. At the same time he is senior researcher at the *Institute for Social Ecology, Frankfurt a.M.* (www.isoe.de). Since 2000 he works with this institute on *Methods of Knowledge Integration, Quality Criteria, and Evaluation Procedures in Transdisciplinary Research* in the context of the federal research program *Social Ecological Research*.

Ulrike Felt has been Professor and Head of the Department of Social Studies of Science (University of Vienna) since 1999. After her Ph.D. in physics (1983), she moved into science and technology studies. She has a wide experience of running nationally and internationally funded research projects, working with a broad spectrum of qualitative social science research methods. She has been visiting professor in a number of institutions, among them at GERSULP/Université Louis Pasteur (Strasbourg), at the CIRST/Université du Québec à Montréal, at the Maison des Sciences de l'Homme in Paris and the Collegium Helveticum, ETH Zurich.

She has been a member of numerous policy working groups on science and society issues on the European level and served as editor of the international peer-reviewed journal Science, Technology, & Human Values (SAGE) from 2002 to 2007. Her research interests gravitate around issues of (1) science communication, public engagement as well as governance and public participation in technoscientific issues and (2) of knowledge politics, changing cultures of knowledge production and institutional policies, with a special focus on comparative perspectives.

Thomas Jahn is senior scientist, co-founder and executive director of the Institute for Social-Ecological Research (ISOE) in Frankfurt/Main, Germany, as well as coordinator of the project area "Knowledge Transfer and Social Ecology" of the Biodiversity and Climate Research Centre (BIKF) in Frankfurt/Main. He studied sociology, political science, German literature and history at the University of Freiburg and the Goethe University Frankfurt/Main, where he received his PhD. His expertise and publication record focuses on social ecology (among others being Co-editor of *Soziale Ökologie. Grundzüge einer Wissenschaft von den gesellschaftlichen Naturverhältnissen* (2006)), methods of transdisciplinary research, and methods of knowledge integration. The focus of his current work is on developing a model that allows to understand and shape the production of knowledge for sustainable development as a transdisciplinary research process.

Julie T. Klein is Professor of Humanities in English/Interdisciplinary Studies and Faculty Fellow in the Office for Teaching and Learning at Wayne State University. She has also held visiting positions in Japan and New Zealand, and was a Fulbright Professor in Nepal. Klein received the Kenneth Boulding Award for outstanding scholarship on interdisciplinarity, including the books and monographs *Interdisciplinarity: History, Theory, and Practice* (1990), *Crossing Boundaries* (1996), *Mapping Interdisciplinary Studies* (1999), *Humanities, Culture, and Interdisciplinarity* (2005), and *Creating Interdisciplinary Campus Cultures* (2010). Her co/edited books include *Interdisciplinary Studies Today* (1994), *Transdisciplinarity* (2001), *Interdisciplinary Education in K-12 and College* (2002), and *Promoting Interdisciplinary Research* (2005). Klein has lectured on interdisciplinarity throughout North America, Europe, South Asia, Latin America, and Australia. She was also Senior Fellow at the Association of American Colleges and Universities (AAC&U) and has served on numerous national and international task forces and advisory councils on interdisciplinary studies and inter- and transdisciplinary research. She is currently doing a new book on *Mapping Digital Humanities*.

Roderick J. Lawrence graduated from the Faculty of Architecture and Town Planning at the University of Adelaide (Australia) with First Class Honours. He has a Masters Degree from the University of Cambridge (England) and a Doctorate from the Ecole Polytechnique Fédérale, Lausanne, Switzerland. In January 1997 he was nominated to the New York Academy of Science. In 1999 he was nominated Professor in the Faculty of Social and Economic Sciences at the University of Geneva. He teaches undergraduate and graduate courses on interdisciplinarity, transdisciplinarity and human ecology. He is the director of a continuing education course on sustainable development and Agenda 21 at the University of Geneva. He has been included in Marquis Who's Who in the World and Who's Who in Science and Engineering in 2009-10.

Brigitte Liebig is Professor of Social and Organisational Psychology at the Department of Applied Psychology, University of Applied Science, Northwestern Switzerland (UAS NWCH). Since 2008 she is President of the Steering Committee of the National Research Program ‚Gender Equality' (NRP 60) of the Swiss National Science Foundation. She studied psychology and sociology in Frankfurt/M., Berlin and Zurich, and holds a Ph.D. in Social Sciences from Zurich University. Since 1993, she directed various research projects on a national and international level. In her current research she focuses on corporate social responsibility, gender and organisation, as well as intercultural cooperation and knowledge management within and between organisations. Recent books: Liebig, B./Dupuis, M./Ballmer-Cao, Th.-H./Maihofer, A. (Hg) (2009): Gender Studies in Ausbildung und Arbeitswelt. Das Beispiel Schweiz, Zürich, Seismo; Liebig, B./Rosenkranz-Fallegger, E./Meyerhofer, U. (Hg) (2009): Handbuch Gender-Kompetenz. Ein Praxisleitfaden für (Fach-)Hochschulen, Zürich, vdf.

Bernhard Schmid studied biology at the University of Zurich from 1972-1976. After obtaining a diploma in botany and the certificate to teach at high schools, he did a PhD on the evolution of a group of closely related sedge species, Carex flava L. s.l. He was postdoc with John Harper in North Wales and with Fakhri Bazzaz at Harvard University. In 1987 he returned to Switzerland as a research group leader in plant population biology at the University of Basel. There he became involved in an integrated biodiversity study which led him towards interdisciplinary research. He became a professor of conservation biology in 1992 at Basel and moved to Zurich 2 years later as a professor of environmental sciences and director of the newly founded institute of the same name. His current research interests are plant ecology and biodiversity-ecosystem functioning relationships. The latter is closely related to human dimensions because a number of ecosystem functions represent services provided to humans and are therefore a prime target in biodiversity management. Schmid collaborates with other biologists, environmental scientists, economists, educational scientists and historians. Since 2004 he is member of the Swiss Research Council and heads the commission for interdisciplinary research.

Ulrike Schultz is a lawyer and Senior Academic at the FernUniversität Hagen, Germany (the German distance-learning university). After heading the Law Faculty's Teaching and Learning Unit for thirty years, she has moved back into the law faculty specialising on questions of gender and law. She is active in many functions in the university´s equal opportunity initiatives and also works as communication trainer for lawyers and the judiciary. Her major area of specialisation for many years has been media work. She has set up and organised several further education programmes, such as Law Related Education, Women and Law, Legal Skills Training, and Virtual International Gender Studies, and has published widely in all of these fields. As founding member of the working group on Legal Professions in the Research Committee on Sociology of Law (RCSL), she has headed the subgroup on Women/Gender in the Legal Profession since 1994. She acts as a member of the International Advisory Board of the *International Journal of the Legal Profession*, board member of the International Institute for the Sociology of Law (IISL) in Oñati, Spain, and board member of the section on sociology of law of the German Sociological Association. Furthermore, she is actively involved in the work for a World Consortium on Law and Society.

Elisabeth Zemp Stutz holds an MD from the University of Basel and a Master of Public Health from the Harvard School of Public Health/Boston. Currently she is a senior researcher at the Institute of Social and Preventive Medicine at the Swiss Tropical Institute Basel where she leads the unit Gender and Health. Her research addresses the multifaceted impact of sex/gender-related factors on health and health care by investigating sex/gender-related exposures, the role of gender as being part of the interaction between health providers and patients/clients, and by focusing on the role of gender and gender theories in social epidemiology. She collaborates with disciplines from the medical and natural sciences as well as the humanities. She is the leader of the Swiss Research Network on Gender and Health and President of PLANeS (Swiss Foundation for Sexual and Reproductive Health).

Urs Wiesmann is Director of the interdisciplinary Centre for Development and Environment (CDE) at the University of Bern, Switzerland and Co-Director of the Swiss National Centre of Competence in Research NCCR North-South: Research Partnerships for Mitigating Syndromes of

Global Change. He is also Professor of Geography at the University of Berne and visiting Professor at the University Nairobi, Kenya. His areas of research include global change research, sustainable regional development, natural resources management, as well as interdisciplinary and transdisciplinary methodologies in the context of development and environment. He is heading and involved in research and implementation projects and programmes on sustainable development in East Africa, Central Asia, Southeast Asia, South America and the Swiss Alps.

Abstracts: Keynotes

Thursday, 19 November, 17:30 – 19:30, GIUB, lecture hall

Multi-, Inter- and Transdisciplinarity: Integrated Biodiversity Projects and the SNF as Case Studies
Keynote 1:   **Bernhard Schmid** (Zurich, Switzerland)

The complexity and relevance of environmental problems require integrated research approaches challenging scientists to collaborate among and beyond disciplines. I will illustrate this with case studies from biodiversity-ecosystem functioning research. Central for the interdisciplinary success were a common planning phase and study design, a strong "soft" coordination, complementary skills of research groups and well-planned interdisciplinary discussion mechanisms. Groups which tried to follow up their previous disciplinary interests within the integrated projects were least successful. Top-down additions of topics or groups were difficult to integrate into the research projects. The integration of transdisciplinary elements into a project worked best if it was left to the research group itself and done as early as possible in the research project. However, even in this situation the interest of stakeholders was limited, probably due to a lack of concrete incentives.

Scientific output per person from integrated research was higher than from disciplinary projects of individual scientist, suggesting that the assumption of a tradeoff between interdisciplinarity and scientific output does not hold. This is not surprising considering the synergistic benefits of integrated research using a common study design. However, the typical synthesis work leading to high-level publications is co-authored by a large number of scientists, making it difficult for PhDs and postdocs to use these publications for qualification steps. Here, a change in evaluation procedures is clearly needed. Multi-author synthesis papers are often written for a broad readership and inherently have a transdisciplinary component.

In the second part of my presentation, I will present two new instruments with which the Swiss National Science Foundation (SNF) encourages interdisciplinary or interdisciplinary plus transdisciplinary research.

These are investigator-driven single or group projects. Although the theoretical nature of interdisciplinarity was intensively discussed at the SNF before the implementation of the new instruments, the new interdisciplinarity commission and the applicants are now in a learning-by-doing process to define practicable interdisciplinarity and transdisciplinarity. Essential in this definition is scientific excellence and experience in integrated research. As interdisciplinary fields grow, they become "disciplinarized" and no longer qualify for the new instruments. To achieve scientific excellence in transdisciplinarity still presents a big challenge for applicants to the new instruments.

Taking Stock of Integration at the Century Mark
Keynote 2:   **Julie T. Klein** (Detroit, USA)

Interdisciplinarity is nearing its century mark, dating its modern emergence to etymological evidence in the early decades of the 20th century. Within the latter decades of that century, Transdisciplinarity evolved into a distinct concept, and Integration became the most common benchmark for both inter- and transdisciplinarity. C. Pohl, L. van Kerkhoff, G. Hirsch Hadorn, and G. mmer called it "the core methodology underpinning the transdisciplinary research process." J.T. Klein and W.H. Newell called it the "acid test" of interdisciplinary studies. A comparative view of patterns of meaning across education and research reveals points of consensus and of disagreement. There is no universal formula for Integration because the contexts of inter- and transdisciplinary work both differ. The focus varies, from generalized treatments of knowledge, metaperspectives, and overarching conceptual frameworks to methods for particular problems and questions. Integration is also influenced by the goals and scope of a specific program or project, the questions being addressed, the participants who are involved, their knowledge traditions institutional settings, and the type of inter- or transdisciplinarity being practiced. Taking stock at this historical point, we find a growing body of theory and practice anchored in tested concepts, methods, tools, and products. Two historical shifts also stand out: from Integration to Integrative Study in education, and from the context of the original OECD definition of Trandisciplinarity to a plurality of contexts. Three testbeds further the review: the disputed status of Integration in fields that critique knowledge, the primacy of external stakeholders in the European context, and the effort to create a new interdiscipline of the Science of Team Science in the USA. Even with points of disagreement, the centrality of language and communicative action in inter- and transdisciplinary work suggests that they are architectonic arts of rhetoric that reconfigure existing closures to make them answer to current needs, fostering alternative forms and outcomes of knowledge production.

Tempor(e)alities in Transdisciplinary Working Contexts

Keynote 3:   **Ulrike Felt** (Vienna, Austria)

Over the past two decades, numerous analysts have pointed to important reorderings in the research system. One of the more influential contributions to these debates, both in policy making but also in academia was the one around "mode 2" knowledge production (Gibbons, Nowotny et al.). Underlining the deep entanglement of knowledge production and societal imaginations, their central argument gravitates around the observation that knowledge is much stronger contextualised, research becoming part of a larger process in which discovery, application and use are deeply entangled. A fundamental revision of time structures in research, fostering focused temporal cross-disciplinary collaborations, mobility of researchers and omnipresent reflections on potential futures, are further identified as crucial changes.

It is precisely these time-structures that I want to put at the core of my reflections. I aim at moving away from macro-level reflections of change to exploring the ways in which researchers and their knowledge production practices are situated in and rearranged along different temporal dimensions, but also how researchers (re)produce and manage them in the effort of reconciling partly contradictory logics – thus how they live these tempor(e)lities. While these issues are more broadly speaking omnipresent also in more classical disciplinary work contexts and produce important effects there, they produce specific effects in transdisciplinary research environments.

Using the concept of epistemic living spaces – a concept developed in recent comparative research on knowledge cultures[1] – I will explore what working and living in transdisciplinary contexts under these new temporal regimes might mean for the different research participants and thus also for their capacities and readiness to produce knowledge. More concretely I aim at identifying the different temporal orders at work (project structures, careers, different life-worlds, epistemic objects, etc.) and how they play out in knowledge production, reflect on the ways in which they overlap, reinforce or compensate each other and finally what that means for epistemic work and the sustainability of this kind of knowledge production.

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[1]   Felt, Ulrike, ed. Knowing and Living in Academic Research. Convergence and Heterogeneity in Research Cultures in the European Context. Prague: Institute of Sociology of the Academy of Sciences of the Czech Republic, 2009.

A Collection of Methods and Examples for Integration in Transdisciplinary Research

Keynote 4:   **Matthias Bergmann, Thomas Jahn** (Frankfurt, Germany)

Transdisciplinary research finds its way into an increasing number of scientific fields, research programs and centres. In terms of theories, methods and concepts important aspects of this special type of research are not yet analysed and described deeply though.

Transdisciplinary research projects are concerned with societal problems that are characterized by complex mechanisms and effects. When translating these complex problems into scientific research questions it often turns out that a heterogeneous arrangement of disciplines has to be involved into the research process. The specific knowledge and methods of these disciplines have to be integrated and additionally have to be linked with some expertise from the societal problem field.

In the context of studies on quality criteria of transdisciplinary research it turned out that successfully coping with a number of various aspects of integration brings a transdisciplinary research project to an end that can meet both: to successfully describe paths of transforming or even solving the practical problems as well as harvesting new scientific insights e.g. in form of interdisciplinary methods or new research questions. Thus it appears that integration is the most important and challenging task in the specific transdisciplinary mode of research. But what are the appropriate methods to meet the manifold and complex tasks of integration? On the background of a study dealing with this question we identified, collected and ordered an array of integration methods coming from a number of examples for successfully integrating transdisciplinary research projects. We will present the methods, being decontextualised from their societal problem field and (inter-)disciplinary context, to provide the interested scientific community with a set of integration methods being useful in every transdisciplinary research context and for various problem settings.

Dialogue Methods for Research Integration: Developing a Compilation as Proof-of-Concept for Integration and Implementation Sciences (I2S)

Keynote 5:   **Gabriele Bammer** (Canberra, Australia)

This paper has three aims: to describe 1) a compilation of dialogue methods suitable for research integration, 2) a process for expanding the compilation to draw in widely dispersed researchers and 3) how this provides proof-of-concept for the development of Integration and Implementation Sciences (I2S).

Fourteen dialogue methods suitable for research integration have been identified (see McDonald, D., Bammer, G., Deane P. (2009). *Research Integration Using Dialogue Methods*, ANU E-Press). Ten are methods for understanding a problem broadly by synthesising judgments, namely citizens' jury, consensus conference, consensus development panel, Delphi technique, future search conference, most significant change technique, nominal group technique, open space technology, scenario planning, and soft systems methodology. Four are dialogue methods for understanding particular aspects of a problem, namely appreciative inquiry (for synthesising visions), strategic assumption surfacing and testing (for synthesising world views), principled negotiation (for synthesising interests) and ethical matrix (for synthesising values). Examples are provided of how these dialogue methods have been applied in four areas – environment, public health, security and technological innovation.

We now plan to expand the compilation by a) including new dialogue methods from the grey literature, as well as those which are unpublished; b) expanding the number of case examples; and c) testing the appropriateness of the ways we used to differentiate between methods. We aim to do this by inviting researchers around the world with an interest in dialogue and research integration to participate in an on-line forum – see http://i2s.anu.edu.au.

This project raises a wider question about developing compilations of concepts and methods for research integration and implementation. The new discipline of Integration and Implementation Sciences (I2S) aims to provide a range of such repositories, including other methods for knowledge synthesis, such as modelling and common metrics, as well as concepts and methods for scoping, boundary setting, problem framing and dealing with values. These allow I2S to comprehensively deal with three domains:

1. synthesis of disciplinary and stakeholder knowledge;
2. understanding and managing unknowns; and
3. providing integrated research support for policy and practice change.

What, Who, How and When? Experiences, challenges and perspectives of integration in transdisciplinary research
Keynote 6: **Urs Wiesmann** (Berne, CH)
              Respondent: **Roderick Lawrence** (Geneva, CH)

The paper builds on experiences gained during three decades of concrete involvement in transdisciplinary research programmes, in particular, the UNESCO Man and Biosphere (MAB) Programme in the 1980ies, the Swiss Priority Programme Environment in the 1990ies, and the Swiss National Centre of Competence in Research (NCCR) 'North-South' since 2001.

Against this background, four questions are addressed and illustrated: (1) What has to be integrated? It can be shown that transdisciplinary integration is not limited to the heavy task of bridging scientific domains, as well as societal stakes, but that integration also has to touch on ontological foundations, as well as institutional arrangements. (2) Who has to be involved? It can be shown that concrete transdisciplinary endeavours tend to hinder substantive integration through an 'all inclusive' participation approach and that collaboration therefore has to be designed very carefully and appropriate to the above levels of integration. (3) How to integrate? It can be shown that limiting collaboration to exchange-oriented communication does not enable transdisciplinary integration if it is not focused around developing overarching concepts, sharing data and tools, and explicitly reflecting on underpinning value loads. (4) When to integrate? It can be shown that time and periodicity play a key-role in integration and that 'rhythms' of scientific production and societal interaction have to be carefully considered in transdisciplinary research.

Based on these experiences and reflections the paper ends with some practical propositions for successful and focussed integration in transdisciplinary research processes.

Abstracts: Workshops and paper sessions

Workshop 1:   room: 007 | chair: Florian Dombois

Integrating the Arts and Design

Organizer: *Florian Dombois*, Y-Institute for Transdisciplinarity, Bern University of the Arts, Switzerland

To study and interpret the managerial perception of physicians and managers in hospitals is usually teh domain of sociology and organizational research. In 2006, however, a group of researchers from Bern University of the Arts investigated this topic also from the perspective of artists and designers. The project team consisted of the following disciplines: media art, communication design, creative writing (prose and drama). The research team was joined by a practice partner from the field of education and further training in healthcare management. Proceeding on a completed socio-scientific research effort, the goal of which was to explore the individual and collective managerial self-perception of head doctors and hospital directors, designers and artists attempted to put that same interview material into a specific media form. Thereby, dichoomousresearch questions were of interest: on the one hand, it was a question of characterizing the extensive study material as compactly as possible in the form of a artistic/designerly presentation and encapsulate it. On the other hand, the demand for knowledge by the creative disciplines and their explicitly non-scientific presentational form should be examined. The result was an astonishing diversity and an amazing acuteness of analysis from the different creative and artistic perspectives.

In the workshop the artistic/designerly results will be presented and the discussion focuses on questions like: how to (re)integrate the different results? What are the underlying transdisciplinary research methods? How to make disciplinary oppositions fruitful?

Paper session 1:   Designing Integrative Systems
                   room: 207a | chair: Bernhard Truffer

1.1

Tackling Integration in Strategic Infrastructure Planning: Methodological Considerations for Transdisciplinary Projects

Eckhard Störmer and Bernhard Truffer, Eawag Cirus, Dübendorf, Switzerland.

The transformation of infrastructure systems forms a major challenge on the way towards more sustainable resource management. The established paradigm of infrastructure in industrialized countries is based on inert, long lasting technologies (25-80 years) and corresponding institutional structures which exhibit strong path dependencies. Current forms of planning and decision making seem to perpetuate predominant paradigms and thus risk missing out on more sustainable alternatives. In particular sanitation is a very good case in point. Sewerage and waste water treatment plants were built up over the past 40 to 50 years in most industrialized countries and connection rates have reached 95 % and more. Currently, a high reinvestment need starts to show, which opens a window of opportunity for adequately dimensioned sanitation capacities and new, eco-efficient technological and organizational system concepts.

The proposed paper elaborates a transdisciplinary planning method for this sector. The "Regional Infrastructure Foresight" (RIF) method uses foresight to enhance the strategic skills of planners and decision makers to handle uncertainties and complexities of solutions. By this, a better understanding of the interdependence of the regional resource of sanitation capacities and regional development on the long run is achieved. In a discursive scenario-process, participating decision makers, planners and stakeholders of the regional sanitation system - facilitated by social scientists and engineers - reflect weak signals of future changes and infrastructure's external effects. Furthermore, the consideration of innovative technologies and new organizational structures widens the scope for action and opens the window for potentially more eco-efficient and -effective solutions.

The innovative core of the method is the elaboration of trade-offs which result from the integration of values, options and context uncertainties. The trade-off analysis opens the multiplicity of outcomes which result from this integrative analysis. Trade-off analysis makes the resulting complexity from integration manageable and offers the way to transfer the results into the political decision making process.

The method creates awareness for the need of flexibility of infrastructure planning, offers an overview on alternative future development and delivers a reflexive evaluation of the options, conscious of different stake-

holder positions and goals to achieve. It induces a learning process on long term strategic decision-making at the interface of public management and regional planning. This learning process is interpreted as an important part of a transition process to a more sustainable, resource-efficient and -effective design of infrastructures.

Results from three comparative pilot studies in Switzerland are presented.

1.2
Needs Based Design Processes (NeBaDepro)
Robert Wimmer, GrAT Gruppe Angepasste Technologie, Vienna and *Dustin A. Tusnovics*, architecture & communication, Vienna, Austria

Needs Based Design is an approach for design, based on the understanding of human needs and enabling high living standards within cultural and natural boundaries. The approach is inspired by the principles of Appropriate Technology where human needs and natural boundaries are in the centre of developing technical solutions. However, this complex task requires a strong transdisciplinary approach where technology is seen as a tool for problem solving, not as solution in itself.

The need for sustainable, affordable and environmentally sound housing is among the major problems worldwide, especially in the light of the enormous increase of population expected in the next decades. It is therefore of high importance to reduce environmental problems, promote and initiate resource efficient and appropriate solutions for the building sector, resulting not only in reduction of environmental pressure, but also in improvement of living conditions and poverty alleviation respecting the cultural conditions.

This aim needs support by exchange of knowledge and best practise incorporating high-end technology as well as locally available indigenous know-how and resources.

Design processes dealing with these big issues of today often risk missing their goal, either by falling into the trap of being too idealistic or remaining at a superficial level that doesn't help. However for radical innovation it is inevitable to explicitly address the big picture, otherwise improvements often remain incremental or create unwanted or unexpected system side effects. The key question is to find appropriate strategies in addressing the 'framework', enabling practical action at the same time and outline possibilities to evaluate the results.

A number of practical cases in developed and developing countries will illustrated the applied principles of transdiciplinarity. This paper will show that a different level of result is reached, when entering a field of 'expertise' without 'experts', applying transdisciplinarity as a principle:

Problem definition that reaches the needs, finding common sense beyond disciplinary languages and stable stakeholder management-process are among the key issues to solve.

The presented projects reach from self-building workshops to advanced sustainable building solutions reducing material and energy consumption by more than 90 % and finally target solutions for completely independent and energy self-sufficient housing. Projects focus on the system 'house', integrating demand side as well as production side, rather than developing singular technical solutions.

Further simple, suitable and reliable requirements for an evaluation methodology, easily understood and communicated at all levels, will be identified.

1.3
Assessing the Potential for Tural development through Sustainable Water Resources Management in a River Catchment in Laikipa District, Kenya: An Integrated Systems Modelling Approach
Justus Gallati, Institute for Environmental Decisions (IED) Natural & Social Science Interface, ETH Zurich, Switzerland and *Boniface Kiteme*, Centre for Training and Integrated Research in ASAL Development (CETRAD), Nanyuki, Kenya

Management of water resources plays a pivotal role with regard to the development potential of a rural area. In Laikipia District in Kenya, facing high population growth and severe pressure on natural resources, this has led to numerous initiatives aimed on one hand at providing sound scientific evidence related to natural resources as well as to socio-economic conditions, and on the other hand at supporting local population as to implement appropriate natural resources management practices.

The project on an integrated systems modelling approach presented here is part of a larger initiative termed "Capacity Building for more Sustainable Water Resources Management in the larger Mt. Kenya region". In particular this project aims at assessing and analysing the effect of different water management policies on the potential for rural development in a specific river catchment area taking into account interactions between upstream and downstream users as well as different economic capabilities of farmers. Furthermore it is envisaged to assess the potential and the usefulness of the proposed approach for capacity building and training with regard to sustainable resources management.

It is an integrative approach, i) linking different disciplinary knowledge related to natural resources, agriculture, and socio-economic conditions, ii) contributing a dynamic, long-term perspective on the problem and potential solutions, and iii) drawing on academic as well as non-academic

expert knowledge. Stakeholders are involved in problem framing, assessing and discussing model outcomes, reviewing the rationale of the model, and in contributing data.

The purpose of the paper is to present a reflection on the use of a systems approach as a mode of integration related to a practical example. First, an introduction into the fundamental rationale of the model is offered as to provide concrete information about the situation as well as to demonstrate the level of aggregation that is adopted for the suggested approach. Second, the participatory process is described, in particular with regard to knowledge elicitation and creating commitment and ownership. Third, selected results of the model simulations are presented. Reflections on lines of further model development and the potential for future applications conclude the paper.

Paper session 2:   Analyzing Integration
                    room: 302 | chair: Eva Heim

2.1
Interactive or Integrative Research? A Framework for the Analysis of Integrative Research Practices
William Peter Dinkel, European University Viadrina Frankfurt (Oder), Germany

The integration of different fields of knowledge and practice is one of the core problem collaborative research endeavors face in all fields of research. When different areas of research and society intersect, boundaries are blurred and their underlying assumptions are reconsidered.

Hence, at best integrative research processes offer the chance of producing highly innovative and relevant knowledge. At the worst, researchers working in heterogeneous settings get stuck with trying to integrate all the different ways of representing and organizing knowledge and the different ways of organizing research. As a consequence, integrative research is – as frequently stated – per se risky and its success is directly linked to the ability of researchers to arrive at some kind of mutual understanding about how to cope with these issues.

It is obvious that such mutual understanding emerges in interactions and hence interactions are a good starting point for studying integrative research practices. However, studies of integrative research practices often lack a theoretically based model for the analysis of interactions. As a consequence, the integration of their results remains difficult, a deeper understanding of research practices in heterogeneous settings is hampered and studies often remain limited to being mere single occasion evaluative works.

I will present a theoretical framework for the analysis of integrative research practices. It takes theories of action as a starting point for linking the different levels of social analysis that determine interactions. By analyzing current theories in science and technology studies that focus on the integration of research and society I will show that integrative research is primarily a process of constructing a semantic context for interactions. Therefore the analysis of integrative research processes should focus on how in integrative research processes both, the construction of a context for interactions and the construction of context knowledge is produced for, are interlinked.

2.2
Integration Strategies and the Role of Different Actors
Antonietta Di Giulio and *Rico Defila*, IKAÖ, University of Berne, Switzerland

An inter- or transdisciplinary project brings together different actors from the scientific system and from different areas of practice. An integration aiming at answering common questions, i.e. questions shared by all persons involved in the research, and aiming at common products has to respect and valuate the different and specific backgrounds, knowledge and cognitive interests of those participating in the project. Integration can't be achieved without sharing conceptions of the knowledge resp. solution to be produced, without sharing quality demands and without a common theory of some kind. Researchers and practicioners however often have different conceptions regarding the type of knowledge or solution to a problem that should be produced by the project. They haven't necessarily the same quality criteria, and it is much easier for practicioners than for scientists to adopt a theory they haven't worked with yet.

In the contribution the problems constraining integration and the challenges to be mastered in a transdisciplinary project (involving non-scientific actors) will be developed and compared with those in an interdisciplinary project (involving only scientific actors). This will occur using the example of two rather different research projects that allow a discussion of these points at different complementary levels. The two projects, representing two different scales of projects, are: (1) A rather small recently terminated transdisciplinary project (2006-2008) funded by the Swiss National Science Foundation (SNF) on Education for Sustainable Development. (2) A rather big ongoing project (2008-2012) funded by the German Bundesministerium für Bildung und Forschung (BMBF) that aims at developing a synthesis on Sustainable Consumption integrating research and results of ten inter- and transdisciplinary project groups. Based upon the experiences made within these different projects, based upon the strategies chosen for these projects and refering to the findings of the interna-

tional DACH-survey, it will e.g. discussed: What are promising strategies for integration, what are the limits and advantages of bottom-up strategies, when is it advisable to choose a top-down strategy in order to attain a syntheses, and what are the conditions of successful top-down strategies? What consequences result from such strategies with regard to the use of different types of integration methods? In which cases is it helpful to develop a ‚meta-theory' instead of trying to integrate different and incommensurable theories? Considering the different and sometimes competing interests within a transdisciplinary project, are there relevant differences between knowledge-oriented integration, solution-oriented integration and product-oriented integration? One further question that will be dealt with is the part of the project leaders: Should they assume a specific part with regard to the integration? How much and how little should they contribute?

2.3
Evaluating Integration
Claudia Michel, Eva Heim and *Anne Zimmermann*, NCCR North-South, CDE, University of Berne

The integration of academic and non-academic knowledge is a key concern for researchers who aim at bridging the gap between research and policy. Researchers involved in the sustainability-oriented NCCR North-South programme have made the experience that linking different types of knowledge requires time and effort, and that methodologies are still lacking. One programme component was created at the inception of this transdisciplinary research programme to support exchange between researchers, development practitioners and policymakers. After 8 years of research, the programme is assessing whether research has indeed enabled a continuous communication across and beyond academic boundaries and has effected changes in the public policies of poor countries.

In a first review of the data, we selected two case studies explicitly addressing the lives of women. In both cases – one in Pakistan, the other in Nepal – the dialogue between researchers and development practitioners contributed to important policy changes for female migration. In both countries, outmigration has become an increasingly important livelihood strategy. National migration policies are gendered, limiting the international migration of women. In Nepal, women were not allowed to migrate to specific countries such as the Gulf States or Malaysia. This was done in the name of positive discrimination, to protect women from potential exploitation and harassment in domestic work. However, women continued to migrate in many other and often illegal and more risky ways, increasing their vulnerability. In Pakistan, female labour migration was not allowed at all and male migration increased the vulnerability of the families remaining back home. Researchers and development practitioners in Nepal and Pakistan brought women's shared experience of and exposure to the mechanisms of male domination into the public debate, and addressed the discriminating laws. Now, for the first time in Pakistan, the new draft policy currently under discussion would enable broadly-based female labour migration.

What can we learn from the two case studies with regard to ways of relating experience- and research-based knowledge? The paper offers insights into the sequence of interactions between researchers, local people, development practitioners, and policy-makers, which eventually contributed to the formulation of a rights-based migration policy. The reflection aims at exploring the gendered dimension of ways to co-produce and share knowledge for development across boundaries. Above all, it should help researchers to better tighten the links between the spheres of research and policy in future.

Papers session 3: Teaching Integration
room: 308 | chair: Doris Wastl-Walter

3.1
Stragegies for Interdisciplinary Integration: Training the Next Generation of Researchers
Catherine Lyall, Ann Bruce, Joyce Tait, ESRC Innogen Centre, University of Edinburgh and *Laura Meagher*, Technology Development Group, Edinburg, UK

"Interdisciplinarity" has become a rallying cry among funders and leaders of research yet, while the creative potential of interdisciplinary research is great, it still poses many practical challenges especially for early career researchers. Disciplines have survived for so long in the academic world because they serve the very useful function of constraining what the researcher has to think about. They set a boundary on the parameters of interest and dictate the range of methodological approaches that are relevant. Specialist discipline-based knowledge is extremely important as an underpinning to interdisciplinary research. Disciplines thus provide a clearly defined starting point for a project; but they also pre-determine to a large extent what the outcomes of the research will be. If this framework is partially or wholly removed, as is the case in interdisciplinary research, young and inexperienced researchers can be overwhelmed by the resulting complexity. An active strategy is thus needed to provide for integration among the different disciplines and engage with the complexities of interdisciplinary research.

As an experienced team of researchers, trainers and evaluators who have worked together on interdisciplinary projects for over a decade we will reflect on practical experiences from a number of UK interdisciplinary capacity-building projects. We will focus, in particular, on our experiences of developing and delivering the ISSTI Interdisciplinary Masterclasses. This is a training and development activity which has sought to improve the practice of interdisciplinary research between the social and natural sciences among early career researchers.

Much of the knowledge that surrounds interdisciplinary research capacity-building is tacit, with practitioners often 'learning by doing' through a process of apprenticeship. These Masterclasses have attempted to formalise some of this craft knowledge and to codify researchers' approach to the conduct, management and evaluation of interdisciplinary research.

At a time when society looks to interdisciplinary research to address its complex problems, the UK government-funded Research Councils are increasingly joining forces to tackle these challenges by funding schemes that seek to foster interdisciplinary research skills in "next-generation researchers". We have conducted a number of independent evaluations of such capacity-building schemes and will draw on these analyses to set our discussion in context. We will share lessons learned from running the Interdisciplinary Masterclasses and assess how they have succeeded in their goals of building and consolidating interdisciplinary skills; and mobilising a relatively new and growing research community in the UK.

3.2
Tool Kit for Overhauling Educational Systems and Practices – A Multidisciplinary Approach

Jaikiran K.P., Department of Geology, University College, Trivandrum 695 034, *Pradeepkumar A.P.*, Department of Geology, University College, Trivandrum 695 034, *Jelena Pantic*, Faculty of Education in Sombor, University of Novisad, Serbia, and *Zorica Prnjat*, Faculty of Trade and Banking, Alfa University, Belgrade, Serbia

Knowledge Management (KM), a relatively new concept that emerged from the corporate domain offers us innovative methods and strategies to manage knowledge in educational contexts. Acquiring and disseminating useful knowledge in different forms is what KM is all about and which the educationists ought to be doing. However, in the emerging knowledge society of the present day world, much emphasis is being laid only on the management of explicit types of knowledge. On the other hand, attempts to capture and disseminate tacit or unseen type of knowledge have been few and far in between despite its greater relevance. We report here a multidisciplinary approach to harness knowledge that resides primarily in the heads of people in the form of skills, expertise and experience. The

multi-dimensional electronic knowledge package that has been developed as part of this exercise uses different media such as video, audio, pictures and texts to map tacit knowledge. Teaching skills of experts, best practices in class rooms, learner management approaches and case studies have been packaged in this DVD-based knowledge package. Educational training programmes, curricula development and policy making initiatives in education would become much simpler and meaningful with the use of such knowledge packages.

Integration of such educational best practices across disciplines, across generations and even across racial, economic and geographic boundaries can lead to a more equitable and peaceful shared learning relationship amongst the nations, and could open up a new vision for learning in the future where competition is swapped for compassion.

3.3
Learning Transdisciplinarity: The Art of Differentiation and Integration

Willi Haas and *Barbara Smetschka*, Institute of Social Ecology, Klagenfurt University, Austria

It is a paradox: Experience at the faculty for interdisciplinary studies at Klagenfurt University shows that interdisciplinary research needs a strong disciplinary base. The integration at theoretical, methodical or empirical level can only be done successfully, if there is a fair amount of specialised knowledge that has been built over some time by masking the „other". With other words: Without differentiation no integration.

The faculty for interdisciplinary studies aims to address problems of society with the central questions about how society deals with public goods, such as health, environment, public space, technology, education, science and humanities but also politics and culture in general. Scholars from a variety of disciplines, experts and practitioners from a variety of professions co-operate in projects. In doing so a connection between research on fundamental societal theories and problem-oriented-research on current issues is aimed at.

At the Institute of Social Ecology and in sustainability sciences in general the interdisciplinary integration of the „two cultures" social and natural science is an important issue. In our contribution we focus on this integration and will point out essential pre-conditions for making this collaboration work. To illustrate promising and less promising examples of integration we will offer examples taken from a course on interdisciplinary research that was held at the faculty twice a year over the last 10 years.

Research on real-world problems needs transdisciplinary collaboration involving practitioners to enhance the amount of understanding and

knowledge as well as to enhance the possibilities of implementation of this knowledge. Drawing from transdisciplinary research at the Institute of Social Ecology over the last 10 years we look for process orientated methods to make scientific knowledge effective in such collaboration. We deal with the danger of science getting sucked into the problems of the field and of science getting stuck in its internal affairs.

Finally we want to show how we could understand quality in transdisciplinary research and a scheme for assessing an individual's transdisciplinarity competencies and its learning challenges.

Parallel Sessions II: Friday, 20 November, 13:30 – 15:00

Workshop 2:   room: 007 | chair: Christian Pohl

Practical Approaches to Integration

Organizers: *Gabriele Bammer*, National Centre for Epidemiology and Population Health The Australian National University, Canberra, Australia, *Christian Pohl* td-net, Swiss Academies of Arts and Science and Institute for Environmental Decisions (IED), ETH Zurich, Switzerland, *Michael Stauffacher*, Institute for Environmental Decisions (IED), Natural and Social Science Interface (NSSI), ETH Zurich, Switzerland, *Martina Ukowitz*, IFF-Fakultät für Interdisziplinäre Forschung und Fortbildung, Institut für Interventionsforschung und Kulturelle Nachhaltigkeit, Klagenfurt, Austria

The workshop discusses practical approaches to integration. Two inter- and transdisciplinary research projects, in which the organizers were involved, serve as exemplary case-studies. The participants are introduced to the general outline of the case-studies of inter- and transdisciplinary research. No information, however, is given on the way integration was reached. Based on that general information, the participants will have group discussions to develop ideas about promising ways of integration for the exemplary case-studies. After the participants presented these ideas, the organizers will explain how they approached integration and in how far the were successful or not.

Case 1
Please read the case description and discuss the questions of the exercise in your group. Prepare a short presentation on your results.

The project "living in a commuter zone"

The main aim of the overall project "living in a commuter zone" is to analyse a Swiss catchment area on an urban-suburban railway line. Around 300'000 people live in the area, in small to medium sized towns and com-

munities. The railway line is 50 km long and the main means of transport in that area. It originates in a big city and ends in a small one, and connects 6 small and medium sized communities. The area is a typical agglomeration/suburbia, i.e. it is not a city and not a village.

The main project aims are to come to a comprehensive understanding of the commuter area, to advance suburban area studies and also to feed back its comprehensive understanding and the results of research to the residents as input to the further development of the area.

The main project consists of nine individual sub-projects:
1. *Contours*: The aim of this sub-project is to identify the inhabitants' perceptions of the area in order to find typical contours of suburbia areas.
2. *Planning*: This sub-project develops designs for the future development of the area where large shopping malls and apartment buildings stand 'in the middle of nowhere'.
3. *Natural areas*: This sub-project identifies the inhabitants' ideas and preferences about the natural areas close to were they live.
4. *Living in suburbia*: This sub-project searches for characteristic forms of living in suburbia
5. *Neighbourhood*: This sub-project aims to understanding how new transport options and mobile lifestyles change the concept and reality of neighbourhood.
6. *Accommodating everyone*: This sub-project investigates conditions in a medium sized town, especially in terms of independent living for old and disabled people.
7. *Historical economic development*: This sub-project investigates how the industry of the area developed from textiles to high-tech and identifies the factors associated with success.
8. *Political landscape and settlement*: This sub-project studies the influence of communities and regional planning agencies on the actual process of settlement.
9. *Mobility*: This sub-project searches for different mobile life styles in the region.

A project management team runs the overall project. The project management team is composed of a principal investigator, an expert in research translation (i.e. in how to communicate scientific insights using exhibitions, popular books and other media), a resident of the study area (who happens to be a retired politician) and an expert in suburban studies. In addition there is an expert panel, who periodically critically review the sub-projects for their scientific quality. mobile lifestyles

Your job as integrator

The project management team have presented the interdisciplinary collaboration and the practical outcomes of the project to the founders, and

all agree on their overall value. The principal investigator contacts you to ask whether you would be available to support the project in interdisciplinary collaboration and in producing practical outcomes. So far, there is no concrete plan of how to reach both goals. The individual sub-projects are already set up and some of them have started. You accept the job.

The constraints for your work are

Your time budget is 150 hours
The project management team have already planned the following events to bring the individual sub-projects together. (Your work starts with meeting 6. The period between meetings is 3 months):

Meeting 6: 2h project meeting, 1h for administrative issues,
1h discretionary time
Meeting 7: 2h project meeting, 1h for administrative issues,
1h discretionary time
Meeting 8: 8h workshop, detailed review of the projects by the expert panel, 5 minutes for your summary
Meeting 9: 5h workshop,
3h planned by you and the project management team
Meeting 10: 8h workshop, planned by you and the project management team
Meeting 11: 4h meeting, 1h discretionary time
Meeting 12: The projects report to the expert panel
Meeting 13: 8h workshop, planned by you and the project management team
Meeting 14: 8h workshop, planned by you and the project management team

You are allowed to give "homework" to the individual sub-projects in preparation for the workshops.
You can ask members of the project management team to collaborate with you.
You can be present at all meetings.

The cross-cutting project

In addition, there is a cross-cutting project on sustainability. The cross-cutting project searches for good examples and practical propositions for the sustainable development of the region in question. Cross-cutting means that it searches for such examples in close collaboration with the individual sub-projects.

The project leader of the sustainability project asks you whether you would advise the cross-cutting project and plan it jointly with the sustainability project leader. You accept. For the cross-cutting work you will have

three meetings with each individual project, each meeting is about 2h long. You can give modest "homework" to the individual projects. Your time budget is 50h.

Questions for group discussion
Please discuss the following questions in groups

1. Where do you see a potential for/ the necessity of integration?
2. Where do you foresee barriers?
3. What ideas do you have for reaching integration (practically ie with methods)

Case 2
Please read the case description and discuss the questions of the exercise in your group. Prepare a short presentation on your results.

The project „Quo vadis Lavanttal?" and its concomitant intervention research

„Quo vadis Lavanttal?" is a process of regional development driven by regional entrepreneurs aiming at positioning and strategic orientation of Lavanttal, a rural region in the south of Austria (Carinthia) with a quite successful economic development in the last years. Sustainable development towards a region viable for the future in the initiator's perspective requires cooperation of the relevant regional actors and cannot be reduced to economic aspects. A concomitant intervention research focuses on discussed contents and social/organisational dynamics throughout the process. The research aims at supporting the process by continuous feedback on both dimensions, contents and process dynamics, and it provides scientific knowledge to aspects that turn out to be relevant.

The „Quo vadis Lavanttal?"-process (including scientific activity) is financed by Kärntner Wirtschaftsförderungs Fonds and Entwicklungsagentur Kärnten (both institutions of the Carinthian government).

The project runs from April 2008 to May 2009. Actually further steps are discussed.

Major steps in the „Quo vadis Lavanttal?"-process

Five events with residents and decision-making persons/groups in the region:
– "Nachhaltige Wirtschaft – Utopisches Konzept oder strategische Chance für KMU?" ("Sustainability in Economy? – Utopistic concept or strategical chance for small and middle sized enterprises?"): Discussion meeting with contributions from sustainability research (ca. 180 participants)
– "Jugend schafft Zukunft" ("Young people creating future"): A workshop where young people work out ideas for a sustainable future (ca. 100 participants)

- "Internationale Netzwerke mit Lavanttaler Wurzeln – Große Töchter / Große Söhne" ("International networks rooted in Lavanttal – Great daughters / Great sons") : Discussion meeting (ca. 75 participants)
- „Zukunftskonferenz" ("Future-conference"): A workshop where decision making persons from different societal areas work out ideas for a sustainable future (ca. 70 participants)
- "Abend der Lavanttaler Wirtschaft" ("Evening of the Lavanttaler Wirtschaft"): A review of the „Quo vadis Lavanttal?"-process with contributions from the research team (ca. 320 participants)
- Presentation and discussion of the documentation of „Quo vadis Lavanttal?"-process (for the association only; ca. 20 participants)
- Presentation of the book „Zukunftsgestaltung als Prozess" („Creating future as a process") (ca. 100 participants)

Actors/groups of actors
- The association „Lavanttaler Wirtschaft" (ca. 60 enterprises in the region) mainly represented by the executive and the board
- The nine mayors of the district Lavanttal
- The „Regionalmanagement Lavanttal" (an institution for regional development) and the department for regional policy and planning at the Carinthian government
- Decision making actors from different societal systems (education, administration, public health …)
- Residents
- The Kärntner Wirtschaftsförderungs Fonds and Entwicklungsagentur Kärnten (financiers of the project and institutions concerned with regional development in Carinthia)
- A process provider (organisation development/counselling; background: philosophy, intervention research)
- Scientific team: two researchers (sociology, regional development; philosophy, intervention research)

Interventions by the research team
- Participation in a two years long phase of project development
- Presentation and discussion of the research-design at a meeting of the association „Verein Lavanttaler Wirtschaft" (after several talks with the board and the formal assignment)
- Qualitative interviews with selected actors
- Participating observation at all events
- Participation in several meetings of the association's board
- Feedback-Workshops for the board
- Composing a documentation to the five events
- Presentation of selected aspects at the event „Abend der Lavanttaler Wirtschaft" ("Evening of the Lavanttaler Wirtschaft")

- Organisation and composition of a book illustrating the process and elaborating selected aspects
- Presentation of the book „Zukunftsgestaltung als Prozess" („Creating future as a process")

Questions for group discussion
Please discuss the following questions in your group.
1. Where do you see a potential for/ the necessity of integration?
2. Where do you foresee barriers?
3. What ideas do you have for reaching integration (practically ie with methods)

Paper session 4:   Integrating Academic and Life-World Perspectives I
                    room: 207a | chair: Urs Wiesmann

4.1

Transdisciplinary Collaboration for Sustainable Urban Development

Merritt Polk, Human Ecology, School of Global Studies, University of Gothenburg, Sweden and *Jan-Henrik Kain*, Department of the Built Environment and Sustainable Development, Chalmers University of Technology, Sweden

One of the most crucial problems today is how to mobilize the necessary will and capacity of stakeholders to build shared awareness and shape joint intentions and actions that can both promote change and innovation and address conflicting social interests. This paper will focus on one example of how this capacity can be developed in a compilation of lessons learned from an on-going process to establish a transdisciplinary center for sustainable urban development in Göteborg, Sweden. This center work is composed of academic and multi-level public actors who have formed a partnership to promote new forms of knowledge production and exchange. This paper will describe the process that has been on-going since 2007. It will present an evaluation of the strategies and mindsets that can make such collaborative efforts more proficient at tackling the different types of problems that arise when joining academic and public representatives from a variety of disciplines, sectors and governmental levels. Some of the key needs include designing processes that can integrate the different goals and aims of the participating organizations, balance the needs for academic excellence and social relevance and effectiveness as well as translate between academic and practitioner based argumentation, decision-making and assessment criteria.

4.2
Transitions Towards Sustainable Development through Scenario Analysis: Bringing Together Diverging System Perspectives

Claudia R. Binder, Institute of System Science, Innovation, and Sustainability Research, University of Graz, Austria and *Regina Schoell*, Department of Geography, University of Zurich, Switzerland

In Human-Environment Systems (HES), transitions are often hindered by differing system pers-pectives among the involved stakeholders. In these cases, for example, mmisnderstandings among stakeholders can lead to distrust and block any long-lasting transfor-mation of the system. This phenomenon is often observed in developing countries, where research and extension programs aiming at an improvement of the human-environment relationship show changes during the project, but after the project, the management strategies of humans mostly return to their original pattern, sometimes even causing higher environmental impacts than before (Hellin and Schrader, 2003; Pretty and Shaw).

For us, the misuse of pesticides within HES is of particular interest as it leads to environ-mental damages (e.g. water and soil quality) and to a reduction of human living quality, through e.g., health impacts. Further-more, in the specific case of Vereda la Hoya, Colombia we found that interventions aiming at improving environmental and health quality have had little effect, as farmers feel not been understood by experts and the latter not been heard by farmers.

Therefore, crucial questions are: how can stakeholders with different system perspectives be brought together to (i) create a common system understanding and (ii) create a common vision of the future and (iii) to identify the steps to be taken for a transition towards the desired future? We consider that these questions can only be answered in a transdisciplinary process accom-pa-nied by an in depth socio-ecological research. In this presentation we focus on the transdisciplinary approach.

We adapted the method of scenario analysis (Scholz and Tietje, 2002) to our conceptual framework (Binder, 2007), the local conditions, and cognitive capacities of the farmers in Vereda la Hoya. The scenario analysis was performed in three steps: (i) system analysis; (ii) scenario development; and (iii) backward planning, corresponding to the above-mentioned questions. Ten farmers of la Hoya and ten experts (local, regional and national level) participated.

The key results are (i) the developed methodology allows for creating a common system understanding and scenario vision among farmers and experts. (ii) Factors related to social structure (e.g. tradition) are the driving factors of the system. They were even more relevant than resource-related factors (economics, power structure). Environmental quality is not a driving variable but is affected by action and it can constrain the potential for change and adaptation to external impacts. (iii) The optimal scenarios depicted by the group showed a coherent picture between farmers and experts. All stakeholders agreed that its realization would require a change in farmers' social and organizational structure. This change would open the door for organized and tailored extension services and additional financial sources.

We conclude that the adapted scenario methodology allows for creating the basis for inducing long-term changes in HES. The results suggest that transition can only happen if changes in social structure are induced. We consider that the common system understanding and new perspectives of experts and farmers built the basis for a transition towards sustainable development.

4.3
Creating Spaces for Successfully Sharing and Producing Knowledge in the Environmental Sector

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Transdisciplinary research involves per definition the involvement of various stakeholders, most of them interested in creating and making use of new complexes of knowledge. However, the integration of various types, cultures, styles and structures of thinking, believing, feeling and experiencing is far from trivial and the search for principles, conditions and good practices for successful integration is an ongoing endeavour – and, clearly, one of the purposes of this year's td-conference. This paper contributes to this endeavour by illuminating some steps on the way to integration. It explores the following question: What makes encounters between the various knowledge cultures of actors from research, public administration and practice creative, productive, and innovative? Based on case study material of sharing knowledge at various interfaces between research and practice, this paper discusses conditions and attitudes for creating spaces for successfully sharing and producing knowledge in the environmental sector. It draws on rich empirical evidence from the fields of agriculture, forestry, water, plant ecology, biodiversity, regional planning, and development cooperation. At the core of the paper stand eight theses. Apart from explanations following the analysis of empirical evidence of the knowledge sharing processes, each of the theses is linked to theoretical concepts on integrating different kinds of knowledge. The paper makes a case for a constructivist mode of knowledge sharing and production, based on the integration of various sources, cultures, and sys-

tems of knowledge. By spelling out eight key theses it provides practical guidance for reflection and innovation in designing and managing processes of integration of academic and non-academic knowledge.

Paper session 5: Tools for Integration I
                   room: 302 | chair: Vera Bühlmann

5.1
Decentralised Steering of Integrative Inter- and Transdisciplinary Research

Thomas Aenis, Humboldt Universität, Berlin, Germany

Application-orientation is increasingly demanded of scientists working in public research in the agro-environmental sector. In larger research consortiums, which are increasingly created to develop integrative solutions for very complex problems of relevance to the whole of society, this is combined with the necessity of interdisciplinary and transdisciplinary communication and co-operation. The problems in carrying out this research in practice are manifold and mostly closely connected with group communication: conflict of interests, paradigms and procedures; different views of problems; unclear objectives, status and hierarchies lead to personal and subject-based conflicts, lengthy group-dynamic processes, talking at cross purposes etc. The result: inefficiency, disintegration or even breaking off the project. One key to solving these problems is inner-consortium management.

   The aim was to empirically develop a model for decentralised steering of application-oriented research. The theoretical discussion includes an analysis of the special aspects of application-oriented research, work on the theory of group communication in the particular case of consortium projects and a concept for decentralised management. Finally, these three aspects are summarised in a "model for steering application-oriented research by means of group communication". The concept assumes that research co-operation is steered through inner-consortium communication. Inner-consortium research can be understood as a system of process-, organisational and team-communication:

- process communication includes the planning, monitoring and evaluaton of networked projects at different levels – in the large group, in working groups, in meetings and workshops;
- team communication deals with group dynamic processes within various small groups which arise during the course of the work of the consortium;
- organisation communication includes group dynamic processes within the large group „consortium" and the creation of project structures. Steering consortium research is a decentralised intervention into the

internal communication system. The "steerers" actually work on communication problems. They analyse a particular situation with reference to the aims of the communication and the goals contained (output and impact), decide on an intervention option and then introduce the means of self-steering. This is a recursive process with many iterations.

The analysis of the process, organisational and team communication was carried out in the GRANO project (1998-2003) – using the steering model as the framework for the analysis and evaluation – with reference to the identification of goals and indicators for the evaluation of group communication and exemplary approaches to solutions, already tested in practice (best-practice) including the steering tools of integrative, application-oriented research.

5.2
The Role of Theories and Methods for Transdisciplinary Integration Processes

Bernhard Freyer, University of Natural Resources and Applied Life Sciences BOKU, Vienna, Austria, *Jim Bingen*, Department of Community, Agriculture, Recreation and Resource Studies, Michigan State University, USA and *Sebastian Helgenberger*, University of Natural Resources and Applied Life Sciences BOKU, Vienna, Austria

The idea of this contribution is to reflect about the potential of theories and methods to integrate actors into the first stage of a transdisciplinary research project, which is to name as the definition phase of the research project objectives. Theories' potential for the integration is a broad one. They have the potential to guide us in identifying our partners. Focus of theories could be at micro-, meso- and macrolevel in ecosystems or social systems. With this differentiation we decide already on actors – individuals or organisations – we wish to keep in touch and to integrate into the research process. Often, the framework of transdisciplinary research, are case studies. Those approaches character is explorative, and often follows an inductive perspective. However this does not mean that we are free of any theories that are guiding our research. To understand reality, processes and developments in social science research we use e.g. social capital theory with focus on organisations, internal interactions between members but also relations to other organisations and their members, we employ actor network theory, to identify key actors but also systems theory to categorize most important subsystems and their relevant stakeholders. Environmental psychology models (e.g. theory of planned behaviour) allow to identify the actors, influencing the decision making process and

the values of a person. Briefly spoken, theories have the potential to support the identification of those persons which are of relevance for a transdisciplinary process e.g. for a common definition of research topics.

Methods are both, tools related to theories but also in a certain sense independent. In the first case related to the question on how to integrate actors in a transdisciplinary process, they support to identify actors, e.g. by interviewing persons. As an independant tool, there is the so called snow ball system, which is a decision of a person to name another person of relevance, of course often partly with a bias, because of sympathy and other factors. Further more there is the approach to identify persons who are affected by any research, and those who could be the future persons with power to guide and transfer the result of any research into practise a.s.o.

To conclude, there are several theories and methods that support the identification of actors with relevance for any transdisciplinary research process. It might be a challenge to systemize theories and methods with this specific profile. Theoretical reflections are complemented by experiences with empirical studies of the author and colleagues.

5.3
A Pattern Language for Education: Applying Design Principles to Course Design Through Interdisciplinary Borrowing
Ken Badley, School of Education, George Fox University, USA

Curriculum planners, professors and school teachers continually design courses and develop curriculum. When they do, they consider psychological and learning theories, epistemological questions such as the interrelations of concepts in relevant disciplines, and such concerns as assessment of learning, or tailoring instruction appropriately for students' varied social conditions. But educators rarely view the tasks of course or curriculum design as design tasks requiring design concepts.

Meanwhile, architects and designers have discussed the principles of design for two millennia. Fields other than education have benefited by using architectural concepts. For example, since the mid-1990s, computer software developers have used contemporary architect Christopher Alexander's idea of a pattern language to share expertise, to simplify the process of writing code, and to produce more elegant software.

Unlike their software-designing counterparts, educators daily carry out their own design tasks while denying themselves the use of specialized conceptual tools which architecture would willingly provide. Given the easy availability of a complete language for curriculum and course design, educators' self-imposed conceptual impoverishment seems a mystery, al-

beit one that will need to await future research. Curriculum and course design thus present both a need and an opportunity for the specific form of interdisciplinarity in which one field uses the tools and concepts of another field.

Curriculum and course designers could readily apply the architectural patterns of Christopher Alexander that software developers have embraced with such success. Patterns such as the following all apply to and would aid the processes of curriculum and course design: strong centers, clear boundaries with obvious entrances, quiet backs and green spaces, public and private, gradients and levels of scale, unity through contrasts, local symmetries and alternating repetition, piecemeal development and roughness.

This session will introduce and review briefly the eight design patterns named above, which are selected from the hundreds of patterns presented by Christopher Alexander in his dozen major and many minor publications. Having received that review along with a written summary/guide, participants in the session will be invited to identify applications in their own field of specialization for one of Alexander's principles from among the eight. The session will close with a sampling of the applications identified by participants, broadening out to more general discussion of the integrative model in which practitioners in one field employ the language, concepts and insights of another field.

Paper session 6: Theorizing Integration I
room: 308 | chair: Manuela Rossini

6.1
The Oxford Handbook of Interdisciplinarity
Robert Frodeman, Center for the Study of Interdisciplinary Studies, University of North Texas, USA

Serving as editor in chief of the Oxford University Press Handbook of Interdisciplinarity (HOI) has provided a useful vantage point for viewing the current state of the art of inter- and transdisciplinary research and education. Forthcoming in January, 2010, HOI consists of 36 chapters that explore the history of disciplinarity, the different types of integration across the disciplines and between the disciplines and society, and the varying forms that interdisciplinary integration takes (cross-disciplinarity, multi-disciplinarity, transdisciplinarity, antidisciplinarity, postdisciplinarity, etc.). HOI has chapters that explore interdisciplinarity in the natural sciences, the social sciences, the humanities, and the arts, as well as chapters that discuss difficulties in integrating interdisciplinary research in a variety of societal contexts (e.g. peer review, the corporate world and pub-

lic policy; table of contents at www.csid.unt.edu/research/HOI/).

Because it conceives of interdisciplinarity in a broad sense, HOI also includes chapters on teamwork, partnerships, and collaborative relationships, both inside and outside the university. Interdisciplinarity[2] is as important outside academia as within, and in fact is a primary means of bridging the university/public divide. Along with its review of academic work, HOI offers historical and philosophic surveys of attempts at interdisciplinarity, accounts of successes and failures within both research and education and across the sciences and the humanities, and explores claims of best practices within interdisciplinary research and education.

HOI is a product of a new institutional research effort into the nature of interdisciplinarity, the Center for the Study of Interdisciplinarity at the University of North Texas (www.csid.unt.edu). This presentation will offer a brief account of the process of creating this volume. Points to be discussed will include the prevalence of the search for a methodology for interdisciplinarity and the possibility of a philosophy of interdisciplinarity.

6.2
Mode (0/0) - Creating Space for Integration
Ulli Vilsmaier, University of Salzburg, Austria

Integration turns out to depend crucially on the understanding of the self. This can be experienced in any type of interactive situation in every day life, the more intensively the closer relations are. Even our research activities are influenced by the key coordinate – our self-understanding – which becomes visible when irritation and confrontation is provoked. Inter- and transdisciplinary research contexts are therefore fruitful fields. The contribution aims at outlining different concepts of the self, focussing on their 'chronotopic' dimension (Bachtin 2008). It will be shown that the creation of space for integration is depending primarily on the understanding of one's own self and the correlative dimensions of identity (professional, disciplinary, cultural). Mode (0/0) stands for an understanding of the self that is neither founded in unity nor in difference. It is characterised by an oscillation between self-reference and self-detractedness and is therein an open concept. Waldenfels (1997) refers to it as 'diastatic'.

The resulting interdependence of the self and the other will be translated to dimensions of identity related to scientific activities. Any form of identity only exists through difference. Any type of knowledge production, any discipline and cultural identity only exists against an all-embracing background (Hamberger 2004), in other words: it is constituted in difference.

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2   note that on this side of the Atlantic, interdisciplinarity is the more common term of art including what is known as transdisciplinarity in Europe.

Discussing the necessity of creating space for integration by the 'chrontotopic' dimension of the self addresses the analytical intellect – the one which needs logically coherent explanations for the simplest human attitudes required for living and acting in community. But as Heinrich von Kleist once remarked: "The door behind us is closed. We've to make all the way round the globe to see if there's a backdoor to paradise left open."

The contribution will not provide methods or programs for integration, as the reflected issue cannot be functionalized. It rather suggests the strengthening of self-reflexivity and openness as extremely effective 'tool kits' for integration process...

6.3
Types of Integration – A Perspective from Philosophy of Science
Jan C. Schmidt, Unit of Social, Cultural and Technology Studies, Darmstadt University of Applied Sciences

Besides problem- and purpose-orientation, integration seems to be a distinguishing character of inter- and transdisciplinarity: Without integration there would be no justification to use these terms. Even after a long debate of more than 30 years, however, it is not clear at all what is the exact meaning of integration and whether we can identify anything distinctive that can be called concepts of integration. Considering long-term efforts, the lack of clarification is, indeed, surprising. In any other kind of (normal) science and research, the scientific community would give up these (reflexivity) efforts and concentrate on more promising fields of inquiry. Only, if somebody is free for a moment, she or he might turn shortly the attention to the struggling question why the failure has occurred.

The lack of clarity might be induced by the hard problem — the epistemological circle: integration is an integrative topic; interdisciplinarity is an interdisciplinary theme. Nobody has, therefore, at the moment the priority access and the privilege to define integration and interdisciplinarity. The main idea of this paper is, however, to look for options of how to tackle this problem. An indispensable step seems to identifying various pitfalls and problems of the term definition of "integration" and "interdisciplinarity". I will just pose questions, also in-dicating that what is still missing is an epistemological framework and foundation of inter- and transdisciplinarity: a synthetic (interdisciplinary) philosophy of interdisciplinarity, or an integrative philosophy of integration. In this paper I will ask — to put it in the well-known terms of Immanuel Kant —, What are the epistemological (and not the organizational) conditions for the possibilities of integration and, therefore, of inter- and transdisciplinary research.

I will start with a short history of integration and interdisciplinarity in the realm of the thought tradition of philosophy showing that this tradition might be helpful for further clarifications. Here, I will also explicate the epistemological circle and argue that a strong normativity/politicity is involved in terms such as "integration" and "interdisciplinarity". (sect. 1)

Then, referring to well-established distinctions in philosophy of science, I will propose a classification scheme reflecting the epistemological conditions for the possibilities of integration: Integration based on (a) constructed or given objects ("ontology"), (b) knowledge/ theories/ concepts (epistemology), (c) methods/ practices (methodology), and further, (d) problem perception/ purpose orientation / problem solving. (sect. 2)

This framework might be helpful to analyze some of the most popular recent examples of research programs that are labeled "integrative", "interdisciplinary", "convergence": (a) NSF-NB-IC-scenario/ nanotechnology, (b) complex systems theory (including modeling and simulation), (c) biomimicry/ bionics, and (d) the EC-CTEKS-scenario or/and technology assessment/ sustainability research. (sect. 3)

In the last section I will discuss and evaluate the four examples of integration. It will turn out that the evaluation depends heavily on different philosophical thought traditions (realists/ real-constructivists, rationalists, methodological constructivists/ pragmatists, instrumentalists/ utilitarians). This, again, highlights that normativity, background convictions, personal or political intentions play a major role in the debate on integration, inter- and transdisciplinarity. (sect. 4).

Parallel Sessions III: Friday, 21 November, 09:00 – 10:30

Workshop 3:   room: 007 | chair: Gertrude Hirsch Hadorn

The Long-term Evolution of Integrative Frameworks in Problem-oriented Research Fields: Case Examples of Invasive Species Research
Organizer: *Christoph Kueffer*, Institute of Integrative Biology (IBZ), ETH Zurich, Switzerland

Transdisciplinary integration is mostly discussed in the context of single research projects or programmes, while the emergence and long-term dynamics of integrative frameworks in existing research fields is underappreciated among transdisciplinarity scholars. In this session we will discuss the relations of long-established research fields and transdisciplinary innovation based on the case example of invasive species research.

– What is the relation between existing research fields and transdisciplinary innovation?
– What is the long-term perspective of novel transdisciplinary frame-

works – adaptation of existing research fields or initiation of new disciplines?
– How may existing research fields accommodate inputs from transdisciplinary research processes?
– How can transdisciplinary scholars assure that their innovations are taken up in established research?

The case example: invasive species research

The societal problem
Through human action and with global change organisms from diseases to plants and animals are spreading into areas where they have naturally (i.e. without human assistance) not been present. These non-native species may in the colonized areas lead to (perceived) negative impacts on ecosystem services and human life quality and are then called 'invasive species'.

The problem-oriented research field

The societal problem of biological invasions has been addressed through specialised research since the late 1950s, and problem framings and research approaches have evolved in time and in response to stakeholders and practitioners (cf. Kueffer & Hirsch Hadorn 2008, www.livingreviews.org/lrlr-2008-2). In particular, research has increasingly become more inter- and transdisciplinary.

Invasive species research is prototypical for a problem-oriented research field focused on a complex societal problem characterised by high scientific uncertainties and conflicts of interests. The 50 years history of invasive species research as a problem-oriented research field allows observing in vivo how integrative frameworks develop and change at the boundary between science and society and through a dynamic interplay of different natural and social sciences disciplines.

Impulse talks

We will introduce conceptual thinking in invasive species research and its evolution at the interface of science and society from three different angles:
– First, we will replay the evolution of integrative frameworks in the history of the research field from early disciplinary approaches based solely on a biological understanding of the issue to more recent transdisciplinary socioecological frameworks (Christoph Kueffer & Gertrude Hirsch Hadorn – The evolution of integrative frameworks in invasive species research).
– Then we will explore differences in conceptual thinking among invasive species experts with different scientific backgrounds and discuss how differences in conceptual frameworks shape the perception and

valuation of the invasive species problem by different groups of stake-holders and experts (Franziska Humair, Christoph Kueffer, Peter Edwards & Michael Siegrist - How do conceptual understandings shape risk perception of invasive plants. A psychological perspective based on the mental model approach)

– The third presentation will compare invasive species research with a neighbouring research field, namely research on risks of genetically modified organisms. In a general sense the same problem, i.e. the potential impacts of novel organisms, is addressed, but the scientific and socio-political context contrasts sharply with the invasive species case, and this presentation thus asks how different socio-scientific contexts shape the development of transdisciplinary integrative frameworks (Monika Kurath & Christoph Kueffer - Who cares about novel organisms? A comparative study of risk research on invasive and genetically modified plants).

Plenary discussion

After the three presentations 45 minutes are reserved for a plenary discussion that will be initiated by an invited discussant (Peter Edwards, a natural scientist involved in invasive species research) and moderated by Gertrude Hirsch Hadorn (a specialist of transdisciplinary research).

In preparation for the workshop, participants may use the invasive species research case example (see www.livingreviews.org/lrlr-2008-2) or their own experiences from other research fields to develop their inputs for the plenary discussion on the questions outlined at the beginning of this workshop description.

Speakers

Prof. *Peter Edwards* is a professor of plant ecology at ETH Zurich. www.plantecology.ethz.ch

Franziska Humair is a doctoral student at the "Consumer Behavior" professorship, Institute for Environmental Decisions, ETH Zurich. www.cb.ethz.ch/people/science/fhumairs

Dr. *Christoph Kueffer* is a senior scientist (Oberassistent) at the Institute of Integrative Biology, ETH Zurich. www.geobot.umnw.ethz.ch/staff/kueffer/

Dr. *Monika Kurath* is a researcher at the Program for Sciences Studies of the University of Basel. http://people.ee.ethz.ch/~kurath/

Prof. *Gertrude Hirsch Hadorn* is the head of the group of environmental philosophy at the Department of Environmental Sciences at ETH Zurich. www.envphil.ethz.ch/people/hirsch/index

7.1

Integration in Inter- and Transdisciplinary Children's Rights Research
Frédéric Darbellay and *Karl Hanson*, Institut Universitaire Kurt Bösch (IUKB), Sion, Switzerland

After providing a short epistemological, theoretical and conceptual outline of the integration concept within inter- and transdisciplinary research, the paper will apply the integration concept to the emerging and multidimensional field of children's rights.

From an inter- and transdisciplinarity perspective, we define the polysemic concept of „integration" from the Latin integrare which means to incorporate all parts into a global and integrated whole. We thereby consider integration as a macro-process which involves the articulation of theories, methods and practices between three complementary sub- processes including integration between disciplines and paradigms, integration on the inter-institutional and organizational levels, and integration between academic and non-academic networks and actors to elaborate solutions in life-world contexts. Integration, which is both an outcome and a process, must thereby be understood as a dynamic, co-productive, non-linear and non-hierarchical mechanism.

In order to describe, analyze and understand the intricacy of theoretical and practical questions in the children's rights field, new theories are being developed that rely on interdisciplinary concepts of complexity, circularity and interrelations aiming at the integration and synthesis between, across and beyond scientific disciplines and paradigms. Key issues in theorizations of children's rights deal with, a/o, how children's conceptualisations of their rights (phrased as living rights) can be translated in legal discourse on children's human rights and with spaces available for 'giving voice' to these living rights. This endeavour will be illustrated via a research proposal which puts forward the concept of "translations" as a rallying concept for fostering the interdisciplinary dialogue between socio-legal studies, communication sciences, human geography, social anthropology, sociology, psychology and political sciences.

The elaboration of an interdisciplinary PhD in children's rights, in collaboration with established universities and faculties, exemplifies the difficulties encountered when integration is to be fostered on the inter-institutional, managerial and structural levels aimed at developing new organizational strategies and modes of governance which are adapted to inter- and transdisciplinary teaching and research practices.

The action-research project "Vivre ma commune" ("My community life") aims at improving both the general understanding of children's perspectives on their quality of life in their local environment as well as local authorities' awareness and capacity for taking into account the viewpoints and interests of their youngest citizens. The project relies on the integration of academic and non-academic networks and actors so as to identify complex problems, develop research questions and elaborate solutions in local life-world contexts which are particularly relevant for children.

7.2
Integration of Research Styles of the Natural and Social Sciences, and Scientific Knowledge with Farmer Knowledge

Edwin Nuijten, Technology and Agrarian Development, Wageningen University, The Netherlands

Today, the need for interdisciplinary and transdisciplinary approaches in agriculture and development oriented research is more and more recognised as it will allow a better understanding of the complexity of agricultural and developmental issues and contribute to more sustainable solutions. But how to integrate social science and natural science research methods is not much understood. A search is on-going for a theory that integrates social and natural science research methods. In this paper a framework is elaborated to understand how to integrate social and natural research methods. Four research styles can be recognised that are all found in the social and the natural sciences, and also in the humanities. These four research styles are: a) identification of candidate mechanisms (hypotheses), b) (re)construction of understanding, c) advanced statistic associations and d) description by measure. Just as triangulation of different research styles is possible within a single discipline, triangulation is also possible by combining research styles of different natural and social science disciplines. Triangulation is not considered as simply increasing the amount of information to test a hypothesis or theory, but as a careful matching of different data sets to test a hypothesis or theory from as many different perspectives as possible.

The framework outlined in this paper accommodates participatory and action research approaches used in interdisciplinary and transdisciplinary research projects. The difference between interdisciplinary and transdisciplinary research is that the focus of interdisciplinary research is more on problem identification and analysis whereas the focus of transdisciplinary research is more on developing solutions that can be immediately implemented. Both interdisciplinary and transdisciplinary research deals with a better understanding of the complexity of development issues. As a result communication between researchers and farmers in such research projects will become easier and more effective, resulting in more valid research questions and optimal solutions that will be sustainable from a economic, environmental and social perspective. Integration of scientific and farmer knowledge will allow deeper and more conclusive insights. Examples are given from on-going research on farmer management of rice diversity in West Africa (in particular The Gambia, Senegal and Guinea Bissau) on how socio-economic variables (such as gender and labour organisation) are interrelated with agro-ecological factors (like water table and rainfall) and plant characteristics (such as crop breeding system).

7.3
Integrating Stakeholder Perspectives for Railway Station Redevelopment by Identifying Generic System Functions

Stefan Zemp, Michael Stauffacher, Daniel J. Lang and *Roland W. Scholz*, Institute for Environmental Decisions IED, ETH Zurich, Switzerland

Railway stations have become a centre of focus in transport and land use planning for sustainable development. The redevelopment of railway stations is complex, posing many interlinked technical and social challenges. The latter is especially relevant for this conference, as a multitude of stakeholders with divergent perspectives (interests and knowledge) come together at a railway station and need to be integrated when preparing a redevelopment project. The integration of the stakeholder perspectives is key for successful redevelopment projects. Conceptual models or frameworks can effectively contribute to support this integration by providing a common system description and as such contributing to joint problem understanding. In this paper, we present the development of a framework, which was specifically targeted at integrating divergent stakeholder perspectives for railway station assessments.

Our framework is based on an explicit description of the generic functions of the system „railway stations". Functions are defined as the goals and requirements imposed on the system by its stakeholders. The participatory process of identifying the functions included multiple iterative steps and was conducted within a transdisciplinary project with the Swiss Railway Company (SBB): For the definition of an initial set of system functions, four focus groups were conducted with laypeople. These initial functions were further specified within 28 expert interviews and two expert workshops (i.e. combining integration by leader and common group learning).

Five functions of railway stations were identified. This set is considered as sufficiently representing the diverging stakeholder perspectives on Swiss railway stations. The functions improve system description by i) supporting the identification and description of the stakeholders of the system, ii) supporting a systematic description of synergies and trade-offs between functions (and their related stakeholders) and therefore also within or between alternative development options, and iii) allowing for the comprehensible derivation of assessment criteria. Within the workshops experts described the functions as improving their understanding of other stakeholders and their needs. A sense of „common system understanding while acknowledging diverging perspectives" was reported. The functions are currently applied in railway station assessments and may even be included within firm-internal teaching courses of the project partner.

For the case of railway stations, our study shows how an integration of stakeholder perspectives may be achieved in a systematic and participatory manner by means of defining system functions. The resulting framework of functions may even be applied as an integrative tool in railway station redevelopment processes.

Paper session 8: Tools for Integration II
room: 302 | chair: Rick Szostak

8.1
'Space Art Rescue' An Exercise in Social Actualisation
Melody Burke and *Frank Hoppe*, Satellite Art Works, London, UK and Berlin, Germany

'Social actualisation' was identified as a natural integrative approach most suitable to a collaborative of contemporary Space Artists to improve understanding at modelling cutting edge public warning systems in communication and dissemination of alertness in advance of impending disaster situations at local community level, focusing on satellite solutions in a user-need oriented approach.

The integrative hub were members of Satellite Art Works in close alliance with a number of specialists, from within the Sciences, Humanities and Commerce, who critiqued each investigative route. The research application aims at the development of a perceptive interpretation of global responsibilities, as these relate to regional and local practices with enquiry to encompass artistic cultural and transdisciplinary approaches, methodologies and principles.

The integration action plan included the use of artistic feedback presentations. The technology partnership with DelFly (Technical University Delft, Netherlands) created swarming micro aerial vehicles (MAV) in-

cluding developing integrated application to a satellite based alarm system outlined in phases to include flights within and over public spaces with accompanying feasibility studies.

Whilst a secondary aim in the collaborative process was the identification of striking similarities found between intuitive qualities and judgements, deployment of the usefulness of these observations became primary. As a result recommendation was made by the artists that there be a place for developing the shared qualities of intuition at an early stage in the project. Whilst this constituted an intriguing phenomenon for studying the interweaving between ways of knowing, thinking and experiencing reality, to some participants, to the majority of experts it was considered sensible. The outcome of this study provided inclusion of unforeseen details, unexpected patterns and intriguing outlooks that admitted significant perspectives.

A guiding vision proposed for integration focused on a number of newly evolving value systems emerging as a result of shared global perspectives including a framework for human rights, innovation, sustainability, ethics and social entrepreneurship. This is accompanied by the vision of a new discipline-based knowledge, Space Art Praxis / Space Art Practice. The artistic relevance of this engagement is currently understood to be located in the area of communication, the foundation of which is to establish an 'open source' in formulating a new kind of model for Art.

Artists are born phenomenologists and things „speak" to them. The result of this fact is that a fuller value to language is added along an integrative path where investigations are centred on speaking beings in a transdisciplinary context.

From a number of vantage points this project is proving an experiment in integration with more and less obvious outcomes. Conceptual integration, advanced communication with different disciplines, feedback presentations and discipline-based knowledge seem highly successful, whilst product development, implementation, general impact and funding require further investigations.

8.2
Do Groups Really Integrate Knowledge? Using 'Hidden Profiles' to Investigate
Ewan Lord, Warwck University, UK

Varieties of facilitated modelling approaches such as problem structuring methods, group model building, and decision conferencing have shown promise as tools for integrating knowledge. This presentation will begin by providing an account of the application of one particular facilitated

modelling approach (i.e. group causal mapping) with a group of actors and stakeholders operating in a London borough council in charge of tackling problems of teenage pregnancy.

The presentation will next discuss issues relating to the sharing and integration of knowledge within a group setting. Although the notion that social actors working as a group are better able to share and integrate their knowledge is highly accepted, this has been challenged by work on the 'hidden profiles' phenomenon. Hidden profiles occur when:

1, each individual in a group is provided with some common information about a problem or decision, but only a few possess some unique information which nobody else in the group has, and

2, a problem solution or optimal choice is only identifiable by sharing the unique information.

Evidence will be presented which shows that hidden profiles are unlikely to be uncovered by unstructured group discussion. Some theoretical explanations as for why this occurs will be discussed, and it will be argued that structured group processes such as facilitated modelling might alleviate the hidden profiles effect.

The presentation will conclude by proposing experimentation for testing a particular structured group process similar to that described at the start of this presentation. This process employs group decision support technology, in the form of Group Explorer software, by which group participants can anonymously input information and then structure it as a group.

8.3
Integrating Meanings and Mechanisms: How Cultural Influences and Neural Mechanisms Constrain Each Other
Machiel Keestra, Institute for Interdisciplinary Studies, University of Amsterdam, The Netherlands

As the cognitive neurosciences offer us ever more insights in the neural mechanisms that underly our mental functions, one may wonder what is left over for hermeneutic – and consequently: psychotherapeutic- approaches to mental functions and pathologies. However, the cultural and individual diversity suggests that neural mechanisms are not completely closed to other determining factors. Indeed, even the mechanism of imprinting teaches us that an apparently rigid neural mechanism offers room for environmental constraints or modulations, as Lorenz has demonstrated convincingly. Similar modulatory influences on mental functions have been obtained in studies of human mental visual imagery (affecting i.a. emotional circuits) or in mirror neuron studies, to name a few.

Investigation of such modulatory influences on neural mechanisms by environmental contingencies invites input from hermeneutics. To investigate meaning relations requires the study of different materials and a different methodology. Especially as environmental contingencies in humans are often of a linguistic and symbolic nature, hermeneutic investigations should clarify the presence and structure of these contingencies.

In my paper I will present a methodological approach – elaborating on mechanistic explanatory approaches – of the collaboration opportunities of cognitive neuroscientists and hermeneutic scholars. The topic at hand will be the recognition and understanding of human action.

Important in the observation and performance of action are the hierarchical and temporal structures that an agent uses while coding the actions. Language is a coding ‚tool’ which seriously enhances this coding process, as its structures allow great complexity. It can contribute to the explanation of the phenomenon of ‚overimitation’ in humans. Theories of language as an embodied or even perceptual symbol system support this mediating role.

Language affects other neural mechanisms too. Human mirror neuron systems respond to verbal meaning, as well. Obviously, shared representations of action’ are not just of a neural but also of a cultural and linguistic nature.

In sum, new and fruitful terrains of collaboration between hermeneutic scholars and cognitive neuroscientist lie ahead with respect to human action understanding. Obviously, these intersections raise various questions. How can the different disciplines help to constrain each other’s hypotheses and interpretations or explanations? For instance, will the study of neural mechanisms ‚fence off’ some interpretative accounts? Can meaning relations predict the neural processes that are involved in cases of action understanding? Obviously, what is needed is an explanatory approach that allows the integration of, on the one hand, meaning relations with, on the other hand, neural mechanisms.

Paper session 9:   Theorizing Integration II
                   room: 308 | chair: Jan C. Schmidt

9.1
Integration of Thought Styles on Multiple Levels
Richard Beecroft, University of Darmstadt, Germany

Although 'inter-' and 'transdisciplinarity' are intensively discussed in different scientific communities, and many suggestions on the principles of inter-/transdisciplinary science have been published with analytical, methodological, or evaluative impetus, these different approaches have

not jet been integrated into a broader picture. As a starting point, Ludwik Flecks theory offers a terminology to discuss the differntiation and recombination of thought styles whilst avoiding unfruitful differentiations between inter- and transdisciplinarity (Fleck 1980).

In this paper, I will suggest to characterize the integration of thought styles on up to seven levels which are drawn from different theoretical and methodological backgrounds.

Some of them form a common basis for cooperation:
– common language and common knowledge (von Hentig 1988)
– „General science" (e.g. system theory, modelling; Wille 2005)
– recombining related thought styles (Fleck 1980)

Some are newly formed connections:
– interdisciplinary procedures (e.g.participatory TA)
– boundary objects/problems (Tchernobyl, "energy")
– integration concepts (constellation analysis, Schön et al. 2007)

And one forms a meta-level of communication:
– reflection of the transdisciplinary work, maybe based on philosophical theory of transdisciplinarity (Schmidt, Grunwald 2005)

These levels are not meant as clearly distinct, but as different foci of the transdiciplinary integration effort. They form a heutristic both to analyse transdisciplinary work, and for planning and evaluation within transdisciplinary work. Hence, this approach is meant to offer a simple, feasible tool for "integration" in a methodology of transdisciplinarity.

9.2
Integration: Method or Manner? – The Case of the Center for the Study of Interdisciplinarity

J. Britt Holbrook, Center for the Study of Interdisciplinarity, University of North Texas, USA

In January 2009, the University of North Texas established the first university-based academic center devoted to the theory and practice of interdisciplinarity: the Center for the Study of Interdisciplinarity (CSID). Members of CSID have taken a case-based approach to our work, which has already helped us to integrate our „research on research" with others both within and outside the university.

This paper discusses several cases of attempted integration (some more successful than others), as well as addressing the overall integrative efforts of CSID as itself a case-study. It then argues that approaching integration as a ‚manner' rather than as a ‚method' (see Kant's Critique of

Judgment) has several practical advantages for encouraging integrative practices. Nonetheless, there is a major practical-theoretical disadvantage to this approach, which will also be discussed.

9.3
What Do We Integrate? A Perspective from Methodological Philosophy on Basic Problems of „Integration"

Henning Meumann, Philosophy Department, University of Erlangen-Nürnbergy

This contribution tries to provide some conceptual proposals as part of a ‚tool kit' for research with integrative purposes. It is an outcome of my doctoral thesis in methodological philosophy about the expectations and reality of supradisciplinary cooperation in one Austrian and two Swiss research programmes, now historical examples of Alps and cultural landscape research: in Austria: „Austrian Landscape Research"; in Switzerland: „Man and Biosphere" and „Landscapes and Habitats of the Alps".

The examination focused on the one hand on the expectations of and experiences with multi-, inter- and transdisciplinary projects in their wider context of the central idea, research politics and legal framework, expressed in publications and interviews with organizers and researchers of the programmes. On the other hand single project examples were chosen to be examined for the relationship between the cooperation of different disciplines and their relevance for integrating different societal sectors.

The study started from the assumption that the development of integrative perspectives requires inter- and transdisciplinary cooperation, and that a lack of integration traces back to a lack of cooperation between different disciplines. The analysis of the expectations, experiences and results, however, revealed that the main problem is not a lack of knowledge between scientists about how to organize the concrete cooperation in an existing research group. Problems arise rather from unrealistic demands and expectations, which leave their marks on basic administrative conditions and on the formulation of assignments.

In effect, integration as a societal concept is not identical with cooperation between different disciplines. Also disciplinary contributions, communicated and applied in the right way, can have an integrative effect in society. In order to improve the intermediation between scientific and non-scientific knowledge, it is important to have a clear concept of 'discipline' and of 'science'. 'Science', not always well distinguished from other societal activities, risks to be fraught with requirements and tasks, for which it is unsuitable. 'Disciplines' are mistakenly identified with typical research fields and consequently with sectors of society. A clear

concept of discipline demonstrates also the limits of conceptually consistent theoretical frameworks for the integration of different disciplines. In one example a theoretical socio-ecological framework was criticized as too holistic and not concrete enough for empirical research.

The presentation concludes with a very simple question: Are the concepts of multi-, inter- and transdisciplinarity related to extensive research fields or to individual projects?

Parallel Sessions IV: Saturday, 21 November, 11:00 – 12:30

Workshop 4:   room: 007 | chair: Robert Frodeman

Integrative Curricula for the Humanities and Social Sciences
Organizers: *Manuela Rossini*, Programme Coordinator at the Institute of Advanced Study in the Humanities and the Social Sciences (IASH, University of Berne, Switzerland, *Julie Thompson Klein*, Professor of Humanities in English and Interdisciplinary Studies, Wayne State University, USA
Presenters: *Julie Thompson Klein*, *Manuela Rossini*, *Francesco Panese*, Director of the College of Human Sciences (CDH), EPF Lausanne, Switzerland

The emergence of new thematics of research and teaching, intellectual problematics, methodological and conceptual approaches, and theoretical frameworks, has also led to innovative curricula development. This workshop is a joint enterprise by scholars who have been teaching and/or coordinating interdisciplinary courses on the BA, MA and PhD level in the humanities and social sciences. Each will give a short input of 10-15 minutes, outlining the course and its aims, and delineating enabling and disabling conditions for dialogue and exchange across disciplines. Designated participants will be offered the opportunity to respond and raise one question before we open the discussion to everyone:

As the scientific coordinator of the newly launched interdisciplinary Graduate School of the Humanities and Social Sciences at Berne University, *M. Rossini* will defend a concept-based methodology as a heuristic tool that also helps to (re-)integrate paradigms, thought styles, theories, methods as well as interests and values of the humanities and social sciences. Respondent: *Catherine Lyall*, ESRC Innogen Centre, University of Edinburgh, UK.

F. Panese will talk about the necessity of designing curricula for dialogue between the neurosciences and the humanities in order to go beyond 'reductionist' approaches and knowledge production. Respondent: *Machiel Keestra*, Interdisciplinary Studies, University of Amsterdam

J. Klein will emphasize solutions and ideas for fostering integrative re-search and education based on patterns of practice in the changing relationship between humanities and social sciences. Respondent: *Britt Holebrook*, Center for the Study of Interdisciplinarity, University of North Texas, USA.

Paper session 10: Integrating Acdemic and Life-World Perspectives III
room: 207a | chair: Theres Paulsen

10.1
Beyond Science: Integration of Science, Civil Society and Politics in Parliamentary Debates on Medical Biotechnology Regulation in the UK
Karen Kastenhofer, Institute of Technology Assessment, Austrian Academy of Sciences, Austria

Public and regulatory discourses have become powerful sites of issue formation and framing of technology governance during the past decades. Such discourses can be analysed similarly to research projects, namely as a combination of epistemic, axiological and political processes. Parliamentary debates represent an exemplary site where the regulation of emerging technologies is discussed referring to and integrating evidence, norms and interests. Although representation of party lines and the constituencies' interests build a core part of parliamentary debates, in the case of debates on the regulation of emerging technologies such as biotechnology, (contested) scientific facts and ethical positions are just as important argumentative resources. Moreover, the narratives mobilised during parliamentary speeches evoke specific pictures of science, science and technology governance, politics and the public.

This paper draws on material from the UK parliamentary debates on the new Human Fertilisation and Embryology Bill between 2001 and 2008. By referring to a political discourse instead of a scientific research project, this presentation introduces a different, but comparable case of 'transdisciplinary' or 'transepistemic' (Knorr Cetina 1984) integration, one that could just as well be labelled as 'transpolitical'. Although the import of the parliamentary discourse on actual political decision making is difficult to assess, an analysis of the argumentative rationalities, resources and references mobilised throughout the debates as part of a formalised process of opinion making can be compared to sensu stricto epistemic projects within science.

The motivation to compare a political discourse with epistemic projects is based upon the observation of a more general development within technology governance. The problematisation and regulation of emerging technologies is one key factor of the 'participatory turn' that took place in European democracies since the late 1990ies. This 'participatory turn' can

be observed mainly on a discursive level, although it also led to transdisciplinary research (e.g., within the field of technology assessment) and new forms of political participation. Therefore, the planned presentation will raise the questions to which extent and in which ways the discourses themselves can be interpreted as epistemic as well as political processes and whether they constitute representations of more general perceptions of science, politics and the public upon which transdisciplinary research and technology governance are built. In more general terms, it allows for addressing political aspects within scientific research and epistemic aspects within political discourse, looking at participation from both – the political as well as the epistemic – side.

10.2
Using transdisciplinary approach to investigate ways of improving health and well-being related to waste management in poor settlements of Abidjan, Côte d'Ivoire

Kouassi Dongo, UFR-STRM, Université de Cocody-Abidjan Côte d'Ivoire and Centre Suisse de Recherches Scientifiques en Côte d'Ivoire; Co-authors: *Guéladio Cissé*, Centre Suisse de Recherches Scientifiques en Côte d'Ivoire, *Brigit Obrist* and *Marcel Tanner*, Swiss Tropical Institutes, University of Basel, Switzerland, *Christian Zurbrügg*, Swiss Federal Institute for environmental Science and Technology (EAWAG), Zurich, Switzerland, *Jean Biémi*, UFR-STRM, Université de Cocody-Abidjan Côte d'Ivoire)

The health and vulnerabilibility of particularly marginalized people are greatly influenced by environmental factors, including risks caused by deficient liquid and solid waste management. The present study aimed at analyzing environmental health risks and people's perceptions of risks related to waste management in poor and informal settlements of Abidjan, with the aim of investigating ways to assist in improving the health status of the population.

The research followed a multi and transdisciplinary approach. Multisource information from land use patterns and from QUICKBIRD satellite images on the one hand, exogenous data and socio-environmental survey on the other hand, were integrated into an innovative, simplified Geographical Information System (GIS).

Strategies of mitigating syndromes regarding solid and liquid waste management were analysed through an integrated participatory workshop involving all the stockholders.

Uncontrolled deposits of solid and liquid waste represented the most striking health risks observed and mapped. These environmental risks add to the vulnerability of the poor people living under difficult circumstances and dramatically increase during the rain season. The rainy season showed

consequently, increased point prevalences for malaria (47.1 % versus dry season 33 %) and diarrhea (19.2 % versus dry season 14 %).

The participatory workshop ended in a concerted action plan which defines the role and level of intervention of each stakeholder and will allow improvement of the health and well-being of people in these poor settlements.

The GIS baseline drew the authorities' attention to the need for improved waste management and will enable better planning in future.

One of the challenges this research has contributed to address is the consciousness and the encouragement of decision-makers to adopt an integrated and more realistic approach for sustainable waste management systems involving citizens' participation and public-private partnerships.

10.3
Tourism as An Object of Study: Between Transdisciplinarity or Disciplinary Reflexivity? Stakes, questions, methods and tools

Laetitia Garcia, *Sébastien Jacquo*, Institute for Research and Tourism Studies (IREST), Université Paris, France, *Maria Gravari-Barbas*, *Laurence Jégouzo* and *Xavier Decelle*, IREST, France, *Isabelle Lefort*, Université Lyon 2, France, *Edith Fagnoni*, Université Paris 4, France

As an object of study, Tourism is characterized by an important heuristic value and is studied by multiple, though compartamentalized disciplines, juxtaposing geographical, economical, sociological, anthropological, law or historical approaches. Relations between compartamentalized disciplines are often difficult to build; works produced in each disciplinary context have small interference with research on the same theme but by another discipline. As a result, knowledge is divided and geographers working on tourism are not aware about research produced by economists or lawyers – and vice-versa. Tourism suffers, probably more than other research fields, by the French traditions in social sciences, which is not very open to transdisciplinarity.

Besides, Tourism presents the particularity of being, more than other research subjects, not sufficiently defined by researchers, even of the same discipline, who often do not agree about its definition.

No discipline can, of course, pretend to have the monopoly on Tourism as an object of research. All disciplines are useful – even necessary – to 'build' Tourism as an object of analysis. However, approaches are radically different.

We propose to analyze transdisciplinarity in Tourism in order:

1. to understand and analyze the reasons of the difficult construction of transdisciplinarity of Tourism;

2. to promote disciplinary reflexivity;
3. to make suggestions of methods and tools of transdisciplinarity.

Through these three points we wish to bring some answers to the questions of the symposium, related not only to the ways of integrating the points of view of researchers of different disciplines but also of acdemic and non-academic professionals.

Paper session 11: Tools for Integration III
room: 302 | chair: Gertrude Hirsch Hadorn

11.1

Towards an Adequate Complexity Reduction in Defining Scientific Contributions to Sustainable Land Use

Gabriela Wülser; Co-authors: *Christian Pohl* and *Gertrude Hirsch Hadorn*, Environmental Philosophy Group, Institute for Environmental Decisions, ETH Zurich, Switzerland.

The heterogeneity of the core ideas around the concept of sustainable development as well as the interpretation and concretisation of the ideas in a problem's context turn sustainability into a highly complex issue. Scientific contributions to sustainable development cannot encompass all the aspects that the sustainability concept consists of without overburdening themselves. Rather, researchers must reduce its complexity in order to find scientifically treatable research questions. Such simplification decisions are often based on disciplinary paradigms and implicit assumptions on sustainability. They therefore easily miss out important considerations and lead to outcomes that are little useful for practice or implicate unsustainable solutions. In order to create relevant results, research projects must systematically reflect and deliberate how to integrate their specific contribution into the complex concept of sustainability.

We present a schema sorting out and structuring the core ideas of sustainable development. It features a set of questions that are deduced from the core ideas and specified for research in the field of climate change related land use. These questions support researchers in identifying their specific contribution to a problem "on the ground", i.e. the relevant aspects a scientific study sensibly should focus on (complexity reduction). This requires that the actual discussion on the interpretation of sustainable development in the context of the issue at stake be taken into consideration. Further, the presented schema helps to relate the chosen focus of a research project to the other, not chosen aspects of the sustainability concept. Such a systematic integration of research questions and the sustainability concept in consideration of the concrete problem "on the ground"

leads to the recognition of the part of the whole that the research project actually is. This helps to clarify and reflect the contribution of research to problem understanding and/or solving.

11.2

Solving the Information Needs of Transdisciplinarians through Classification?

Rick Szostak, University of Alberta, Canada and *Claudio Gnoli*, University of Pavia, Italy

Transdisciplinary research faces several difficulties in the broad area of „information." Transdisciplinary scholars often have difficulty locating relevant research in fields other than their own. They then have difficulty understanding what they find because they encounter novel terminology or (often even more troubling) familiar terminology used in different ways. Finally, they have difficulty reaching multiple disciplinary audiences with their research findings.

These problems could each be alleviated if the present discipline-based systems of library classification were supplanted by a new system. The Leon Manifesto (2007) called for a new system with three key attributes:
– Documents would be classified in terms of a universal list of phenomena (and the causal relations among these) rather than in terms of disciplines and disciplinary terminology.
– Documents would also be classified in terms of the main theories (or types of theories) applied.
– Documents would also be classified in terms of the main methods applied.

Such a classification system would make it much easier for transdisciplinary researchers to find all studies that have addressed a particular causal relationship (and also to identify work on related relationships – perhaps especially importantly those that the researcher might not first have considered), and furthermore to see what theories and methods have previously been applied to a particular research question (which can prevent "re-inventing the wheel," while identifying gaps in previous research). By the same token, such a classification would enhance the likelihood that disciplinary researchers would find relevant research by transdisciplinarians as well as by scholars in other disciplines.

Less obviously, a better classification would reduce terminological confusion. Placing a term in a classification identifies what sort of thing it is and what sort of thing it is not (and often also what are its subsidiary elements). There is a huge debate within information science as to whether terminology is inherently so ambiguous as to militate against a universal

classification. Szostak (2008) provided a philosophical justification for the view that a universal classification was indeed possible.

This paper will describe efforts (by the co-authors and others) to develop such a classification (providing examples from various fields). It will also outline how scholars with an interest in particular areas of transdisciplinary research can provide guidance on the precise shape such a classification should take.

This research is itself transdisciplinary in orientation. It draws most obviously on the field of information science. A classification of scholarly documents must be grounded in both an ontological appreciation of how the (natural and social) world is organized and an epistemological appreciation of how scholarship proceeds. There is thus both a critical philosophical component and potential input from every scholarly field (but also non-scholarly interest groups) as to how their areas of interest are best classified. The goal of the research is a new unified vision of how to classify documents.

11.3
Finding a Common Language in Post-Crisis Development
Thomas Bearth, University of Zurich, Switzerland

A cross-sectorial view of what may be counted as „resources" for sustained livelihood in a given area is an indispensable prerequisite to minimizing arbitrariness in developing strategies for improving conditions of life, and eventually, establishing stable conditions for self-reproducing sustainable management of such resources. Translated into the working context of inter- and transdisciplinary research, systemic interdependence between different types of resources implies the readiness of researchers involved to transcend epistemic limitations of their own disciplines and to allocate a part of their research time to working together in establishing a common space of reflection which makes discipline-specific or resource-specific assumptions and results mutually accessible and interpretable (Genske 2006).

Empathy towards local knowledge and beliefs, while avoiding romanticism blinded by the myth of "the local", is an indispensable prerequisite to generating the kind of local trust and participation conducive (i) to falsifying the „enlightened" opinion according to which local traditional knowledge is a priori deficient for coping with systemic requirements of resource use under environmental pressures, challenges of the prevailing market economy, and adjustments to global culture; (ii) to recognizing the

possible global relevance of original local solutions; (iii) to seeking a synthesis of local and specialist knowledge (Neubert & Macamo 2004) suited to respond meaningfully to crisis and post-crisis situations for the benefit of local communities and for science in its generalizing, multiplicator and disseminating role.

These premises provide the background against which the methodological principle of epistemic priority given to local analysis (Bearth 2008) was developed, which will be briefly discussed in its methodological implications and illustrated in its consequences for an integrated approach to development challenges in an early post-crisis situation as it prevails currently in Western Ivory Coast. Initiated at the height of the crisis as part of a cooperative research experience with a vague idea of compensating for the institutional vacuum resulting from radical state failure, it has survived both the war and the research project which triggered it and constitutes in the eyes of, and on demand of local leadership an integral part of a creative approach to the challenges of a post-crisis environment which is still, on the whole, unstable. The adoption of an originally external research scheme into a local vision of development by a representative segment of a local community, while in no way motivated by monetary or career support, is an indicator f both conditions for and fallouts from locally-based integrated research. Among the latter will be discussed:

– the recognition of locally supported threshold values for redefining "poverty line" in a locally meaningful, systemic and gender-sensitive perspective,
– the story of how transformation of a liability – war – into a collective learning experience can be helped by science.

Accessorily, it brings to light the need for a common language as perhaps the biggest challenge transdisplinary research is called upon to face, particularly in a context of endemic multilingualism prevailing in many parts of Africa, in the quest of creating a transdisciplinary communicative space as a frame favoring an integrated approach to development and science.

12.1

Integration in Climate Change Research for Adaptation Strategies: The Case of the "Knowledge for Climate" Programme

Kirsten Holländer, Foundation Knowledge for Climate, Utrecht, The Netherlands

Recently, the ambitious Dutch research program "Knowledge for Climate" received funding. We present this program and its approach, discussing its transdisciplinary character and integration issues in order to identify and reflect upon central challenges of TD research management. The presentation argues that transdisciplinary research responding to societal needs requires transdisciplinary research governance. Governance concerns a.o. the formal and informal norms regulating rights and duties of actors and interaction modes. In heterogeneous programs with co-financing by stakeholders different frames of reference meet and need to be effectively negotiated.

"Knowledge for Climate" is the leading national research program for climate-proofing the Netherlands. It aims at developing and implementing adaptation strategies on the local, regional, national and international level. "Knowledge for Climate" serves the goal of developing applied knowledge through joint knowledge production in the cooperation of government, business communities and scientific research Institutes. It started in 2008 with a budget of 50 million Euros (to be doubled by co-funding) awarded from the Economic Structure Enhancing Fund (FES).

Central building blocks of the program are the eight regional hotspots (areas of either great ecological vulnerability or areas with anticipated large climate-change effects on economic activities). Additionally, eight cross-cutting topics have been identified (water safety, specific issues for urban and rural areas, improvement of climate models, governance and decision support). The program is now entering a crucial phase with an open call for the formation of eight consortia on the cross-cutting topics who additionally are required to collaborate with a number of hotspots. The questions addressed in the open call were developed in collaboration with the hotspots, research institutions and ministries.

The central challenges for the programme that will be adressed in the presentation include the following:

1. Integrating regional approaches and hotspots with cross-cutting thematic consortia – a crucial phase in programme implementation.
2. Integrating scientific excellence and societal relevance, ie. research goals with application and implementation aims.
3. Integrating social and natural sciences.
4. Integrating a supply and demand driven approach in knowledge production. i.e bottom-up responsiveness in program design with top-down research planning.
5. Integrating stakeholders, universities and applied science institutions within research consortia
6. Integrating local, regional and national adaptation strategies.
7. Integrating project based research funding with aims for a permanent contribution to knowledge infrastructure on Climate Change Adaptation
8. Integrating projects into the program, balancing coherence with flexibility.

The analysis of these challenges contributes to identifying the central questions for designing integrative research approaches for climate adaptation and sustainability. Large transdisciplinary programs are complex and function in a dynamic environment. The aim of the research program to contribute to the Dutch knowledge infrastructure raises questions as to the governance of science systems in the light of sustainability issues and the scientific and societal relevance of knowledge.

www.knowledgeforclimate.org / www.kennisvoorklimaat.nl

12.2

The Formation of Transdisciplinary Research: Responses to a Call on Urban Future

Malin Mobjörk, Swedish Defence Research Agency, Sweden

Transdisciplinarity is a concept under formation. In recent literature transdisciplinarity is not only described in terms of degree of integration, it also compromises the motives behind the research as well as the relationship between science and society. Despite the heterogeneous character of transdisciplinarity one could identify a common ground on how to understand transdisciplinarity which emphasises collaboration and mutual learning between various actors (academic and non-academic). Reading literature on transdisciplinarity one could furthermore acknowledge that less is written on transdisciplinarity and its content from empirical experiences, for instance concerning methods used or approaches to the integrative work. Taking starting point from a call emphasising inter- and transdisciplinarity in the area of "Urban Future" this paper analyses how three research groups have responded to this call that came in 2008. Focus lies on how different research groups interpret and set up the framework for doing "transdisciplinary" research: Which actors are considered important for collaboration (the integrative work)? Which roles are different actors going to have? Are there any specific methods considered particularly important for transdisciplinary research (to support integration)?

These issues lie as a foundation for discussing particularly two distinguished approaches towards transdisciplinarity visible in these research proposal; approaches that could be related to different motives behind the research. Distinguishing these approaches promotes a better understanding of the variety of research approaches which exist under the banner of transdisciplinarity. The approaches are of substantial importance for the meaning and content of transdisciplinarity, not least in relation to methodological and epistemological challenges including the integrative work. A fruitful development of, for instance, methodological tools for transdisciplinarity or criteria for evaluating transdisciplinarity needs to be done in a dual process with a development of a refined conceptual framework for understanding transdisciplinarity. This paper aims to be such a contribution combining a theoretical analysis and concept development together with empirical experiences on different approaches to transdisciplinarity.

The relevance of this paper to the td-net conference lies particularly in its approach of supporting a discussion of a refined classification of different approaches towards transdisciplinarity which are of substantial relevance for understanding, accomplishing and evaluating integrative approaches in transdisciplinary research. The analysis is made on three research proposal and their intention and pre-hand ideas of how to do transdisciplinary research. The strength with this empirical data is that different approaches can be discussed which are oriented towards the same subject area.

12.3
Getting Serious about the Games People Play:
Integrated Research and Policy
Dannie Jost, World Trade Institute, University of Berne, Switzerland

At the World Trade Institute, students and researchers work *principally* in the field of international trade law and economics and in the area of political science, but not only. The purpose of NCCR Trade Regulation is to develop innovative, concrete policy recommendations that reflect a better balance between economic and other regulatory objectives. In other words, the institute has as its business the matter of doing legal and economic analysis, and drafting new policy proposals from the perspective of international trade; *all* help is welcome, all disciplines are granted equal opportunity to contribute.

In society, the reality is one of a fragmented and amorphous puzzle ambiguously fighting and embracing globalisation. On one side there is an heterogeneously motivated array of policymakers, politicians, consumers and unlabelled folks from all walks of life looking or clamouring for solutions to pressing problems such as climate change, agricultural sustainability, food security, food safety, medical technology, public health, toxic waste disposal, access to knowledge, and nanotechnology, to name a few contemporized issues. On the other side, academics and scholars, be they lawyers, political scientists, economists, natural scientists, engineers, philologists or toxicologists, abscond their intellectual gems in treasure chests vaulted with intellectual ownership rights and an avalanche of esoteric language and duplicitous acronyms. It is not a satisfactory condition. Bridges need to be built between the problems and the solutions.

In this paper I will outline the motivation, ideas and platforms that are being explored at present to create sustainable stakeholder integration that focus on *actions* that precede, accompany or follow research and contribute to integrate it in society, in particular in the area of policy.

Voices of the Community:
A Collection of Statements on Integration

Integration in inter- or transdisciplinary research is for me the successful outcome of an encounter (or several encounters) between different disciplinary research fields or research domains, e.g. the natural sciences and the social sciences).
‚Outcome' refers to results and/or research findings that would not have come about without such an encounter; ‚successful' means that the original research questions raised, even if they were framed in a disciplinary mode, have been transformed into questions that were answered in a mode transcending them.

<div align="right">

Helga Nowotny
European Research Council, Bruxelles
</div>

We try to integrate different disciplines in interdisciplinary research-teams as well as participants from practical fields. All our research projects involve all members of the different practical fields. We offer them access to our results during the process of research and discuss these results together with them in order to get a common validation. The consequences for their further way have to be decided by our research-partners themselves.

<div align="right">

Larissa Krainer
Institut für Interventionsforschung und Kulturelle Nachhaltigkeit
Alpen-Adria-Universität Klagenfurt
</div>

I understand integration in the rather restrictive sense of framing, integrating and generalizing knowledge through theoretical frameworks. Integrative frameworks in transdisciplinary research transgress disciplinary frameworks, integrate different forms of evidences (esp. non-academic local, traditional, practioners' knowledge), are framed in order to address societal issues (i.e. problem-oriented) and have the strength to guide new research over the long-term, i.e. a criterium of the quality of transdisciplinary integrative frameworks is that they can form a research interest beyond a single project.

<div align="right">

Christoph Küffer
Institute of Integrative Biology, ETH Zürich
</div>

I understand ‚integration' as the process of translating between different disciplinary realms in order to create a fuller picture of a ‚wicked problem' – one that escapes any one disciplinary epistemology, set of questions, or methodologies. I haven't come across any key texts that summarize this issue adequately...

<div align="right">

Susan Squier
Department of English, Pennsylvania State University
</div>

(Research) integration is the process of improving understanding about a problem by bringing together and synthesising relevant disciplinary and practice (stakeholder) knowledge, as well as the various unknowns about the problem.

<div align="right">

Gabriele Bammer
National Centre for Epidemiology and Population Health
Australian National University
</div>

I have a rather specific view on this, which I can only explain in terms of a metaphor. Imagine producing of a block of styrofoam, in which each constituent particle is a discipline. It seems to me that most people hope for integration to occur by blowing the particles together with sufficient organizational force so that the whole of the block is created – but only for a while. After a short time the particles start to fall apart and the block becomes non-existent. Somehow the block of the whole has to be woven together in some more enduring manner. And that is my life-long search: how to do this (and to witness the „unexpected thinking" that can emerge as a by-product) and, if I have the skill, how then to pass it on to those who will follow after me?

<div align="right">

Bruce Beck
Environmental Systems Analysis, University of Georgia
</div>

There is no universal formula. The focus varies, from generalized treatments of knowledge, metaperspectives, and overarching conceptual frameworks to particular methods for particular problems. Integration is also influenced by the goals and scope of a specific program or project, the questions being addressed, the participants who are involved, their research traditions and methodological preferences, the institutional setting, and the type of interdisciplinarity or transdisciplinarity being practiced.

<div align="right">

Julie Thompson Klein
Interdisciplinary Studies Program, Wayne State University
</div>

The success of transdisciplinary integration depends on the commitment of all participants to address a common and integrative research question.Integration has to start at the beginning of transdisciplinary research activities not at its endpoint. Integration is mainly on processes rather on results.

<div align="right">

Armin Grunwald
Institute of Technology Assessment and Systems Analysis, Karlsruhe
</div>

The lack of clarity might be induced by the hard problem – the epistemological circle: integration is an integrative topic; interdisciplinarity is an interdisciplinary theme. Nobody has, therefore, at the moment the priority access and the privilege to define integration and interdisciplinarity.

<div align="right">

Jan C. Schmidt
Unit of Social, Cultural and Technology Studies
Darmstadt University of Applied Sciences
</div>

Integration supports the identification of practical solutions to daily problems of people like you and me.

Thomas Teuscher
Roll Back Malaria Partnership, Geneva

Interdisciplinary or transdisciplinary integration is less a matter of methodology than a tonal quality – a sensitivity to nuance and context, a flexibility of mind, and an adeptness at translating concepts from one disciplinary domain to another.

Robert Frodeman
Center for the Study of Interdisciplinarity
University of North Texas

Integration in Inter- and Transdisciplinary Research
From an Inter- and Transdisciplinarity perspective, we define the polysemic concept of „integration", from the latin integrare which means to incorporate all parts into a global and integrated whole, as a macro-process which involves the articulation of theories, methods and practices between three complementary sub-processes, including:

a) The integration and synthesis between, across and beyond scientific disciplines and paradigms (epistemologies and teaching and research methodologies) in order to describe, analyze and understand the complexity of theoretical and practical questions in various fields.

b) Integration on the inter-institutional, managerial and structural levels aimed at developing new organizational strategies and modes of governance which are adapted to inter- and transdisciplinary teaching and research practices.

c) The integration of academic and non-academic networks and actors so as to identify complex problems, develop research questions and elaborate solutions in life-world contexts.

Integration, which is both an outcome and a process, must be understood as a dynamic, co-productive, non-linear and non-hierarchical mechanism, which articulates in a ternary logic (a) the emerging eco-auto-reorganization of disciplines and scientific paradigms; (b) the changing institutional and organizational structures; (c) and all the networks and stakeholders which are implicated in theoretical or practical problems to be solved on the basis of a new contract between science and society.

Frédéric Darbellay
Institut Universitaire Kurt Bösch, Sion

Without differentiation no integration.
Willi Haas and Barbara Smetschka
IFF Social Ecology, Vienna

swiss-academies award for transdisciplinary research
supported by Stiftung Mercator Schweiz

Call for Application 2010   deadline: 2 April 2010

Every two years, the td-net grants the *swiss-academies award for transdisciplinary research* to an outstanding transdisciplinary research project by an individual or a research group. The award of CHF 75,000 is provided by the *Stiftung Mercator Schweiz*. It must be used for a follow-up project by the winner or the winning team.

The award is given in recognition of excellence and innovation in transdisciplinary research. It is an incentive to researchers of all fields to develop more integrative projects in order to better deal with the complexities of sociocultural, technological, economic, environmental and health issues whose causes and effects are not well understood or uncertain.

Based on the principles established by the td-net in dialogue with its national and international scientific community, the major qualities and ways by which a project may contribute to the enhancement and excellence of transdisciplinarity research are:

– a substantial contribution to knowledge production in the participating disciplines as well as to the building and transfer of solution-oriented research in the interest of a common good;

– a high level of awareness and a reflexive handling of the complexity of an issue – meaning the complex system of factors that together explain the issue's current state and its dynamic;

– integration of academic and non-academic perceptions and positions;

– participatory stakeholder and/or community engagement or policy development process;

– scientific and social contextualisation.

Projects that made path-breaking contributions to one or several of these aspects are eligible for this award. Furthermore, in order to be eligible, the applicant's project must be

– recently (not later than in 2008) or nearly completed;

– based at a Swiss university or research institute (even though the research may be carried out abroad).

The decision of the jury will be based upon the quality of the *completed* project (not on the follow-up project).

Further information and the application form can be found on
www.transdisciplinarity.ch

Mercator Foundation Switzerland

The Mercator Foundation Switzerland is one of Switzerland's largest foundations. It initiates and funds projects that promote better educational opportunities in schools and universities. In the spirit of Gerhard Mercator, it supports initiatives that embody the idea of open-mindedness and tolerance through intercultural encounters, encouraging the sharing of knowledge and culture. The foundation provides a platform for new ideas to enable people - regardless of their national, cultural or social background - to develop their personality, become involved in society and make the most of the opportunities available to them. Mercator Foundation Switzerland takes an entrepreneurial, international and professional approach to its work.

Bringing forward new ideas

The Foundation makes grants on three broad subject areas: Science and Research, Children and Youth Education, and Tolerance and Intercultural Understanding.

Science and Research

The Mercator Foundation Switzerland supports higher education in Switzerland aiming at increasing its competitiveness and quality as well as its ability to train students in an outstanding way. The foundation believes that a carefully reasoned and systematic understanding of the forces of nature and society, when applied inventively and wisely, can lead to a better world for all. The foundation offers support for scientific meetings in Switzerland to strengthen scientific relations and to undertake innovative research. It makes grants that foster a better public understanding of the increasingly scientific and technological environment in which we live. And it attaches great importance to funding inter- and transdisciplinary research projects, since this approach is a necessary prerequisite for tackling new research topics and innovation.

Children and Youth Education

The Mercator Foundation Switzerland provides young people with the opportunity of a integrated education and promotes cultural, scientific and social engagement. The foundation aims to strengthen and propel children to achieve success as individuals and as contributors to the society. It provides proposals for improving Switzerland's educational system and concepts for early-childhood education. It supports civic involvement and initiatives to improve historical and political awareness in Switzerland.

Tolerance and Intercultural Understanding

The Mercator Foundation Switzerland recognizes the importance of developing tolerance and understanding between people for the development of a peaceful society. The foundation funds projects which encourage dialogue and mutual understanding between people from different cultures. It develops and funds initiatives that help improve the integration of young people in Switzerland with a migration background.

Our commitment to the td-conference 2009

As part of its encouragement for Science and Research, the Mercator Foundation Switzerland supports the td-net for transdisciplinary research, its annual conferences and the td-award. We think it is essential to transgress disciplinary boundaries and to include knowledge from academic and non-academic experts. We encourage you to take personal and professional advantage of this unique transdisciplinary and international meeting and to learn from each other.

Albert Kesseli
Managing Director

Learn more about the Mercator Foundation Switzerland:
www.stiftung-mercator.ch

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Thank you and stay tuned!

We would like to thank all of you for contributing in one way or another to making this conference an interesting and lively event.

The annual Transdisciplinarity Conference is one of the central means of the td-net to promote excellence in transdisciplinary research and teaching. Its main aim is to provide a platform for the exchange between individuals and teams involved in transdisciplinary projects on a diversity of issues (public health, migration, new technologies, climate change, globalisation, etc.) so that they can learn from each other's experiences and further develop integrative methods and approaches for knowledge-based solutions to pressing problems in the life-world.

Since such a platform for regular encounters between transdisciplinary researchers is still lacking in Switzerland and elsewhere, the td-net plans to organise this international conference every year from 2008 onwards. Up to 2011, the financing of the conference is guaranteed thanks to the generous support of the Stiftung Mercator Schweiz.

Extending over two days, the event will be organised in collaboration with a different Swiss university or research institute each year. The overall theme will determined by the Scientific Board whose members also act as the Steering Committee. As the conference should not only serve to further develop and strengthen transdisciplinarity in Switzerland but should also act as a crystallization point for transdisciplinary projects in Europe and beyond, the conference language will be English.

Every other year, the conference will include the ceremony of the bi-annual td-award in recognition of excellent transdisciplinary research, also funded by the Stiftung Mercator Schweiz.

This is thus the second of a series of four td-conferences. Please join us again in 2010 in Geneva (13-15 September) so that we can learn from each other's approaches and project, and build up and intensify the network of transdiscisplinary researchers in Switzerland, Europe and beyond.

You can keep informed about the td-net and activities, publications, job offers and much more in the field of transdicipinary research by subscribing online to our newsletter.