TCSR
Transdisciplinary
Case Study Research

# Transdisciplinary Case Study Research for Sustainable Development

Symposium organised by the Transdisciplinary Case Study Research Group (TCSR) of the Institute for Human-Environment Systems (HES) at the Swiss Federal Institute of Technology (ETH)

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TCSR Transdisciplinary Case Study Research

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TCSR Transdisciplinary Case Study Research

# Symposium on Trandisciplinary Case Study Research for Sustainable Development

June 6-8, 2005
Finlandia Hall, Helsinki, Finland

Organized by
the Transdisciplinary Case Study Research (TCSR) Group
of the Institute for Human-Environment Systems (HES)
at the Swiss Federal Institute of Technology (ETH) Zurich

Arnim Wiek (Symposium Convener)
Daniel Lang (Chair)
Alexander Walter (Chair)
Roland Scholz (Keynote)

## 11th Annual International Sustainable Development Research Conference

Organized by ERP Environment and Prof. Dr. Jouni Korhonen, University of Tampere

# Content

# Prefaces

The Symposium on 'Transdisciplinary Case Study Research for Sustainable Development' is one of the main events within the program of the 11th Annual International Sustainable Development Research Conference to be held in Helsinki, Finland, June 6-8 at the Finlandia Hall (www.erpenvironment.org).

We are privileged to host this symposium, which makes an important contribution to this traditional annual international conference, the program of which includes 500 oral platform presentations from over 50 countries and all continents of the world. The particular aspect fruitful in this symposium is that there is a science emerging, clarifying and classifying those interactions and relations that exist between the different societal sectors affected by and affecting sustainable development. Up to date, sustainable development work has been suffering from fragmentation and gaps within and between scientists and different sciences, policy-makers, business organizations, non-governmental organizations and individuals, although being the most important challenge facing humanity today. Sustainable development must be addressed by all these sectors and actors, within difference scientific fields and between the academia and the larger societal system, and through the philosophy of cooperation and mutual learning.

We welcome all those interested in this important challenge to join us at this symposium and help us make the 11th Annual International Sustainable Development Research Conference a success.

*Jouni Korhonen, University of Tampere (Conference convener)*

Coping with the transition from the industrial to the post-industrial society, fundamental changes in science have occurred. One of the crucial changes has been the development of transdisciplinary research and a new relationship between theory and practice. From my point of view, transdisciplinarity should be regarded as a new challenge for engineers as well as natural and social scientists.

However, from my experiences over the last 15 years, though the transdisciplinary approach is highly appreciated by practitioners, it is still received with apprehensions among scientists. A crucial future challenge in this respect will be the further development of methodological know-how that can compete with the standards of „normal“ sciences.

This symposium indicates a kind of international breakthrough for transdisciplinary research. I am very happy that we could seize the opportunity to discuss our field and to contribute to the transdisciplinary approach on its way to become recognized as a science.

*Roland Scholz, Swiss Federal Institute of Technology Zurich (Symposium keynote speaker)*

Transdisciplinary Case Study Research is, at least in some respect, not a new approach in the landscape of science. There have always been recognized scientists coping with complex real world problems seeking for support by people who were not trained in academics but in every-day-life „sciences“ – with good observation, experiences and conclusions. However, there might have been an overstated enthusiasm about participatory approaches, not fully taking into account the biases on both sides and the limits of this paradigm. Currently, it seems to be a favourable moment in the dynamics of science and society to affirm the transdisciplinary approach on a strong basis of methodological research. Being aware of its limits and realizing its options should provide the prerequisites for transdisciplinary research being esteemed both in science and society.

On behalf of the TCSR Group at the Swiss Federal Institute of Technology, I would like to thank Jouni Korhonen for providing this great opportunity to convene a symposium on Transdisciplinary Case Study Research within the 11th International Sustainable Development Conference 2005.

Moreover, I am indebted to Roland Scholz for supporting this event with his expertise based on 15 years of teaching and research experiences in this field. As the mentor of our research group, he continuously encourages and challenges us to develop and discuss our concepts and ideas with an international audience.

My colleagues, Daniel Lang and Alexander Walter, who will chair various sessions within the symposium, have been always very supportive during the preparation providing me with contacts, references, advice and apples all day long.

This event relies on the very promising contributions (gathered in this brochure) that have been submitted by colleagues from academic and private institutions all over the world – many thanks in advance!

Last but not least, I would like to thank our research assistents Maria Rey and Susanne Landis, who sucessfully coped with all the perils that occur when preparing such an event.

*Arnim Wiek, Swiss Federal Institute of Technology Zurich (Symposium convener)*

# The Conference

ERP Environment, publisher of the international journal Sustainable Development, organises this 11th annual conference in association with the University of Tampere Research Institute for Social Sciences, Finland, Inderscience Publishers, Statistics Finland, and the Swiss Federal Institute of Technology (ETH Zurich).

The 11th Annual International Sustainable Development Research Conference with a symposium on 'Transdisciplinary Case Study Research for Sustainable Development' and special streams on Industrial Ecology and European Environmental Policy has generated a lot of international interest. Researchers of environmental and social sciences, government officials working for environmental policy, private companies and others will be involved in the conference and, thereby, with the global challenge of sustainable development.

The organizers received 500 abstracts for presentations. At present, the list of participants covers 50 countries and all continents in the world.

The speakers of the conference include well-known international experts on sustainable development research and practice, experts on developing and developed countries, and those working for the implementation of corporate sustainability and corporate social responsibility strategies. Professor Richard Welford, University of Hong Kong, Professor Karl-Henrik Robèrt, The Natural Step Foundation, Professor Roland Scholz, Swiss Federal Institute of Technology, and Professor Pim Martens, Maastricht University, are among the keynote speakers.

The conference seeks and brings together an international and interdisciplinary audience to begin to tackle many of the issues connected with sustainable development - to share experiences and to begin to work towards solutions. By building informal partnership and in offering opportunities to share ideas this conference seeks to move this complex debate forward.

Presentations will be given from researchers and practitioners in the fields of sustainable development, transdisciplinary case study research, industrial ecology, cleaner production and environmental policy. This year particular emphasis is put on papers that critically assess the progress that has been made in sustainable development research and practice in terms of integrating policy studies and issues of governance and management to approaches in material and energy flow studies and life cycle assessment and cleaner production.

A number of special sessions and workshops will be held alongside the general program during the three conference days. The special sessions and workshops are chaired by experienced scholars in sustainable development research and practice.

All conference papers will be published in the conference proceedings, which will be delivered to each conference delegate at the conference registration. Selected papers will be considered for publication in the conference journals.

For further information please visit: www.erpenvironment.org

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# The Research Field

Transdisciplinary Case Study Research (TCSR) deals with *transitions* of complex human-environment systems, e.g. a city, a region, a sector, or a company, towards sustainable development. The research is based on the paradigm of *transdisciplinarity*, i.e. conducting a mutual learning process between scientists, practitioners and stakeholders. The research provides *decision support* for complex transitions by integrating goal formation, system understanding, future projection, multi-criteria assessment, strategy building, and evaluation methods.
Within the symposium on *Transdisciplinary Case Study Research for Sustainable Development*, the papers will present results from fundamental and methodological research.
*Fundamental research* in this filed contributes to the theories of complex human-environment systems, transitions of these systems, and decision support for facilitating these transitions. Papers presented in this section will focus on one of the three aspects, but will highlight the interdependencies with the other aspects.
*Research on transdisciplinary case study methods* aims at a sound understanding and conceptualising of functions, structures and applicability of methods that support decision-making in transition processes. The methods are structured according to an prototypic decision cycle comprising goal formation (e.g., consensus building), system understanding (e.g., modelling, impact analysis), future projection (e.g., scenario construction, forecasting, simulation), multi-criteria assessment (e.g., MAUT), strategy building (e.g., agent network analysis), and evaluation. Of special interest are approaches applying these methods in a transdisciplinary manner as well as approaches integrating these methods. Papers presented in this section will focus on one specific method, and will highlight the aspects of transdisciplinarity and integration.
The *Transdisciplinary Case Study Research* field is strongly linked to a variety of integrated approaches, e.g., on learning, strategic planning, complex problem solving, and decision-making.

Below, some important contributions to the field are listed (without pretence of completeness):

Bell, S. & Morse, S. (2003). Measuring Sustainability – Learning by doing, London: Earthscan.

Checkland, P. (1999). Systems Thinking, Systems Practice. Chichester, et al.: Wiley

Martens, P. & Rotmans, J. (eds.) (2002). Transitions in a Globalising World. Lisse: Swets & Zeitlinger Publishers.

Mingers, J. & Gill, A. (eds.) (1997). Multimethodology. The Theory and Practice of Combining Management Science Methodologies. Chichester: Wiley.

Rosenhead, J. & Mingers, J. (eds.) (2001). Rational Analysis for a Problematic World Revisited: Problem structuring methods for complexity, uncertainty and conflict. Chichester: Wiley.

Scholz, R.W. & Tietje, O. (2002). Embedded Case Study Methods. Integrating quantitative and qualitative Knowledge. Thousand Oaks, London: Sage

Thompson Klein, J., Grossenbacher-Mansuy, W., Häberli, R., Bill, A., Scholz, R.W. & Welti, M. (Eds). (2001). Transdisciplinarity: joint problem solving among science, technology, and society: an effective way for managing complexity. Basel: Birkhäuser.

Yin, R. (2003). Case Study Research: Design and Methods. Newbury Park, CA: Sage.

# The Symposium

Because of the high interest in the special stream on *Transdisciplinary Case Study Research for Sustainable Development* (more than 30 submitted abstracts), the conference organizers offered to convene a 3-days symposium on this issue.

The symposium is organized by Arnim Wiek. It will be chaired Arnim Wiek, Daniel Lang and Alexander Walter. They are members of the Transdisciplinary Case Study Research Group (TCSR), at the Chair of Roland Scholz, at the Swiss Federal Institute of Technology, Zurich.

The following researchers will contribute to the symposium sessions (corresponding authors):

- Philip Bedall, University of Lueneburg (Germany)
- Prof. Dr. Ruben Bancrofft, University of La Habana (Cuba)
- Dr. Simon Bell, Open University (United Kingdom)
- Prof. Dr. Paul Burger, University of Basel (Switzerland)
- Ivonne Cruz, Polytechnic University of Catalonia, Barcelona (Spain)
- Prof. Dr. Berhard Freyer, University of Agricultural Sciences Vienna (Austria)
- Dr. Paul Goodwin, University of Bath (United Kingdom)
- Dr. Rodrigo Jiliberto Herrera, TAU Environmental Consulting (Spain)
- Prof. Dr. Hironori Kato, University of Tokyo (Japan)
- Dr. René Kemp, University of Maastricht (Netherlands)
- Michael Koucky, Gothenburg University/Chalmers University of Technology (Sweden)
- Christoph Kueffer, Swiss Federal Institute of Technology Zurich (Switzerland)
- Prof. Dr. Harald Mieg, Humboldt University Berlin (Germany)
- Dr. Steve Morse, University of Reading (United Kingdom)
- Dr. Alfred Posch, University of Graz (Austria)
- Dr. Mohammad Rais, National Institute of Science, Technology, and Development Studies (India)
- Prof. Dr. Joe Ravetz, University of Manchester (United Kingdom)
- Filippina Risopoulos, University of Graz (Austria)
- Prof. Dr. Jonathan Rosenhead, London School of Economics (United Kingdom)
- Dr. William Sheate, Imperial College London (United Kingdom)
- Dr. Gerald Steiner, University of Graz (Austria)
- Dr. Bärbel Tress, Wageningen University (Netherlands)
- Ulli Vilsmaier, University of Agricultural Sciences Vienna (Austria)
- Jan-Peter Voss, Institute for Applied Ecology, Berlin (Germany)
- Alexander Walter, Swiss Federal Institute of Technology, Switzerland
- Dr. Wen Zongguo, Tsinghua University Beijing (China)

Keynotes will be given by

- Prof. Dr. Pim Martens, University of Maastricht (The Netherlands)
- Prof. Dr. Roland Scholz, Swiss Federal Institute of Technology (Switzerland)

# The Schedule

The symposium comprises seven sessions structured into five regular sessions with presentations, one opening session with a round table, and one keynote session.

### Opening Session: Monday, June 6, 11.05-12.05

The short opening session serves for an introduction into the symposium. It starts with an overview to the programme. The following round table, whose seats will be taken by „representatives" from the regular sessions, should provide the opportunity of discussing expectations, wishes, visions and apprehensions regarding the symposium.

Chair: Wiek
Participants: Kemp, Bell, Rosenhead, Wen Zongguo, Sheate, Kueffer

### Regular Sessions

Each of the five regular session is focused on a specific aspect of Transdisciplinary Case Study Research and will present about four papers (20 min. for presentation, 10 min. for discussion each).

*Session 1 on „Contributions to the Theory of Sustainable Development": Monday, June 6, 14.35-16.05*

Chair: Walter
Contributions: Voss & Kemp, Herrera, Cruz, Rais

*Session 2 on „Integrated Planning": Monday, June 6, 16.20-18.30*

Chair: Wiek
Contributions: Bell & Morse, Ravetz, Walter & Wiek, Bancrofft, Tress et al.

*Session 3 on „Problem Structuring and Representation": Tuesday, June 7, 8.30-10.30*

Chair: Lang
Contributions: Rosenhead, Vilsmaier et al., Kato et al., Wen Zongguo et al.

*Session 4 on „Scenario Construction and Assessment": Tuesday, June 7, 14.15-16.15*

Chair: Lang
Contributions: Sheate et al., Goodwin & Wright, Burger & Zierhofer, Koucky & Kåberger

*Session 5 on „Transdisciplinary Research": Wednesday, June 8, 8.30-10.30*

Chair: Walter
Contributions: Kueffer, Risopoulos et al., Mieg, Bedall et al.

### Keynote Session: Tuesday, June 7, 10.50-13.00

In the keynote session basic concepts of Transdisciplinary Case Study Research for Sustainable Development will be presented.

Chair: Wiek
Contributions: Martens, Scholz

## Monday, June 6

| | | |
|---|---|---|
| **11.05-12.05** | **Opening Session (Chair: Wiek)** | |
| | Wiek, Lang, Walter | Introduction to the TCSR Symposium |
| | Kemp, Bell, Rosenhead, Wen Zongg, Sheate, Kueffer | Round Table on expectations, whishes, visions and apprehensions regarding the symposium |
| **14.35-16.05** | **Regular Session 1 (Chair: Walter)** | **Contributions to the theory of sustainable development** |
| | Voss & Kemp | Reflexive governance for sustainable development |
| | Jiliberto Herrera | Holarchy - A fruitful paradigm for qualitative sustainable development models |
| | Cruz | Contributions to a Sustainable Human Development Theory - Analysing the Human Development paradigm through multidimensional perspectives |
| | Rais | Sustaining Mountain Communities in Fragile Environment: Some Experiences from South and Southeast Asia |
| **16.20-18.30** | **Regular Session 2 (Chair: Wiek)** | **Integrated planning** |
| | Bell & Morse | Sustainable development projects: explicit and acroamatic story telling as part of a new 'project ethnography' |
| | Ravetz | Research for integrated planning in the 21st century – examples and prospects |
| | Walter & Wiek | Integration and Synthesis - Systainability Planning for City-Regions |
| | Bancrofft | Towards the systematic improvement of the physical urban development of La Habana and other main Cuban cities |
| | Tress et al. | Experiences of researchers in integrative transdisciplinary landscape projects |

## Tuesday, June 7

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| **8.30-10.30** | **Regular Session 3 (Chair: Lang)** | **Problem Structuring and Representation** |
| | Rosenhead | Problem Structuring and Development |
| | Kato et al. | Interview-based Structurization of Regional Transport Problems - Case Study of Strategic Transport Plan in the Kanto Region, Japan |
| | Vilsmaier et al. | Transdisciplinary goal finding process in regional planning processes |
| | Wen Zongguo et al. | Case study on genuine progress indicator methodology to measure sustainability in China |
| **10.50-13.00** | **Keynote Session (Chair: Wiek)** | |
| | Scholz | Transdisciplinary Case Study Research - History and Theory |
| | Martens | Sustainability Science or Fiction? |
| **14.15-16.15** | **Regular Session 4 (Chair: Lang)** | **Scenario Construction and Assessment** |
| | Sheate et al. | Sustainability Assessment of Scenarios for Agriculture Development and Biodiversity Conservation in Mountain Areas |
| | Goodwin & Wright | A comparison of decision analysis and scenario thinking as alternative ways of dealing with uncertainty about the future |
| | Burger & Zierhofer | On the Reliability of Formative Scenario Analysis in Research for Sustainable Development |
| | Koucky & Kåberger | Actor group evaluation of future scenarios and identification of misconceptions between actor groups |

## Wednesday, June 8

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| **8.30-10.30** | **Regular Session 5 (Chair: Walter)** | **Transdisciplinary Research** |
| | Kueffer | Mutual learning between scientists and practioners in ecology |
| | Risopoulos, Steiner & Posch | Communication and Social Competences in Transdisciplinary Case Studies: Graz Mobility study |
| | Mieg | Expert roles in transdisciplinary processes |
| | Bedall et al. | Integrating Transdisciplinary Case Study Research into the University Curriculum |

| | Monday, 6 June 2005 | Tuesday, 7 June 2005 | Wednesday, 8 June 2005 | |
|---|---|---|---|---|
| 8:30 | Registration and coffee | TCSR Symposium<br>Regular Session 3: Papers 10-13<br>*Chair: Lang*<br>Rosenhead<br>Kato et al.<br>Vilsmaier et al.<br>Wen Zongguo | TCSR Symposium<br>Regular Session 5: Papers 18-21<br>*Chair: Walter*<br>Kueffer<br>Risopoulos et al.<br>Mieg<br>Bedall et al. | 8:30 |
| 8:45 | | | | 8:45 |
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| 10:00 | | | | 10:00 |
| 10:15 | Plenary Session<br>*Chair: Korhonen,*<br>Welcome speech: Welford) | | | 10:15 |
| 10:30 | | Coffee | Coffee | 10:30 |
| 10:45 | | TCSR Symposium<br>Keynote Session<br>*Chair: Wiek*<br>Scholz<br>Martens | Plenary Session<br>*Chair: Hoffrén*<br>Rikhardsson, Seager | 10:45 |
| 11:00 | TCSR Symposium<br>Opening Session<br>*Chair: Wiek*<br>Kemp, Bell, Rosenhead, Wen Zongguo, Sheate, Kueffer | | | 11:00 |
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| 12:00 | Lunch | | | 12:00 |
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| 13:00 | | Lunch | Lunch | 13:00 |
| 13:15 | P. Lipponen | | | 13:15 |
| 13:30 | Plenary Session<br>Robért | | | 13:30 |
| 13:45 | | | | 13:45 |
| 14:00 | | TCSR Symposium<br>Regular Session 4: Papers 14-17<br>*Chair: Lang*<br>Sheate et al.<br>Goodwin et al.<br>Burger & Zierhofer<br>Koucky & Kåberger | Closing Panel:<br>The Future Challenges of SD<br>*Chair: Korhonen & Welford* | 14:00 |
| 14:15 | | | | 14:15 |
| 14:30 | TCSR Symposium<br>Regular Session 1: Papers 1-4<br>*Chair: Walter*<br>Voss & Kemp<br>Herrera<br>Cruz<br>Rais | | | 14:30 |
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| 16:00 | | Coffee | | 16:00 |
| 16:15 | Coffee | | | 16:15 |
| 16:30 | | Plenary Session<br>Figge, Korhonen, Posch, Strachan | | 16:30 |
| 16:45 | TCSR Symposium<br>Reguar Session 2: Papers 5-9<br>*Chair: Wiek*<br>Bell & Morse<br>Ravetz<br>Walter & Wiek<br>Bancrofft<br>Tress et al. | | | 16:45 |
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# Keynotes:

# Speakers and Abstracts

Keynote Session

Tuesday, June 7

10.50-13.00

# Sustainability Science or Fiction?

## Author

Pim Martens

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## Abstract

A new field of sustainability science is emerging that seeks to understand the fundamental character of interactions between nature and society. Such an understanding must encompass the interaction of global processes with the ecological and social characteristics of particular places and sectors. In research terms this means assessing sustainability at the systems level, involving analyzing the deeper structure of the system in question, forecasting and backcasting (un)sustainability trends, monitoring (un)sustainability trends, evaluating the sustainability impact of policy options, and designing possible solutions in terms of sustainability strategies. In order to fulfil these high expectations we need a new research paradigm that better reflects the complexity and multidimensionality of sustainable development.

# Curriculum Vitae

## Pim Martens

Pim Martens is Director of the International Centre for Integrative Studies (ICIS), Maastricht University. He holds the chair 'Sustainable Development' at the same University. Prof. Martens is project-leader and principal investigator of several projects related to sustainable development, globalisation, environmental change and society, funded by, amongst others, the Dutch National Research Programme, the United Nations Environment Programme and the European Community. Pim Martens is Executive Editor of the International Forum on Science and Technology for Sustainability, and co-editor-in-chief of the International Journal Ecohealth. Finally, Prof. Martens is a Fulbright New Century Scholar within the programme 'Health in a Borderless World' and winner of the Friedrich Wilhelm Bessel-Forschungspreis.

## Publications


Huynen, M.M.T.E., Vollebregt, L., Martens, P., Benavides, B.M. (2005). The Epidemiologic transition in Peru. *Pan American Journal of Public Health*, vol. 17, pp. 51-59.

Hymen, M. M. T. E., P. Martens, et al. (2004). Linkages between biodiversity loss and human health: a global statistical indicator analysis. *International Journal of Environmental Health Research*, vol. 14, pp. 13-30.

Martens, P., J. Rotmans, and D. De Groot (2003). Biodiversity: luxury or necessity? *Global Environmental Change*, vol. 13, pp. 75-81.

Martens, P. (2002). Health transitions in a globalising world: Towards more disease or sustained health? *Futures*, vol. 37, pp. 635-648.

Martens, P. and A.J. McMichael, eds (2002). Environment, climate change and health: concepts and methods. Cambridge University Press: Cambridge.

Martens, P. and J. Rotmans, eds (2002). Transitions in a globalising world. Swets & Zeitlinger Publishers: Linne.

Parry, M., Arnell, N., McMichael, T., Nicholls, R., Martens, P., Kovats, S., Livermore, M., Rosenzweig, C., Iglesias, A. and Fisher, G. (2001). Defining critical climate change threats and targets. *Global Environmental Change*, vol. 11, pp. 181-183.

Martens, P. and Moser, S.C. (2001). Health impacts of climate change. *Science*, 292 (5519), pp. 1065-1066, Letter.

Martens, P., McMichael, A.J. and Patz, J.A. (2000). Globalisation, environmental change and health. *Global Change and Human Health*, vol. 1, pp. 4-8.

Martens, P., & Rotmans, J. (eds.) (1999). Climate change: an integrated perspective. Kluwer Academic Publishers, Dordrecht.

Keynote Session

Tuesday, June 7

10.50-13.00

# Transdisciplinary Case Study Research – History and Theory

## Author

Roland W. Scholz

## Affiliation

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## Abstract

Transdisciplinary Case Studies (TCS) are a teaching and research methodology. TCS cope with a special kind of ill-defined problems, i.e., with complex, societal relevant problems that demand for joint problem solving and mutual learning among science and society. This paper reveals the historical roots both of case studies and of transdisciplinarity as a teaching and research tool. We provide a rational why the development of science and of society demand for supplementing disciplinary and interdisciplinary research by transdisciplinarity. Though case studies have been traditionally developed as a qualitative, holistic approach, we present the Embedded Case Study methodology, which has been developed at the Swiss Federal Institute of Technology (ETH) for transition management of regional, urban and organizational systems. This approach is entrenched by an (i) epistemology which distinguishes between understanding, conceptualising and explanation, (ii) a methodology, which makes reference to Probabilistic Functionalism and offers set of methods for problem representation, evaluation, and transformation and (iii) an organizational basic model which refers to more than a dozen large scale studies in the field of sustainable development. Problems of validity of TCS as a research methodology are discussed.

Key words: transdisciplinarity, case studies, embedded case studies, scenario assessment, strategic planning, participation

# Curriculum Vitae

## Roland Scholz

Roland W. Scholz holds the Chair of Natural and Social Science Interface (NSSI) at the Swiss Federal Institute of Technology Zurich (ETH) and is adjunct professor of Psychology at the University of Zurich. He was elected as the fifth holder of the King Carl XVI Gustaf's Professorship 2001/2002 hosted at Chalmers University of Technology and Gothenborg University (Sweden), and was visiting professor at MIT (Boston, USA), at Karl-Franzens-University of Graz (Austria), and at the University of Natural Resources and Applied Life Sciences of Vienna (Austria).

He specialized in Decision Sciences and Systems Analysis. His current research field is environmental decision making in human-environment interactions. Current topics are complex environmental system analysis and complex problem solving. He has developed a methodology for integrating qualitative and quantitative knowledge in complex real world case studies. The annual transdisciplinary ETH-NSSI case studies on sustainable urban, regional, and organizational development are a major activity of the NSSI group, and especially the TCSR Group.

## Publications


Scholz, R.W. & Wiek, A. (in press). Operational eco-efficiency – Comparing companies' environmental investments in different domains. *Journal of Industrial Ecology*

Posch, A. & Scholz, R.W. (eds.) (in press). Applying Transdisciplinary Case Studies as a Means of Organizing Sustainability Learning. *International Journal of Sustainability in Higher Education*

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Scholz, R.W., Mieg, H.A. & Oswald, J.E. (2000). Transdisciplinarity in groundwater management: Towards mutual learning of science and society. *Water, Air, and Soil Pollution*, vol. 123, 477–487.

Scholz, R.W., Mieg, H.A., & Weber, O. (1997). Mastering the complexity of environmental problem solving with the case study approach. *Psychology Science*, vol. 39, pp. 169–186.

# Contributions for the Sessions:

# Speakers and Abstracts

Regular Session 2

Monday, June 6

16.20-18.30

# Towards the systematic improvement of the physical urban development of La Habana and other main Cuban cities

## Author

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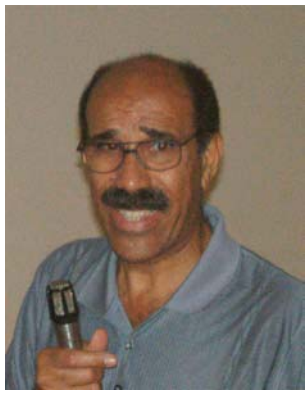
## Abstract

The paper describe the ongoing International Cuba-Switzerland Research Project "SeDUT, Urban Planning and Mobility: Strategies for a sustainable integration", due to a co-operation between the Superior Polytechnic Institute José A. Echeverría (CUJAE), La Habana, and a Swiss team under the co-leadership of the department of architecture at the ETH Zurich and the Metron AG, Brugg, Switzerland. A new project SUDeS (Sustainability planning for robust urban development strategies in La Habana and other Cuban cities, has been just presented to the Swiss authorities as a continuation of SeDUT Project and deals with the lack of transdisciplinarity of urban development management to be applied in the capital of Cuba, la Habana. and in another main city, much more representative of the system of Cuban main cites. The goal is to contribute to improve the efficiency of the urban managements efforts of the country, in order to achieve a more robust (systemic) urban development, facing the new globalizing challenges of the country in the next future.

The paper analyzes the interesting integral development of the Cuban physical planning and urban policy settled by the revolutionary government till 1959, regarding spatial, economic, cultural, political and institutional aspects, largely different from similar cities of other developing countries, and covering certain main aspects of sustainability from the social, cultural and physical aspects, as a sound basis for the future development tasks.

# Curriculum Vitae

## Rubén Bancrofft



Rubén Bancrofft is Professor of Building and Architecture Technologies since 1975 at the Faculty of Architecture at the Instituto Superior Politécnico José A. Echeverría (CUJAE) in La Habana, Cuba.

He graduated as Architect at the University of Havana in 1969 and earned his Doctor-Ing. Degree from the Hochschule fuer Architektur und Bauwesen, actually Bauhaus-University, in Weimar, Germany. Rubén Bancrofft was Dean of the Faculty of Architecture between 1996 and 2004; Vice-Rector of CUJAE for Inter-institutional Relationships, in charge of International Affairs and Entrepreneurial Development, 1995-1996; Founder-Dean of the Faculty of Architecture of Havana, at ISPJAE, 1981-1989.

At the moment he is visiting professor of the Facultad de Arquitectura of the University of San Simon in Cochabamba and of the Faculty of Architecture of the Technical University of Oruro, both in Bolivia. He also was visiting professor of the Department of Architecture at the University of Applied Sciences of Muenster, Germany.

Rubén Bancrofft has been President of the Scientific Councils at the Faculty of Architecture and CECAT and member of the Scientific Committee of the Technical Consulting Council of the Ministry of Construction in Cuba. Moreover, he serves on various civic and professional committees and institutions at the highest levels.

He is currently researching problems of sustainable development and education in Construction and Architecture.

# Publications


Bancrofft, R. (2002). The planning of urban agriculture as an instrument to promote urban sustainability for the city of Havana (Orig.: El planeamiento de la Agricultura Urbana como instrumento promotor de sustentabilidad para La Ciudad de La Habana.) Revista de la Universidad Humboldt, Berlin, 2002.

Bancrofft, R. (1995). Shaping the local community. A statement from Cuba. TRIALOG. Zeitschrift für das Planen und Bauen in der Dritten Welt. No. 45. Alemania. 1995.

Bancrofft, R. (1991). Some ideas for the integral improvement of the built environment in the developing countries (Orig.: Algunas Ideas para el Mejoramiento Integral del Ambiente Construido en los Países en Desarrollo). Conferencia Inaugural. Primer Seminario-Taller Internacional sobre el Desarrollo del Ambiente Construido en Países del Sur. La Habana. Diciembre de 1991. Revista Arquitectura y Urbanismo. La Habana Cuba.

Bancrofft, R. (1990). The participatory process in planning, design, construction and use of architecture and urban studies (Orig.: La participación del usuario en el proceso de planificación, diseño, construcción y uso de la arquitectura y el urbanismo). (Coautor). Proceedings del VI Congreso Internacional de Arquitectura y Urbanismo. La Habana del 25 al 31 de marzo de 1989. Editor: Prof. Jos Weber, Hamburg. 1990. pp. 70-71.

Regular Session 5

Wednesday, June 8

08.30-10.30

# Integrating Transdisciplinary Case Study Research into the University Curriculum

## Authors

Philip Bedall, Kerstin Döscher, Sebastian Helgenberger, Sami Mussbach

## Affiliation

Working Group on Innovative University Teaching (AgiHL)

Faculty of Environmental Studies

University of Lüneburg (Germany)

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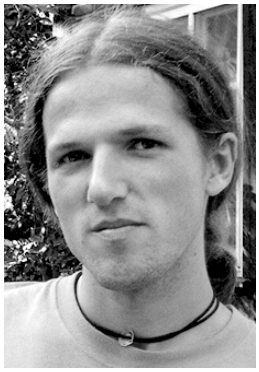
## Abstract

A comprehensive demand for educating advanced students for Sustainable Development Research (SDR) has been claimed by many international institutions and educational boards. Supported by the Faculty of Environmental Studies and during the implementation of the Bologna Process an interdisciplinary team has seized the opportunity to initiate SDR within the university curriculum. Understanding University as a favourable platform for participatory learning processes, the *Transdisciplinary Case Study Approach* was taken to establish the this paradigm. Thereby, new avenues in experimental and experiential education were followed allowing the students to acquire key competences in the field of SDR. The concept generated various positive responses – both from students and university lecturers. In particular the opportunity for students to transform passive experiences in university-courses to an active shaping of their research competences has been widely appreciated. Due to providing new potentials to foster demand-driven university education and to enhance the *Transdisciplinary Case Study Approach* in particular, the presented initiative may be considered as an example of innovative institutional evolution in education for SDR.

# Curriculum Vitae

## Philip T. Bedall



Philip Bedall (born 1980 in Nürnberg, Germany) studies environmental sciences at the University of Lüneburg (Germany) since 2001. He focuses on environmental and sustainability communication as well as research in ecology. Between October 2003 and April 2004 he participated in the Transdisciplinary Case Study at Swiss Federal Institute of Technology Zurich, Department of Environmental Sciences, Chair on Natural and Social Science Interface. He was tutor in the first Transdisciplinary Case Study at the University of Lüneburg on *Shrinking processes in regional development in Eastern Germany*.

Philip Bedall represents at the symposium the Working Group on Innovative University Teaching (AGiHL) that is affiliated to the Faculty of Environmental Studies, University of Lüneburg (Germany).

This working group contributes to Transdisciplinary Case Study Teaching and Research. Some milestones have been the following:

| | |
|---|---|
| 2004/2005 | Teaching (Tutorials) in the first Transdisciplinary Case Study at the University of Lüneburg on *Shrinking processes in regional development in Eastern Germany* |
| Since 2003 | Association to the International Transdisciplinarity Network (ITd-Net) on Case Study Teaching (Swiss Federal Institute of technology) |
| | Implementation of the Transdisciplinary Case Study approach in the university curriculum |
| | Organisation of the Transdisciplinary Case Study on *Shrinking processes in regional development in Eastern Germany* at the University of Lüneburg |

# Publications

Bedall, P. et al. (in prep.). Shrinking processes in regional development in Eastern Germany – Final Report of the Transdisciplinary Case Study at the University of Lüneburg.

Kaufmann, D. & Bedall, P. (2004): Breite-Lehenmatt Quartier: Hoher Wohnanteil – wenig Familien. [Breite-Lehenmatt quater: high living density – few families]. In Scholz, R.W., Stauffacher, M., Bösch, S. & Krütli, P. (eds.). Freizeit in der Stadt Basel – Mobilität und zukunftsfähige Stadtentwicklung [Leisure in the city of Basel – Mobility and sustainable urban development], ETH-UNS Case Study 2003. Zurich: Rüegger und Pabst. pp. 65-84.

Regular Session 2

Monday, June 6

16.20-18.30

# Sustainable development projects: explicit and acroamatic story telling as part of a new 'project ethnography'

## Authors

Simon Bell[1] and Stephen Morse[2]

## Affiliation

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[2] Department of Geography, University of Reading, Reading
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## Abstract

This paper constitutes an attempt to find a means to represent multiple stories in the strong narrative of conventional sustainable development (SD) projects. The author's experience of such projects in various parts of the world indicates that they have a tendency to arise from and reflect a dominant mindset, placing the SD project in what can be a working environment which is inimical to the very ideals which SD is supposed to represent. Short termism and value for money drive project formats and objectives whilst counter narratives and alternative stories arising from stakeholders in such projects are often ignored. Yet these alternative threads often contain strong SD messages of their own and could, if effectively utilised, enhance the SD project process. This paper sets out the case for a new field – 'project ethnography' – allied with the growing use of meta-analysis to compare project 'stories'. The paper presents preliminary findings using an analytical framework to facilitate an ethnographic analysis and draw out the stories that those working in such projects can tell. The analysis focuses on some SD projects in the Mediterranean which reinforces the view of the authors that the conventional model of SD project organisation and delivery often contains within itself alternative understandings – understandings which the authors regard as stories in collision with the presenting and accepted project narrative, but at the same time valuable in richness of experience and perspective which can be drawn upon for informing SD project design and implementation.

# Curriculum Vitae

## Simon G. Bell

Date of Birth: 30 July, 1957

Simon Bell is Senior Lecturer in Information Systems at the Open University (UK). He joined the OU Centre for Complexity and Change in 1996.
Prior to that, he worked for fifteen years as a consultant and Lecturer in the School of Development Studies at the University of East Anglia.
He has worked with teams on:

- Researching information systems in Nigeria for the British Council
- Designing monitoring and evaluation systems in Pakistan for the UNDP
- Aiding a team to develop a global appraisal information system for the CIECC in China

Simon is linking practical outcomes to current research interests. For example, he is currently working on

- developing sustainability indicators in the Mediterranean for the Blue Plan Regional Activity Centre - specifically in Malta and Lebanon;
- developing and improving existing information systems in Bangladesh for the Proshika NGO.

His research an teaching activities focus on Systems Approaches to Sustainable Development, to Rapid Information Systems Development, and to Project Management, as well as on Teleworking and the implications of new work forms.

# Publications


Bell, S. & Morse, S. (2005). Problem Structuring Methods: Proof that the Road to Hell is paved with good intentions? Accepted by the *Journal of Operations Research*.

Bell, S. & Morse, S. (2005). Rounding the line: Delivering sustainability therapy in a projectified world. *Journal of Environmental Management* Vol. 75, No. 1, pp. 37 – 51.

Bell, S. & Morse, S. (2004). Experiences with Sustainability Indicators and Stakeholder Participation: a case study relating to a 'Blue Plan' project in Malta. *Sustainable Development*. Vol. 12, pp. 1-14.

Bell, S. & Wood-Harper, A. T. (2003). How to Set Up Information Systems: a non-specialists guide to the Multiview approach'. London: Earthscan.

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Bell, S. (2001). Systemic Practice and Action Research – Reflections on Systems Thinking and Systems Practice at the UK Open University. Vol. 14, No. 6, pp. 661-668.

Bell, S. & Morse, S. (2001). Breaking through the glass ceiling: Who really cares about Sustainability Indictors? *Local Environment*. Vol. 6, No. 3, pp. 291 – 310.

Bell, S. & Wood-Harper. T. (under review). Practitioner team notes: Making use of a multiple perspective information systems analysis and design methodology in a Non Governmental Organisation (NGO), Bangladesh. *Journal of Information Technology for Development.*

# Stephen Morse

Steve is a member of the Geographies of Development Research Group. He has been involved in development projects and research for 22 years, and has received research funding from a variety of sources including the Department for International Development (DFID, UK), MISEREOR (Germany), Department for Foreign Affairs (Ireland), United Nations Environment Programme and the Natural Resources Institute (UK). Research interests are broad spanning both the natural and social sciences, but largely centered on the practical achievement of sustainability in development and natural resource management. Amongst his latest projects have been a six-year study of the creation and application of sustainability indicators for agriculture in Nigeria, the setting of indicators for sustainable development in Malta and the impacts on farmer livelihood of genetically modified cotton in South Africa. Steve is the author of 8 books and over 30 refereed journal papers, and a Member of the Institute of Biology (MIBiol) and the Association of Applied Biologists (AAB).

His research focuses on:

- Sustainable development, especially the creation and application of sustainability indicators. Stakeholder participation in agricultural research programmes. Regional interests: sub-Saharan Africa, India and the Mediterranean.
- Various aspects of agricultural development, including sustainability, cropping systems, crop protection, crop biotechnology and on-farm research.
- Microfinance provision in rural and urban areas.
- Stakeholder participation in agricultural research programmes
- Work experience in: West Africa (mostly Nigeria), Kenya, Uganda, Mozambique, India, Malta, South Africa

# Publications


Morse, S. (2004). *Indices and Indicators in Development. An unhealthy obsession with numbers,* Earthscan, London.

Bell, S. and Morse, S. (2003). *Measuring Sustainability. Learning by doing,* Earthscan, London.

Bell, S. and Morse, S. (2004). Experience with sustainability indicators and stakeholder participation: a case study relating to a 'Blue Plan' project in Malta. *Sustainable Development,* vol. 12, pp. 1-14.

Galvani, F. and Morse, S. (2004). Institutional sustainability: at what price? UNDP and the new cost-sharing model in Brazil *Development in Practice,* vol. 14, pp. 311-327.

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Morse, S. (2003). Greening the United Nation's Human Development Index? *Sustainable Development,* vol. 11, pp. 183-198.

Morse, S. (2003) Putting the pieces together again. An illustration of the problem of interpreting development indicators using an African case study *Applied Geography,* vol. 24, pp. 1-22.

Regular Session 4

Tuesday, June 7

14.15-16.15

# On the Reliability of Formative Scenario Analysis in Research for Sustainable Development

## Authors

Paul Burger & Wolfgang Zierhofer

## Affiliation

Program on Human-Society-Environment (Mensch Gesellschaft Umwelt)

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## Abstract

Recent achievements in integrated formative scenario analysis (FSA) signify a remarkable break through in methodologically well-based research for knowledge of action within the domain of sustainable development. FSA does not only allow for goal formation in regard of relevant societal cases but represents also a basis for the assessment of potential consequences (given suitable evaluation tools).

Like any other qualitative empirical research method, FSA establishes a relation of representation, which is, even if accompanied by well established analytic tools such as material flux analysis or biodiversity analysis, exposed to possible bias. Societal actors may be inadequately represented, special interests may dominate the assessment, or the relevant institutional action spaces may not have been taken into account. The crucial methodological question is, therefore, how *reliable* knowledge can be produced through the mix of different methods used within FSA.

Our paper will discuss the reliability of FSA as a function of its representation relation and epistemological criteria of reliability. The research setting of a specific case in the domain of sustainable land use management will function as empirical background of that discussion. The result will contribute to determine the performance of this tool and foster its reflected and purpose-guided application in the research process.

# Curriculum Vitae

## Paul Burger

Born 10th October 1956 in Basel/Switzerland

Degree in philosophy and history at the University of Basel (Licentiatus 1987); Doctor in Philosophy at the University of Basel (1992); Habilitation in Philosophy at the University of Basel (1997); Titular Professor at the University of Basel (2001).

Scientific assistant for philosophy at the University of Basel (1989-91, 1996-7) and Lucerne (1992-3); SNF-research projects (1993-96; 1997-98); Lecturer at the Universities of St. Gallen (1998-2000), Fribourg (1998) and Innsbruck (2002); Head of education program Mensch Gesellschaft Umwelt at the University of Basel (1998-today); designated head of section "sustainability" within the Departement Society Science and Philosophy at the University of Basel.

Teaching and research on ontology and epistemology, on the philosophy of science especially in regard of the methodology and didactics of inter- and transdisciplinary practices of science in the field of sustainability, and on the integration of values in science.

# Publications


Zierhofer, W. & Burger, P. (forthcoming). Participative Knowledge Production. An epistemic point of view.

Burger, P. & Kamber, R. (2003). Cognitive Integration in Transdisciplinary Science: Knowledge as a Key Notion. *Issues in Integrative Studies*, No. 21, pp. 43-73.

Burger, P. (2003). Non-Epistemic Values and Scientific Knowledge. In: W. Löffler und P. Weingartner (eds.). Wissen und Glauben, Beiträge des 26. Int. Wittgenstein Symposium. Kirchberg 2003, pp. 67-70.

Burger, P. (2001). Ecological values as societal values and new conceptual qualities in decision finding for sustainable development. In: Symposium Sustainable Development and a New System of Societal Values, Proceedings, issued by Sustain, Graz 2001 , pp. 11-16.

Burger, P. (2000). What kind of knowledge do we gain in inter- and transdisciplinary research and how do we justify it? In: Häberli et al., (eds.). Joint Problem-Solving among Science, Technology and Society. Zurich. Workbook I, pp. 104-108.

Regular Session 1

Monday, June 6

14.35-16.05

# Contributions to a Sustainable Human Development Theory - Analysing the Human Development paradigm through multi-dimensional perspectives

## Author

Ivonne Cruz

## Affiliation

UNESCO Chair in Technology, Sustainable Development, Imbalances and Global Change

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## Abstract

The Human Development paradigm has become a conceptual framework along the latest years. As a multidimensional approach, it has enabled the ability to describe well-being, understood as a complex relation of freedom of choices. But what if we are enthusiastic in truly incorporating a more multidimensional perspective to the development process -integrating and interrelating human, political, environmental and economic complexity- then the purpose must be, finding coherence and balance between the means and the ends in order to coexist through time in freedom, equality and solidarity. This refers to what has been described as integral sustainability, a new appreciation of phenomena that must be taken into account when talking of people and their environment; of the things that affect them and on things on which they have an effect. Alternative theories such as Human-Scale Development (H-SD) help to scrutinize whether a potential theory of sustainable human development could enter along the Sustainable Development paradigm.

The H-SD is thus proposed as an alternative humanistic scheme of thought, advocating for self-reliance and suggesting a renovated exercise of actualisation of human needs to potenciate collective action; complemented with UNDP´s comprehension of SHD as the equal access to development opportunities, for present and future generations.

# Curriculum Vitae

## Ivonne Cruz B.

Ivonne Cruz is a PhD candidate in Sustainability, Technology and Humanism, UNESCO Chair in Sustainable Development, University of Barcelona (Spain).

1999 Institut für Unterricht (UTZ) Erlangen, Germany (Language Courses)

1998-1994 B.A International Relations, Univ. Américas Puebla (UDLA-P) Mexico.

1996-1997 Institute d'Etudes Politiques (IEP) Grenoble, France

Ivonne Cruz focuses her research on Sustainable and Human development, Governance and International Organizations.

She is involved in teaching activities within the Master Programme in Sustainability, "Human Development and Human Needs" at the UNESCO Chair in Sustainable Development.

Ivonne Cruz gathered broad working experiences at the International Governance Institute (Governance for Sustainable Development), the Center for International Relations and International Cooperation (CIDOB), the United Nations, Department of General Assembly Affairs and Conference Services (Financing for Development World Summit), the Economic Development Secretariat of the State Government of Nuevo Leon, Mexico (Rural Tourism program Coordinator), etc.

Ivonne Cruz is a Member of the International Development Evaluation Association (IDEAS) and a Member of the Human Development and Capability Association.

She contributed to the 4th International conference on the Capability Approach (University of Pavia, Italy) and the International Conference on Democracy Governance and well-being in global societies.

# Publications

Cruz, C. (2004). Linking cultural diversity and human development; notes on the Human Development Report 2004 (UNDP). *Gobernanza, International Governance Journal for Human Development* (http://www.iigov.org/gobernanza)

Cruz, C. (2004). Human Development and Human-Scale Development – Comparing and analysing theories through different perspectives. *Journal on Human Development* (UNDP) (being revised)

Cruz, C. (2004). Participation and information access: the right to claim good governance. *Institutions and Development Journal* (International Governance Institute) (being revised)

Regular Session 4

Tuesday, June 7

14.15-16.15

# A comparison of decision analysis and scenario thinking as alternative ways of dealing with uncertainty about the future

## Author

Paul Goodwin and George Wright

## Affiliation

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## Abstract

This paper compares and contrasts decision analysis and scenario thinking. At a general level, the former is axiom-based whilst the latter is practitioner derived. Decision analysis requires inputs of subjective probability about the likelihood of future events but, at the same time, managers exhibit heuristics that can lead to bias in such assessments, e.g. overconfidence. Whilst sensitivity analysis can attenuate the effects of such bias, decision analytic technology cannot eliminate these effects. By contrast, scenario thinking requires little in the way of probabilistic thinking and entails the construction of qualitative descriptions of alternate futures. Scenario thinking thus starts with future-orientated thinking - against which alternative strategies can be evaluated subsequently. Decision analysis, on the other hand, contains no procedure to challenge a single world-view - within which a decision tree is constructed. Scenario thinking can aid the construction of robust strategies that perform well against a range of plausible scenarios whilst decision analysis aids the choice of strategy that has the highest expected utility. The papers ends by proposing a combination of scenario thinking with multi-attribute value analysis and then develops a quantitatively-enhanced alternative to decision analysis for decision making in the face of uncertainty.

# Curriculum Vitae

## Paul Goodwin

Paul Goodwin obtained a BA (Hons) in Economics at the University of Liverpool (1972), a MSc in Management Science and Operational Research at the University of Warwick (1982), and a PhD in Management Science at University of Lancaster (1998)

Paul Goodwin is Senior Lecturer in Management Science at the Management School, University of Bath.

His research focuses on the role of judgment on forecasting and decision making, decision analysis, scenario planning, and decision support systems.

He is member of the Editorial Boards of the *Journal of Behavioral Decision Making,* the *International Journal of Services and Operations Management,* and *Foresight: the International Journal of Applied Forecasting.* He is Associate Editor of the *International Journal of Forecasting.* He is Editor of *The Oracle*.

He is Director of the International Institute of Forecasters.

## Publications


Fildes, R., Goodwin, P. and Lawrence, M. (in press). The design features of forecasting support systems and their effectiveness. *Decision Support Systems*.

Goodwin, P. (2004). Providing support for decisions based on time series information under conditions of asymmetric loss. *European Journal of Operational Research*, 163, 388-402.

Goodwin, P. & Wright, G. (2004). Decision Analysis for Management Judgment. Third Edition, Chichester: Wiley.

Goodwin, P. (2002). Forecasting games: Can game theory win? *International Journal of Forecasting,* vol. 18, pp. 369-374.

Lawrence, M., Goodwin, P. & Fildes, R. (2002). Influence of user participation on DSS use and decision accuracy. *Omega, International Journal of Management Science*, vol. 30, pp. 381-392.

Wright, G. & Goodwin, P. (2002). Eliminating a framing bias by using simple instructions to 'think harder' and respondents with managerial experience. Comments on Breaking the Frame. *Strategic Management Journal, vol.* 23, pp. 1059-1067.

Goodwin, P. & Wright, G., (2001). Enhancing strategy evaluation in scenario planning: A role for decision analysis. *Journal of Management Studies*, vol. 38, pp. 1-16.

Wright, G. & Goodwin, P. (1999). Rethinking value elicitation for personal consequential decisions. *Journal of Multi-Criteria Decision Analysis,* vol. 8, pp. 3-10.

Wright, G. & Goodwin, P. (1999). Future-focused thinking: Combining scenario planning with decision analysis. *Journal of Multi-Criteria Decision Analysis*, vol. 8, pp. 311- 321.

Goodwin, P. (1996). Statistical correction of judgmental point forecasts and decisions. *Omega, International Journal of Management Science*, vol. 24, pp. 551-559.

Regular Session 1

Monday, June 6

14.35-16.05

# Holarchy – A fruitful paradigm for qualitative sustainable development models

## Author

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## Affiliation

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## Abstract

Sustainable development models are still a big conceptual and practical challenge.

Quantitative sustainable development models are confronted to serious conceptual and technical problems. Those problems is not primary the lack of consistent measurement units and data. It is still a conceptual one.

They are still based on a mechanical integration paradigm; integration between a priori given and each other separated entities of the world. This paradigm is in itself contradictory, because the measurements units of the different entities of our world can intrinsically not be integrated. The mechanical paradigm is a non-integration paradigm.

Effective integration can be achieved by an alternative paradigm. This might be a qualitative paradigm based on a radical system theory (surpassing the mechanical paradigm) capable to let emerge the new object of analysis. The holarchical paradigm it is a proposal of such kind of theory, that might help us to visualise the system which drives in fact the social realm as a totality and to visualise its main functional rules.

Keywords: sustainable development models, systems. holarchy, indicators, system dynamics

# Curriculum Vitae

## Rodrigo Jiliberto Herrera

Born May 5, 1957

Rodrigo Jiliberto Herrera obtained a Master Degree in Social Sciences and holds a Master in Economic Sciences obtained from the Hochschule für Ökonomie "Bruno Leuchener," Berlin, Germany. (1986-1991). Moreover, he obtained a Research Sufficiency Degree for the achievement of the PhD degree in Economics, Universidad Complutense de Madrid (1991-1993).

Rodrigo Jiliberto Herrera is Senior Environmental Consultant with 18 years professional experience in environmental consultancy. He was adjunct Professor in environment and natural resources in the Department of Economics at the University Carlos III of Madrid between 1993 and 1998. He has worked intensively in environmental planning and policy analysis. He has a wide expertise in managing environmental statistics and accounting. He is a pioneer in the development of environmental indicator's systems in Spain. He directed the international working group to develop pressure indicators for the EUROSTAT. During the past eight years, he has worked on Analytical Strategic Environmental Assessment of PPP. He is currently involved in the elaboration of methodologies for regional and local sustainability analysis, in particular in the field of system dynamics modelling. He has published articles in various international journals and edited books on specialised environmental topics.

Since 2003, Rodrigo Jiliberto Herrera is Deputy Director of TAU Environmental Consultants, Madrid.

# Publications


Caratti, P., Dalkmann, H. Jiliberto, R. (eds.) (2004). Analysing Strategic Environmental Assessment Edward Helgar, UK.

Jiliberto, R. (2004). A Holarchical Model for Regional Sustainability Assessment. *Journal of Environmental Assessment Policy and Management*, vol. 6, pp. 511-538.

Jiliberto, R., Dalkmann, H. & Bongardt, D. (2004). Analytical strategic environmental assessment (ANSEA) developing a new approach to SEA. *Environmental Impact Assessment Review*, vol. 24, pp. 385-402.

Jiliberto, R. (2003). A prodigal mind for a systemic world. In Review Polis, Bolivarian University, volum I, number 5, Santiago (Chile).

Jiliberto, R. (2002). Decisional environment values as the object o analysis for strategic environmental assessment. *Impact Assessment and Project Appraisal*, Vol. 29, no. 1.

Regular Session 3

Tuesday, June 7

8.30-10.30

# Interview-based Structurization of Regional Transport Problems – Case Study of Strategic Transport Plan in the Kanto Region, Japan

## Authors

Hironori KATO[1], Hideaki SHIROYAMA[2] and Yoshinori NAKAGAWA[3]

## Affiliation

[1]Associate Professor, Department of Civil Engineering, University of Tokyo

[2]Associate Professor, Department of Law, University of Tokyo

[3]Ph.D. candidate, Department of Civil Engineering, University of Tokyo

## Abstract

This paper intends to analyze the structure of regional transport issues by using a case of the *Strategic Transport Planning in the Kanto Region, Japan*. Though it is essential for transport planners to comprehend the regional transport problems, very few analyses have been challenged for understanding its structure practically. One of its reasons is because the regional transport covers so many stakeholders as well as so various issues that its policy can affect very many social activities complicatedly. In addition, as the different stakeholders may have different ideas even for the same issues, the planners sometimes find the difficulty in consensus-building. Therefore, the interdisciplinary approach is really required to overcome the above-mentioned problems especially in a cooperation with practitioners. We analyze the regional transport issues by depicting the causal relationships not only from issue-based viewpoints but also from stakeholder-based viewpoints. To depict the diagrams, first, we get information about the ongoing regional transport plan in cooperation with the Kanto branch of the central government, Ministry of Land Infrastructure and Transport. Then we list the expected stakeholders based on the document-based information. Next, we interview with main stakeholders and transport specialists on their cognition of problem structure, their behavioral principle and constraints. After the interviews, we complete the diagrams by taking the other data into an account. Finally we compare the different stake-holder's cognitive diagrams and discuss the policy implication.

# Curriculum Vitae

## Hironori Kato

Hironori Kato obtained a BE and a ME in Civil Engineering as well as the Doctor Degree in Engineering from the University of Tokyo.

He was Research Associate at Department of Civil Engineering (1995-1998), Project Manager at the Institution of Transport Policy Studies (1998-2000), and Assistant Professor at Department of Civil Engineering, University of Tokyo (2000-2004). Moreover, he was Visiting Researcher at Department of Civil Engineering, Darmstadt University of Technology (2001/2002).

Since August 2004, Hironori Kato is Associate Professor at Department of Civil Engineering, University of Tokyo.

Hironori Kato focuses his research on Transport planning, Transport demand modeling, Travel behavior analysis, Project evaluation and cost-benefit analysis, Public participation in transport planning, and Transport policy.

## Publications


Kato, H., Fujiwara, H. & Ieda, H. (2005). Spatial Computable General Equilibrium Model for Freight Transport: Empirical Analysis in Japan. *Proceeding of the 1st International Conference on Transportation Logistics (T-Log 2005)*. [forthcoming]

Kato, H. & Sato, J. (2005). Urban Goods Transport of Medan: Basic Survey and Scenario Analysis. *Proceeding of International Workshop Problems and Prospects for Urban Regeneration: Comparison of Regional Cities in Indonesia and in Japan*.

Kato, H. & Kouchi, K. (2004). Empirical Analysis of Value of Time for Non-work Activities. *Proceedings of ICTTS 2004* (Traffic and Transportation Studies), Science Press, pp. 354-362.

Kato, H., Kaneko, Y. & Inoue, S. (2003). Measurement of Transport Investment Benefit: Empirical Comparisons between OD-based Approach and Route-based Approach. *Journal of Eastern Asian Society of Transportation Studies*, vol. 5, pp. 2962-2971.

Hosoya, R., Sano, K., Ieda, H., Kato, H. & Fukuda, A. (2003) Evaluation of Logistic Policies in Tokyo Metropolitan Area using a Micro-simulation Model for Urban Goods Movement. *Journal of Eastern Asian Society of Transportation Studies*, vol. 5, pp. 3097-3110.

Kato, H., Ieda, H., Honda, H. & Koizumi, H. (2001). An Integrated Transport Demand Forecasting Model for an Extension of High-speed Rail Network. *Journal of Eastern Asia Society for Transportation Studies*, vol. 4, pp. 93-105.

Regular Session 4

Tuesday, June 7

14.15-16.15

# Actor group evaluation of future scenarios and identification of misconceptions between actor groups

## Authors

Michael Koucky[1] and Tomas Kåberger[2]

## Affiliation

[1] Centre for Environment and Sustainability (GMV),
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## Abstract

In 2003, the Gothenburg Centre for Sustainability conducted a transdisciplinarity case study on the future development of the southern archipelago in Gothenburg.
During the study, a series of evaluation criteria for future scenarios was developed and several representatives for different actor groups (politicians, inhabitants, administrative staff) were asked to weight the different criteria as a part of evaluation. As a result, differences between actor groups in what is perceived being important for future development could be shown.
As a novelty, the representatives for the selected groups were not only asked to weight the criteria according to their own judgment, but also asked how they *thought* the other groups would weight the criteria. This was done to examine whether there exist misconceptions that can unnecessarily hinder implementation of more sustainable solutions.
A comparison of the actor groups own judgment of criteria and how the other actor groups thought this group would weight shows significant discrepancies in some fields.
The criteria "climate effect" can serve as an example: All groups had high rankings of that criteria, but no group thought that any other group will rank this issue highly. Similar mismatches between actor groups own judgment and how the other groups thought this group would judge could be shown for several criteria.
Such misconceptions can lead to difficulties in implementing necessary actions for sustainability since conflicting interest can occur, e.g. if politicians fear to loose popularity.
It is therefore valuable to examine the potential misconceptions in judgment between actor groups when evaluating future scenarios for sustainable development.

# Curriculum Vitae

## Michael Koucky

Date of birth: 1st of June, 1970

Michael Koucky obtained a M.Sc. in environmental science from the Swiss Federal Institute of Technology Zurich (ETH Zurich) in 1997.

He is leader of the Transdisciplinary Case Study at the Centre for Environment and Sustainability, Göteborg University and Chalmers University of Technology. Moreover, he is founder and CEO of Koucky & Partners AB, Gothenburg (environmental consultancy).

Michael was lecturer in Transdisciplinary Case Studies at the Centre for Environment and Sustainability, Göteborg University and Chalmers University of Technology (2002-2004) and at the Swiss Federal Institute of Technology Zurich (1996)

Michael was a member of the Swedish Transport and Communication Research Board (KFB) conducting research on and evaluation of various Swedish projects with electric vehicles as a part of KFB's R&D project on environmental friendly vehicles (1999-2000).

Michael is Chairman of the Swedish Association of Green Motorists (Gröna Bilister) and board member in Falkenberg Energi AB.

His research deals with sustainable development focusing on transportation and energy. Moreover, he is interested in processes and mechanisms of learning and change, on the individual, institutional and societal level.

## Publications

Koucky, M. & Lock, A. (2005). Case Study Majorna – Hållbar utveckling utifrån lokalsamhällets egna behov och önskemål [Case Study Majorna – Gothenburg Southern Archipelago: Sustainable development based on the local population's needs and desires]. Gothenburg University, Chalmers University of Technology. Gothenburg.

Scholz, R.W., Kåberger, T., Koucky, M., Enwall, Y. & Månsson, M. (2004). Mobilitet och hållbar stadsutveckling – Lundby på gång [Mobility and Sustainable Urban Development - Lundby on the Move]. Case Study 2002. Gothenburg University, Chalmers University of Technology. Gothenburg.

# Tomas Kåberger

Tomas Kåberger obtained a PhD in physical resource theory, and later became Associate Professor in environmental science at Chalmers in Göteborg.

In this position he was in charge of the Transdisciplinary Case Studies on Mobility that were conducted in cooperation with Prof. Dr. Roland Scholz and his team from the Swiss Federal Institute of Technology Zurich.

Since 2003, Tomas is Associate Professor at International Institute for Industrial Environmental Economics (IIIEE), Lund University, Sweden.

Tomas has broad experiences from Government commissions as well as industry.

His research is focused on the implementation of new energy technologies for Sustainable Development.

# Publications


McCormick-Brennan, K. & Kåberger, T. (2005). Exploring a Pioneering Bioenergy System: The Case of Enköping in Sweden. *Journal of Cleaner Production*, vol. 13, pp. 1003-1014.

McCormick-Brennan, K. & Kåberger, T. (2005). Overcoming Barriers to Expanding Bioenergy in the European Union. Proceedings for the Swedish Energy Conference, 8-9 March 2005, Eskilstuna, Sweden.

Scholz, R.W., Kåberger, T., Koucky, M., Enwall, Y. & Månsson, M. (2004). Mobilitet och hållbar stadsutveckling – Lundby på gång [Mobility and Sustainable Urban Development - Lundby on the Move]. Case Study 2002. Gothenburg University, Chalmers University of Technology. Gothenburg.

Kåberger, T., Jürgensen, A., Sterner, T. & Zamanian, M. (2004). Economic Efficiency of Compulsory Green Electricity Quotas in Sweden. *Energy and Environment*, vol. 15(4), pp. 675-697.

Kåberger, T. (2003). Environmental labelling of electricity delivery contracts in Sweden . *Energy Policy*, vol. 31, pp. 633-640.

Roth, A. & Kåberger, T. (2002). Making transport systems sustainable. *Journal of Cleaner Production*, vol. 10, pp. 361-371.

Regular Session 5

Wednesday, June 8

08.30-10.30

# Mutual learning between scientists and practitioners in ecology

## Author

Christoph Kueffer

## Affiliation

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Swiss Federal Institute of Technology Zurich, Switzerland

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## Abstract

Transdisciplinary research is confronted with special challenges. Stakeholder interests have to be mediated. Classical disciplines do not fit to the research problems and therefore interdisciplinarity is needed. However, the research capacity and output of classical disciplines are an important resource for transdisciplinary problem solving processes.

The challenge is that disciplinary knowledge in the making cannot be transferred in the form of ‚frozen facts' to transdisciplinary problem solving processes. Interactions between experts from within classical disciplines and experts from the problem solving context have to be established. At least one side of the involved experts need enough experience and knowledge from the other side so that this interaction can work. Special methods are needed to facilitate the transfer and validation of such tentative knowledge.

I discuss what methods and experiences exist in ecology for such mutual learning processes between scientists and practitioners, and what boundary conditions are needed so that they may work. Especially, there has to be a general agreement among the involved stakeholders about the problem framing and the kind of disciplinary knowledge that is needed. Such an agreement must first be achieved e.g. through transdisciplinary research, stakeholder mediation processes or institutional innovations.

I illustrate my theoretical considerations with experiences made as an ecological scientist in a nature conservation project in the Seychelles (Indian Ocean).

# Curriculum Vitae

## Christoph Kueffer

Date of birth:13.04.1974

Christoph Kueffer obtained a Master in Environmental Natural Sciences from the Swiss Federal Institute of Technology Zurich.

He was a collegiate at Collegium Helveticum, Swiss Federal Institute of Technology Zurich.

Christoph is currently finishing his PhD thesis at the Geo-botanical Institute, Swiss Federal Institute of Technology Zurich.

Since 2003 Christoph is Editor of ‚Kapisen – Plant Conservation Newsletter', Seychelles.

He was employed as consultant by the Seychelles Ministry of Environment and Natural Resources (2002-2005). In 2001, he was employed by the *TD-Net – Network for transdisciplinarity in sciences and humanities* (www.transdisciplinarity.ch).

He is co-founder and member of the executive committee of seed sustainability, a platform for transdisciplinary student research for sustainability (www.seed-sustainability.ch).

# Publications


Kueffer, C. (submitted). "Ecological research for environmental problem solving." Gaia.

Beaver, K., Matatiken, D., Dogley, D. & Kueffer, C. (2005). The challenge of the GSPC - how the Seychelles, a small tropical islands state, is responding. *Bgjournal*, vol. 2(1): 5-6.

Kueffer, C. & Vos, P. (2004). Case Studies on the Status of Invasive Woody Plant Species in the Western Indian Ocean: 5. Seychelles. Rome, Italy, Forestry Department, Food and Agriculture Organization of the United Nations.

Kueffer, C. (2003). Habitat restoration of intermediate secondary cinnamon forests in the Seychelles. Proceedings of the Regional Workshop on Invasive Alien Species and Terrestrial Ecosystem Rehabilitation in Western Indian Ocean Island States. Sharing Experience, Identifying Priorities and Defining Joint Action. J. R. Mauremootoo (ed.). Quatre Bornes, Mauritius, Indian Ocean Commission: 147-155.

Regular Session 5

Wednesday, June 8

08.30-10.30

# Expert roles in transdisciplinary processes

## Author

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## Abstract

This paper discusses expert roles and their unintended consequences in the framework of the Transdisciplinary Case Study Research (TCSR) paradigm. It provides some clarifications that may help understand and manage expert roles.

TCSR is based on the paradigm of transdisciplinarity, that is a type of research that

(i) involves a mutual learning process between scientists, practitioners and stakeholders

(ii) provides decision support for complex transitions of human-environment systems

This definition is not free of inconsistency. Whereas criterion (i) is based on the methodological assumption that everyone is in some respect an expert, criterion (ii) attributes a particular expert role in decision support to TCSR. In practice, such role problems require reasonable investments in trust building with external project partners.

The paper will be structured as follows:

1. Analyzing differences between expert roles and their organizational consequences; empirical evidence (e.g. Mieg, 2000)

2. The expert role of TCSR and the Case Study Bureau

2a. The problems of the formal-expertise concept of decision support (Otway & von Winterfeldt, 1992)

2b. Consequences of the ongoing professionalization of TCSR

3. The general expert-role approach (Mieg, 2001): from professionals to "system experts" with relative expertise

4. Reflection on the "reflective" expert (U. Beck, D. A. Schön)

5. The democratic principle of TCSR and the limits of the expert-role interpretation of TCSR

# Curriculum Vitae

## Harald A. Mieg

1961 Born in Munich

1982-1989 Studied psychology, philosophy, and mathematics in Munich, Paris, Vienna, and Mannheim.

1989 Diploma in psychology and mathematics with a thesis "On the non-existence of expert systems" (Mannheim University)

1992-1993 Assistance work for Prof. Delius (Philosophy), Mannheim/Berkeley

1993 Dr. phil. (Ph.D) in social psychology and philosophy (Prof. Irle, Mannheim), dissertation on responsibility and social complexity

1993-1998 Assistant at the Natural and Social Science Interface (Prof. Scholz), Swiss Federal Institute of Technology (ETH Zurich): Responsible for establishing a project management for the Transdisciplinary Case Studies on environmental planning.

1994 International Atomic Energy Agency (IAEA) at the UN Headquarters in New York

1995-1997/2003 Executive MBA, University of Zurich / Stanford University

1997 Visiting scholar at the University of Chicago (guest of Prof. Andrew Abbott)

1998-2004 Assistant Professor of Human-Environmental Interaction (Mensch-Umwelt-Beziehungen) at the Swiss Federal Institute of Technology (ETH Zurich)

1999 Habilitation and "Venia legendi" in environmental social sciences

Since April 2004: Hans-Sauer-Professor of Metropolitan Studies and Innovation

# Publications


Mieg, H. A. (forthcoming). Social and sociological factors in the development of expertise. In K. A. Ericsson (Ed.), *Cambridge handbook of expertise and expert performance*. Cambridge, UK: Cambridge University Press.

Mieg, H. A. (2004). The precarious role of scenarios in global environmental politics: Political options versus scientific projections. In F. Biermann, S. Campe & K. Jacob (Eds.) 2004. *Knowledge for the Sustainability Transition: The Challenge for Social Science (Proceedings of the 2002 Berlin Conference on the Human Dimensions of Global Environmental Change).* Global Governance Project: Amsterdam, Potsdam, Berlin, Oldenburg.

Mieg, H. A., Hübner, P., Stauffacher, M., Bösch, S., & Balmer, M. (eds.). (2001). *Zukunft Schiene II: Ökologisches Potenzial des Schienengüterverkehrs am Beispiel der Region Zugersee, Fallstudie 2000*. [Ecological potential of rail freight transportation in the region "Zugersee"]. Zürich: Rüegger.

Mieg, H. A. (2001). *The social psychology of expertise*. Mahwah, NJ: Lawrence Erlbaum Associates.

Mieg, H. A. (2000). University-based projects for local sustainable development: Designing expert roles and collective reasoning. *International Journal of Sustainability in Higher Education*, *1*, 67-82.

Scholz, R.W., Mieg, H.A. & Oswald, J.E. (2000). Transdisciplinarity in groundwater management: Towards mutual learning of science and society. *Water, Air, and Soil Pollution*, vol. 123, 477–487.

Regular Session 1

Monday, June 6

14.35-16.05

# Sustaining Mountain Communities in Fragile Environment: Some Experiences from Asia

## Author

Mohammad Rais

## Affiliation

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## Abstract

Sustainable development of sloping lands without sacrificing their culture is becoming a big challenge for mountain communities. This paper reports the experiences of author while conducting case studies during 1995-2002 in mountain communities of South and Southeast Asia, namely: Nepal, India, Indonesia, Thailand, and Vietnam for studying the domain of sloping lands people, its economy, culture, and environment. The case studies in Southeast Asia were sponsored by International Development Research Centre (IDRC), Canada at International Board for Soil Research and Management (IBSRAM), Bangkok. The data generated in these case studies was analyzed by using Pressure-State-Response (PSR) framework. The key findings suggest: (i) depending on their circumstances, a household can be rich in some assets (social and cultural capital, indigenous knowledge, and biodiversity) and poor in others (capital, infrastructure, and market information). (ii) the traditional governance of environment and natural resources by local institutions is declining. The unique situation of sloping lands calls upon in-depth analysis of their cultural ethos and socioeconomic interdependencies for optimizing effectiveness of environment conservation for achieving sustainable development. (iii) farmers are aware of the need of sustainable development, and in their view it is a process of capacity building of local communities and community based institutions, which provides alternative resource management and sustainable development options. (iv) multiplicity of government departments /agencies and lack of proper coordination aggravated the conflicts of mountain culture, economic and environmental degradation. A brief analysis of participatory process based on transparency, community empowerment, and watershed level institutions, equitable sharing of benefits from common property resources, and gender perspective for alleviating poverty and achieving sustainable development are reported in the study.

# Curriculum Vitae

## Mohammad Rais

Mohammad Rais is a research scientist since February 1992 with he National Institute of Science, Technology, and Development Studies, New Delhi. He is graduate of G.B. Pant University of Agriculture and Technology and Technology, Pantnagar (B. Sc. Ag & A.H. Hons, M. Sc. Agril. Econ), and Indian Institute of Technology (IIT), Kanpur (Ph.D.).

His areas of interest include: (i) Sustainable land management (SLM) for sloping lands and Environment Management, (ii) Interdisciplinary approach interfacing land resources with socioeconomic issues and application of state of art information systems such as Geographic Information Systems (GIS), Expert Systems, and Decision Support Systems, for studying natural resources management issues of sloping lands, (iii) Capacity building of user agencies by organizing training programs, developing project proposals and contacting for development investment with donors, (iv) Synthesizing and monitoring data and results from project networks.

In NISTADS he participated in several projects sponsored by Minsitry of Environment and Forests and Ministry of Science and technology, Govt. of India. He organized six short term training programme on Environment Management sponsored by Word Bank (through Ministry of Environment and Forests) for officers from States and Central Pollution Control Boards in India. He was Research Fellow at and Indian Institute of Technology (IIT), Kanpur, and Indian Institute of Management, Ahmedabad (1991-92). He was a Fellow during 1995-96 to work on decision support systems for sustainable development at the United Nations University International Institute for Software Technology, Macau, China. He worked as project leader of IDRC sponsored project on "Decisions support system for evaluating sustainable land management in sloping lands of Southeast Asia" at the International Board for Soil Research and Management, Bangkok (1996-98).

# Publications


Rais, M. (2003). Harvesting agro-biodiveristy of Uttaranchal: an ecofriendly approach. *Invention Intelligence*, vol. 38, pp. 187-189.

Rais, M. (2000). Integrating Transdisciplinarity in Assessing Sustainability: A Dialogue between Research Framework and Farmers Perception: Some Experiences of Sloping Lands from Southeast and South Asia. In Haeberli, R., Scholz, R.W., Bill, A. & Welti, M. (eds.). Proceedings of International Conference on Transdisciplinarity: Joint Problem Solving among Science, Technology and Society: February 27 – March 1, 2000, Zurich, Workbook I. Zurich: Haffmans. pp. 420-424.

Lefroy, R.D.B., Bechstedt, H.D., & Rais, M. (2000). Indicators for sustainable land management based on farmer surveys in Vietnam, Indonesia, and Thailand. *International Journal of Agriculture, Ecosystems & Environment*, vol. 81, pp. 137-146.

Rais, M., Gameda, S., Craswell, E.T., Sajjapongse, A., & Bechstedt, H.D. (1999). Decision Support System for Sustainable Land Management: A South-East Asia Case. In: Kersten, G.E. et.al. (ed.) Decision Support Systems for Sustainable Development: A Resource Book of Methods and Applications. Boston/ Dordrecht/ London: Kluwer. pp. 183-196.

Regular Session 2

Monday, June 6

16.20-18.30

# Research for integrated planning in the 21st century – examples and prospects

## Author

Joe Ravetz

## Affiliation

Centre for Urban & Regional Ecology

School of Environment & Development

Manchester University

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## Abstract

The aspiration for across many areas of policy and scientific activity for 'sustainable development' is a broad agenda for change. Such change involves both substantive change, such as energy efficiency or land use. It also involves paradigm shifts, such as the relationship of users to producers of knowledge.

One of the most crucial interpretations of the sustainable development agenda is for policy integration – a loose set of directions, but generally promoting linkages, horizontally between sectors, vertically between levels, laterally between causes and effects, and laterally between different worldviews. One theme within this is 'integrated planning' – taken here to concern policy implementation for sustainable development with a spatial or physical component. Clearly, research to support 'integrated planning' will be different to former models.

This paper reviews the agenda for integrated planning research. It draws from an ongoing research initiative, the Sustainable City-Region programme, at the Centre for Urban & Regional Ecology in Manchester. This demonstrates some of the challenges, the current constraints, some opportunities and possible ways ahead for similar research on integrated planning.

# Curriculum Vitae

## Joe Ravetz

Joe Ravetz (PhD) is a Research Fellow in the Department of Planning and Landscape. He is a chartered architect with interests and experience in regional planning, economic development, environmental management and community regeneration. He is the co-ordinator of the 'Sustainable City-Region' programme, a partnership between the Town and Country Planning Association, public sector and academic community in the North West. Joe Ravetz is also working on the Economic and Social Research Council's 'Global Sustainability' programme. He has been actively involved in the European Commission's DG12 Integrated Visions project.

## Publications


Ravetz, J. (forthcoming). Integrated Environmental Management: a City-Region Case Study. *International Journal of Sustainable Development & World Ecology*

Ravetz, J. (in press). Urban Form and the Sustainability of Urban Systems: theory and practice in a northern conurbation' In: Jenks M, Burton E & Williams K (Eds.), Achieving Sustainable Urban Form, London: E & F Spon.

McEvoy, D. & Ravetz, J. (2001). Toolkits for regional sustainable development. *Impact Assessment and Project Appraisal*, vol. 19, pp. 90-94.

Ravetz J. (2000). City-Region 2020: integrated planning for a sustainable environment. With the Town & Country Planning Association. London: Earthscan.

Ravetz, J. (2000). Integrated Assessment for Sustainability Appraisal in Cities & Regions. *Environmental Impact Assessment Review*, vol. 20, pp. 31-64.

Ravetz, J. (1999). Citizen Participation for Integrated Assessment: new pathways in complex systems. *International Journal of Environment and Pollution*, vol. 11, pp. 331-350 (Special Issue on citizen participation).

Ravetz, J. (1998). Integrated Assessment Models: from global to local. *Impact Assessment & Project Appraisal*, vol. 16, pp. 147-154.

Regular Session 5

Wednesday, June 8

08.30-10.30

# Communication and Social Competences in Transdisciplinary Case Studies: Graz Mobility Case Study

## Authors

Filippina Risopoulos, Gerald Steiner, Alfred Posch

## Affiliation

Institute of Innovation and Environmental Management

University of Graz, Austria

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## Abstract

Since people are the driving force of every social system directed towards sustainable development, the communication amongst them, including their forms of participation and problem solving, are of special research interest. Consequently, people's cognition, preferences, and decisions need to be considered from an individual, group-specific, as well as regional viewpoint.

„One cannot not communicate". This axiom is based on the idea that any human communication implies an aspect of content and relationship. The content aspect of a message conveys information. It may be about anything that is communicable regardless of whether the particular information is true or false. The relationship aspect, on the other hand, refers the relationship between communicants and therefore to what sort of message it is to be taken as.

In the Graz mobility case study a complex real-world problem will be scientifically tackled by combining theoretical competence and practice-oriented knowledge and experience. The general focus of the case study at the University of Graz will lie on both theory building as a scientific contribution and communication processes for problem-solving strategies for the city of Graz and its mobility problems. For this, a close cooperation between academia and practitioners will be one of the most essential prerequisites. A joint project team consisting of scientists and different actors from the public, private, and civil spheres will bring forward the process of knowledge integration. Further, this network of different stakeholder groups, such as customers, road users, residents and companies, will be involved. Together with the department of urban and traffic planning of the city of Graz and the city of Basel and the University of Graz and the ETH-Zurich a mutual learning process, fruitful for all participating case study actors, will be started.

# Curriculum Vitae

## Filippina Risopoulos

Filippina Risopoulos obtained a Master in Educational Science and German as a Foreign Language at the University of Graz, and attended practitioner and master trainings in neurolinguistic programming in Vienna. At present, she is working on a doctorate thesis ("case studies a transdisciplinary approach within higher education") that will presumably be finished in Juni 2005.

Since 2002, Filippina Risopoulos is a scientific associate at the Institute of Innovation and Environmental Management, at the Karl-Franzens-University of Graz. She has several years work experience in administrative organisation at the University of Graz, since 2001 she is a special trainer in the field of communication, personal training and group dynamics (working in several institutions of further education such as Austrian Federal Economic Chamber, Karl-Franzens University of Graz, Technical Universtiy of Graz, grammar schools etc.). Since 2001, she is working as university teacher in the field of communication- and presentation and systemic management.

Main research interests are collaborative cognition in higher education, with a special focus on communicative processes, inter- and transdisciplinary teaching and research methods for sustainable development, systemic management in institutions of higher education.

# Publications


Risopoulos, F. (in press). Kommunikations in transdiziplinären Fallstudien [Communication in transdisciplinary case studies]. In: Steiner, G. & Posch, A. (eds.). Innovative Forschung und Lehre für eine nachhaltige Entwicklung [Innovative research and teaching for sustainable development], Wien, New York: Springer.

Risopoulos, F., Posch, A. & Steiner Gerald (2004). Transdiciplinary creation of a shared vision for sustainable development, STIQE, 7th International Conference on Linking Systems Thinking, Innovation, Quality, Entrepreneurship and Environment Marburg 2004.

Posch, A., Steiner, G. & Risopoulos, F. (2004). Die Erzherzog-Johann-Fallstudie – Ein inter- und transdisziplinäres Lehr- und Forschungsprojekt der Kulturlandschaftsforschung [The Erzherzog-Johann-Case Study – An inter- and transdisciplinary teaching and research project in the Austrian Landscape Research Programme]. Wien: Bundesministerium für Bildung, Wissenschaft und Kultur.

Risopoulos, F. (under reviw). Fallstudien als transdiziplinäre Form der universitären Bildung [Case Studies as transdisciplinary types of academic education], Oekom München 2005

# Gerald Steiner

Born in 1967, studied business administration and civil engineering at the University of Graz, UC Oklahoma, UCB, and UCLA. Master degree and doctoral degree from the University of Graz. Doctoral thesis on a model for an integrated creativity management.

Besides professional industry background since 1996 occupational activity as scientific collaborator and later assistant professor at the Institute of Innovation and Environmental Management at the University of Graz with the research focus on sustainability and environmental management, organizational creativity and innovative climate, training for creativity as well as creativity techniques, product innovation, entrepreneurship, and transdisciplinary problem solving.

Since 1990 lecturer in the MBA-Program at the School of Economics and Business at the University of Maribor/Slovenia, with the focus on creative problem solving for innovation.

Since 2004 visiting professor at the Utrecht Network International Summer School on "Environmental Management" at the University of Ljubljana/Slovenia with the focus on tools for sustainability in theory and practice as a part of the transdisciplinary case study approach.

Examples of further academic activities are: visiting scholar of the IIASA (International Institute of Applied Systems Analysis), member of the "European Rural Development Focus Group" on alpine regions, and member of the ITdNet (International Network on Transdisciplinary Case-Studies).

# Publications


Steiner, G. & Posch, A. (in press). Higher education for sustainability by means of transdisciplinary case studies: An innovative approach for solving complex, real-world problems. *Journal of Cleaner Production*.

Steiner, G. & Laws, D. (in press). Appropriate learning concepts for solving complex real-world problems: A comparison of the Harvard- and the ETH-case study approach. *International Journal of Sustainability in Higher Education*. Special issue on: 'Applying Transdisciplinary case studies as a means of organizing sustainability learning, edited by Posch, A. & Scholz, R.W.

Steiner, G. (2005): Integriertes Kreativitätsmanagement für die Generierung von Innovationen [Integrated creativity management for stimulating innovations]. Wiesbaden: DUV Gabler Edition Wissenschaft.

Posch, A., Steiner, G. & Risopoulos, F. (2004). Die Erzherzog-Johann-Fallstudie – Ein inter- und transdisziplinäres Lehr- und Forschungsprojekt der Kulturlandschaftsforschung [The Erzherzog-Johann-Case Study – An inter- and transdisciplinary teaching and research project in the Austrian Landscape Research Programme]. Wien: Bundesministerium für Bildung, Wissenschaft und Kultur.

# Alfred Posch

Alfred Posch obtained a PhD in Business Administration, a Masters in Business Education, and in Business Administration, from the University of Graz (Austria), and University of Utah, Salt Lake City (U.S.A.).

Alfred Posch is Associate Professor at the Institute of Innovation and Environmental Management, School of Economics and Social Sciences of the Karl-Franzens-University of Graz (since 1996). He has several years work experience in industry, and freelance researcher at Joanneum Research, Graz.

Main research interests are environmental management in industry, with a special focus on possibilities for inter-organisational cooperation, industrial ecology, inter- and transdisciplinary teaching and research methods for sustainable development

# Publications


Steiner, G. & Posch, A. (in press). Higher education for sustainability by means of transdisciplinary case studies: An innovative approach for solving complex, real-world problems. *Journal of Cleaner Production*.

Posch, A. & Scholz, R.W. (eds.) (in press). Applying Transdisciplinary Case Studies as a Means of Organizing Sustainability Learning. *International Journal of Sustainability in Higher Education*

Posch, A. & Steiner, G. (in press). Integrating Research and Teaching on Regional Entrepreneurship. *International Journal of Sustainability in Higher Education.*

Posch, A. (2005). Editorial: Cooperation within Sustainability Networks and its Implications for Research and Teaching. *Progress in Industrial Ecology – An International Journal*, Vol. 2, No. 1, pp. 1-18.

Posch, A. (2004). Editoral: Sustainability Networks. *Progress in Industrial Ecology – An International Journal*, Vol. 1, No. 4, pp. 331-347

Posch, A., Steiner, G. & Risopoulos, F. (2004). Die Erzherzog-Johann-Fallstudie – Ein inter- und transdisziplinäres Lehr- und Forschungsprojekt der Kulturlandschaftsforschung [The Erzherzog-Johann-Case Study – An inter- and transdisciplinary teaching and research project in the Austrian Landscape Research Programme]. Wien: Bundesministerium für Bildung, Wissenschaft und Kultur.

Regular Session 3

Tuesday, June 7

8.30-10.30

# Problem Structuring and Development

## Author

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## Abstract

Sustainability of development requires that the 'beneficiaries' of research or planning should be active subjects in the definition of their problem, taking into account the action consequences of accepting that definition. However, complex formulations tend to exclude them from this active involvement. RRA and PRA provide a sophisticated repertoire of transparent methods for eliciting and structuring the factors that are important to local participants. However the assistance they provide to collective decision-making is constrained by the fact that they do not incorporate processes for linking actions to consequences. This function is a key feature of 'Problem Structuring Methods' (PSMs), a family of approaches which set out to facilitate dialogue within groups characterised by heterogeneous interests or knowledge bases. They do this by the participative construction of a model or models representing the factors and relationships group members see as relevant to their situation. PSMs lend themselves to use in action research mode, providing assistance to participants while also contributing to generalisable theory. This paper will provide an introduction to Problem Structuring Methods and their applications, and a discussion of the potential complementarity between them and the participative methods of RRA and PRA.

# Curriculum Vitae

## Jonathan Rosenhead

Jonathan Rosenhead was educated at the University of Cambridge and University College London in Mathematics and Statistics respectively. Early operational research (OR) employment was in the UK steel industry in Sheffield and in management consultancy in London (both groups founded by Stafford Beer), as well as in the group led by Russ Ackoff at the University of Pennsylvania. Like Beer and Ackoff, Rosenhead also found that the limitations of operational research as practised in the 1960's and 70's excluded it from many social problems of significance. However he remained within OR, and has worked to develop methods appropriate to 'messy' problems characterised by multiple stakeholders, uncertainties, intangibles and conflict.

Rosenhead has been a teacher at the London School of Economics since 1967, and Professor of Operational Research there since 1987. He was awarded the President's Medal of the British Operational Research Society in 1979, its Goodeve Medal in 1987, and its Beale Medal in 1992. He was President of the Society in 1986-7.

His edited collection *Rational Analysis for a Problematic World* published in 1989 established Problem Structuring Methods as a coherent group of participatory approaches to messy or 'wicked' problems. This volume has been substantially revised and up dated in *Rational Analysis for a Problematic World Revisited*, with John Mingers (Wiley, 2001). He is credited with launching the community operational research movement, which provides decision support for grass roots organisations, and has worked and published extensively on problems in health care and in third world development.

# Publications


Rosenhead, J. & Mingers, J. (2004). Problem Structuring Methods in Action. *European Journal of Operational Research*, vol. 152, pp. 530-554 .

Cushman, M. , Franco, L. A., Rosenhead, J. (2004). Project Review and Learning in the Construction Industry: Embedding a Problem Structuring Method within a Partnership Context. *European Journal of Operational Research*, vol. 152, pp. 586-601.

Rosenhead, J. & Horlick-Jones, T. (2002). Investigating Risk, Organisations and Decision Support Through Action Research. *Risk Management*, vol. 4, pp. 45-63.

Rosenhead, J. & Mingers, J. (2001). Rational Analysis for a Problematic World Revisited. Chichester: Wiley.

Rosenhead, J. (1996). What's the Problem? An introduction to problem structuring methods. *Interfaces*, vol. 26, no. 6.

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Rosenhead, J. & Bornstein, C.T. (1990). Operational Research in Less Developed Countries: a critical approach. *European Journal of Operational Research*, vol. 49, no. 2.

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Regular Session 4

Tuesday, June 7

14.15-16.15

# Sustainability Assessment of Scenarios for Agriculture Development and Biodiversity Conservation in Mountain Areas

## Authors

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## Abstract

BioScene (Scenarios for Reconciling Biodiversity Conservation with Declining Agriculture Use in Mountain Areas in Europe) is a three-year project (2002-2005) being funded by the EU 5th Framework Programme, and aims to investigate the implications of agricultural restructuring and decline for biodiversity conservation in Europe's mountain areas.

The project takes a case study approach to the analysis of the biodiversity processes and outcomes of different scenarios of agri-environmental change in six countries (France, Greece, Norway, Slovakia, Switzerland and the United Kingdom) covering the major biogeographical regions of Europe. The project is coordinated by Imperial College London, and each study area has a multi-disciplinary team including ecologists, and social and economic experts, which seeks a comprehensive understanding of the drivers for change and their implications for sustainability (i.e. environment, society and economy).

A key component is the sustainability assessment (SA) of alternative scenarios both for agriculture and rural policy and for biodiversity management. This paper discusses the development and application of the SA methodology developed for this project. It departs from the UK and international experience, but has been designed to respond more specifically to the needs of the overall research objectives. For example, while it is objectives-led, it is also strongly grounded in baseline ecological and socio-economic data. A particular aspect of the approach is the engagement of stakeholder panels in each study area throughout the research, which emphasizes the participatory nature of the research methodology.

# Curriculum Vitae

## William Sheate

Originally an ecologist, with a BSc Hons in Biology from Exeter (1982) and an MSc in Environmental Technology from Imperial College, University of London (1984), William Sheate has worked, lectured and published widely on environmental impact assessment (EIA) for nearly 20 years.

He is Senior Lecture for Environmental Policy and Management at the T. H. Huxley School of Environment, Earth Sciences & Engineering at the Imperial College London (UK).

He is the founder and editor of the Journal of Environmental Assessment Policy and Management, which seeks to provide a forum for linking environmental assessment and management tools.

He has particular interests in the development, application and implementation of EIA and strategic environmental assessment (SEA) in the European Union, and in public and NGO participation in environmental decision-making.

## Publications


Gu, L. & Sheate, W.R. (in press). Institutional Challenges for EIA Implementation in China: a Case Study of Development versus Environmental Protection, *Environmental Management*.

Gu, L. & Sheate, W.R. (in press). Comparative Analysis of Environmental Management in China and the UK: Lessons and Challenges for Transitional and Market Economies. *Journal of Environmental Management*.

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Sheate, W.R. (2003). Changing Conceptions and Potential for Conflict in Environmental Assessment - Environmental Integration and Sustainable Development in the EU, *Environmental Policy and Law*, vol. 33 (5): 219-230.

Sheate, W.R., Dagg, S., Richardson, J., Aschemann, R., Palerm, J. & Steen, U. (2003), Integrating the Environment into Strategic Decision-Making: Conceptualising Policy SEA, *European Environment*, vol.13 (1), 1-18.

Scrase J. I & Sheate, W.R. (2002). Integration and Integrated Approaches to Assessment: What Do They Mean for the Environment? *Journal of Environmental Policy and Planning*, vol. 4 (4), 275-294.

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Smith, S. & Sheate, W.R. (2001), Sustainability Appraisals of Regional Planning Guidance and Regional Economic Strategies in England: an Assessment, *Journal of Environmental Planning and Management,* vol. 44 (5), pp. 735-755.

van der Vorst, R, Grafe-Buckens A, & Sheate, W.R. (1999), A Systemic Framework for Environmental Decision-Making, *Journal of Environmental Assessment Policy and Management*, vol. 1 (1), pp 1-26.

Ng, Yuen Ching & Sheate, W.R. (1997). Environmental Impact Assessment of Airport Development Proposals in the UK and Hong Kong: Who should participate? *Project Appraisal*, vol. 12 (1).

Sheate, W.R. & Atkinson, N.R. (1995). Public Participation in Environmental Decision-making: the European Dimension. *Environmental Policy and Practice*, vol. 5, pp. 119-129.

Regular Session 2

Monday, June 6

16.20-18.30

# Experiences of researchers in integrative landscape projects

## Authors

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## Affiliation

[1]Wageningen University, Department of Environmental Sciences, Land Use Planning Group
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## Abstract

Integrative (interdisciplinary and transdisciplinary) landscape studies become more and more frequent. Consequently, researchers spend a larger time of their professional careers in integrative projects. They work in shifting teams composed of different disciplines and have direct exchange with stakeholders and other non-academic participants. Involvement in integrative projects is no one-time experience, but rather becoming the rule. Therefore, aspects such as project experiences, perception of success/failure of the project, and positive/negative career affect, become crucial for the participating researchers. In spite of the importance of the subject, there is a lack of studies on the performance of integrative research projects, and no empirical study has yet been undertaken.
Following these arguments, the objective of our project was to identify positive and negative experiences of researchers in integrative landscape projects, including perceived career effects, and to investigate the factors, which influence these experiences. Towards this end we conducted interviews and a web-survey. The 19 qualitative semi-structured interviews were used to identify possible experiences of researchers. Interview results served to set up a web-survey with closed questions that could be answered on 5-point-scales.
All in all 234 respondents from 28 different countries have taken the web-survey. Data analyses included descriptive statistics, and compare-means analyses. A correlation-matrix revealed differences in experiences of different groups of researchers. Results show that the majority of participants perceive their projects as success, and also perceive a positive effect on their careers. Further positive experiences are discussions among participants, networking, gaining new insights, and teamwork. Publications and merit points, as well as project management are experienced less positive. Participants' experiences are influenced by the degree of integration of disciplines that was reached in the project, and whether a common understanding of integrative concepts was achieved. We conclude that integrative projects provide overall positive experiences for the participants, but recommend to give special attention to the delivery of scientific output.

# Curriculum Vitae

## Bärbel Tress

Bärbel Tress obtained a Master in Geography at the University of Heidelberg, Germany (1996) and a PhD in Landscape Ecology at the University of Roskilde, Denmark (1999).

Since 2003, Bärbel Tress is Associate Lecturer at Wageningen University (The Netherlands), Department of Environmental Sciences, Land Use Planning Group. She was Senior Researcher at Alterra Green World Research, Landscape Centre, Wageningen (2001-2004) and Assistant Professor at the University of Roskilde, Department of Geography, Denmark (1999-2001).

Her research focuses on:

- Integrative landscape research (interdisciplinarity and transdisciplinarity)
- Theory, knowledge production, methods and evaluation of integrative research
- Participatory landscape planning and management
- Landscape ecology
- Future studies and landscape scenario techniques
- Visualisation techniques
- Research evaluation and sociology research

## Publications


Tress, G., Tress, B. & Fry, G. (in press). Clarifying integrative research concepts in landscape ecology. *Landscape Ecology*.

Tress, B., Tress, G. & Fry, G. (2005). Integrative studies on rural landscapes: Policy expectations and research practice. *Landscape and Urban Planning*, vol. 70, pp. 177-191.

Tress, B., Tress, G. & Fry, G. (2003). Scenario visualisation for participatory landscape planning – a study from Denmark. *Landscape and Urban Planning,* vol. 64, pp. 161-178.

Tress, G., Tress, B. & Bloemmen, M. (Eds.) (2003). From tacit to explicit knowledge in integrative and participatory research. DELTA Series 3, Wageningen.

Tress, B., Tress, G., Van der Valk, A. & Fry, G. (Eds.) (2003). Interdisciplinary and transdisciplinary landscapes studies: potential and limitations. DELTA Series 2, Wageningen.

Tress, B. & Tress, G. (2001). Capitalising on multiplicity: A transdisciplinary systems approach to landscape research. *Landscape and Urban Planning*, vol. 57, pp. 143-157.

Fry, G., Tress, B. & Tress, G. (submitted). Integrative landscape research: facts and challenges. In: Wu, J. & Hobbs, R. (eds.). Key topics and perspectives in landscape ecology. Cambridge University Press.

Regular Session 3

Tuesday, June 7

8.30-10.30

# Transdisciplinary goal finding process in regional planning processes

## Authors

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## Abstract

The key question of the teaching research project „Leben 2014“ in the region of „Oberpinzgau“ on regional planning processes was: How should the landscape, land use and the society in the National park region „Hohe Tauern/Oberpinzgau” look like in ten years? At the beginning of the project the challenge was to specify this general question to detailed research questions in a transdisciplinary and participatory process. This approach combined different perspectives of regional actors, scientists as well as students.

An eight stage goal finding process, which has integrated the different partners, i.e. Mayors (9), Projectpartners (10), Regional actors (86), etc., lead to a synthesis of six so called polarity fields, with key topics and detailed thematically oriented research questions. The specific thematic areas were: tourism, future of the youth, health and social aspects, traffic, cooperation in the region, self perception of the Oberpinzgau, National Park Hohe Tauern and agriculture.

The complex picture of the region was structured by the scientists and a selected group of regional actors to „polarity fields“. Every polarity field was focused on a thematic but interdisciplinary formulated topic, based on the integration of two opposite positions: Alone & Common, Outside & Inside, Young & Old, Fast & Slowly , Tradition & Innovation, Wilderness & Culture.

This concept was presented to and discussed with the steering committee of the region and added with specific research questions. It was the job of the project team to summarize the results for the next stage. Students and regional working groups, linked to the different polarity fields, reflected the results in their first common meeting, made some additional comments and specified the questions. The final control was the duty of the project team and the lectures.

The inter- and transdisciplinary character of the polarity field studies was based on a team of students from different disciplines and the local working groups, which were accompanying and supporting the student work process.

# Curriculum Vitae

## Ulli Vilsmaier

Born: 28th June 1972

| | |
|---|---|
| 1990 – 1997 | Study of Geography at the Paris Lodron University Salzburg, Master of Natural Science |
| 1997 – 2000 | Lecturer at the Universidad Nacional Autónoma de Nicaragua, León, Nicaragua |
| | Research Assistant: `Urban growth processes in Latin America´, Paris |
| | Lodron University Salzburg |
| | Consultant in regional development processes, Salzburg |
| Since 2001 | Research assistent at the Department of Geography, Geology and Mineralogy, Division of Human Geography, Regional and Development Studies, Paris Lodron University Salzburg |
| | Project-coordinator of `Life 2014 – Perspectives for Integrated Regional Development in the National Park Region Hohe Tauern /Oberpinzgau´ |

# Publications


Vilsmaier, U., Freyer, B. & Muhar, A. (2005). Inter- und transdisziplinäre Lehrforschung. Das Beispiel „Leben 2014 – Perspektiven der Regionalenwicklung in der Nationalparkregion Hohe Tauern/ Oberpinzgau [Inter- and transdisciplinary teaching and research. The example *Life in 2014 – Perspectives for the regional development in the national parg region Hohe Tauern/Oberpinzgau*]. In: Salzburger Geographische Arbeiten, Salzburg, p. 173-186.

Rosner, W. & Vilsmaier, U. (2005). Desarollo Urbano de Fortaleza (Brasil): El impacto de las estructuras de poder local. In: Robert B. Kent, Vicent Ortells Chabrera y Javier S. Marti (eds.) Cities and Urbanism in Latin America / Ciduades y Urbanismo en America Latina, Castellon de la Plana (in press).

Vilsmaier, U. & Fromhold-Eisebith, M. (2004). Das transdisziplinäre Lehrforschungsprojekt 'Leben 2014' – Perspektiven der Regionalentwicklung in der Nationalparkregion 'Hohe Tauern' [The transdisciplinary teaching and research project *Life in 2014 – Perspectives for the regional development in the national parg region "Hohe Tauern"*]. In: W. Gamerith and P. Messerli et al. (eds.): Alpenwelt – Gebirgswelten. Inseln, Brücken, Grenzen. 54. Deutschen Geographentag Bern 2003. Heidelberg, Bern, p. 407-416.

# Bernhard Freyer

1958: Born in Stuttgart, Germany

1978-1984: Study of Agricultural Biology at the University of Hohenheim, Germany

1984-1985: Civil service as farmer, Germany

1985-1989: Junior Scientist at the Department for Methods of Alternative Agriculture, University of Kassel, Witzenhausen, Germany

1990-1998: Head of the department of Landscape economy and Landscape ecology at the Institute of Organic farming (FiBL), Frick, Switzerland

1998: Full Professorship, Head of Division of Organic Farming; University of Natural Resources and Applied Life Sciences

# Publications

Vilsmaier, U., Freyer, B. & Muhar, A. (2005). Inter- und transdisziplinäre Lehrforschung. Das Beispiel „Leben 2014 – Perspektiven der Regionalenwicklung in der Nationalparkregion Hohe Tauern/ Oberpinzgau [Inter- and transdisciplinary teaching and research. The example *Life in 2014 – Perspectives for the regional development in the national parg region Hohe Tauern/Oberpinzgau*]. In: Salzburger Geographische Arbeiten, Salzburg, p. 173-186.

Darnhofer, I., Schneeberger, W., & Freyer, B. (2003). Converting or not converting to organic farming in Austria: Farmer types and their rationale. *Agriculture and Human Values*.

Wehinger, T., Freyer, B., & Hoffmann, V. (2002). Stakeholder Analysis in the conversion to organic framing. In: International Farming Systems Association (Ed.): Pre-proceedings of the Fifth IFSA European Symposium. Farming and Rural Systems Research ans Extension - Local Identities and Globalisation, 767-776; 8-11 April 2002, Florence, Italy.

Freyer, B., Reisner, Y., & Zuberbühler, D. (2000). Potential impact model to assess agricultural pressure to landscape ecological functions. Ecological modelling, vol. 130, pp. 121-129.

Regular Session 1

Monday, June 6

14.35-16.05

# Reflexive governance for sustainable development

## Authors

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[2] Maastricht Economic Research Institute on Innovation and Technology (MERIT), Maastricht University (The Netherlands) and TNO Strategy, Technology and Policy (TNO-STB)
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## Abstract

Many of the current trajectories of development are not sustainable. Environmental problems pose immediate threats and resource use poses a long-term problem. There is a need for redirection of development involving system change. This leads governments to look for alternative trajectories and explore solutions. For some people sustainability is about renewables. For others, any type development (even the use of acclaimed 'sustainable solutions') will produce undesirable results from a societal point of view. These unintended consequences cause often more severe problems that are more difficult to handle, because they require to leave the straightforward problem-solving world of specialised purpose and skills. Such problem can be called problems of a second order. Sustainability is one, if not the second order problem of modernist problem-solving. Second order problems successively work to disrupt the structure of modernist problem-solving, because in order to get a hold of them, they require to leave the isolation of specialisation, to widen filters of relevance, trade off values, engage in interaction with other specialists, in short, to transgress cognitive, evaluative and institutional boundaries.

The central assumption of this paper is that sustainability calls for new forms of problem treatment. We need strategies for dealing with reflexivity and better strategies to deal with complexity, uncertainty and ambiguity. Attention to side-effects, adaptive strategies, interactive decision-making and integrated knowledge production appear useful strategies to deal with specific problems of control, uncertainty and ambiguity. The intention of the paper is to relate them to theme of reflexive governance and to explain why they are important and necessary.

This is worked out in a systematic manner. By positioning specific strategies as elements of reflexive governance it becomes much clearer why they are needed: by offering systemic feed-back on existing governance practice. They are not strategies that guarantee optimal outcomes but they help to better deal with dilemmas for managed change. In the paper we discuss two tools or approaches for reflexive governance: sustainability foresight and transition management, describing the experiences gained with it.

# Curriculum Vitae

## Jan-Peter Voss

Jan-Peter Voss studied political science and economics at Freie Universität Berlin and the London School of Economics and Political Science (LSE). In 1999 he obtained a degree in political science from Freie Universität Berlin. As a graduate student he interned with the Framework Convention on Climate Change and the government of Peru. He started working at the Öko-Institut – Institute for Applied Ecology (Berlin) in 1999.

Jan is leading the project "Knowledge Interfaces", is co-leader of the "Microsystems" project, and member of the steering group of the "Evalunet" project at the Öko-Institut. He coordinates a cross-cutting working group on "Governance of socio-ecological Transformation" in the Socio-ecological Research Programme at the German Research Ministry. In the context of an interdisciplinary junior research group on "Transformation and Innovation in Power Systems (TIPS)" he works on a doctoral dissertation ("Innovation of Governance. Understanding the emergence of new policy arrangements in the energy system") which is supervised by Arie Rip and Maarten Arentsen at the University of Twente.

Jan is working in transdisciplinary sustainability research with a focus on governance of transformation in socio-technical systems (especially energy provision) and methodological questions of sustainability research. His theoretical background is governance theory, science & technology studies, evolutionary and complexity theory.

# Publications


Voss, J.-P. (2004a). Governance Innovation – Sustainability requirements, innovation dynamics and real world contexts. Paper presented at the international conference „Innovation, Sustainability and Policy“, Kloster Seeon, 23-25 May 2004.

Voss, J.-P. (2004b). Innovation of Governance: How do new policies develop and become implemented? Paper presented at the conference on “Technik in einer fragilen Welt. Die Rolle der Technikfolgenabschätzung“, 24. - 26. November 2004, Berlin.

Voss, J.-P., Konrad, K. & Truffer, B. (2004). Sustainability Foresight – Reflexive governance for energy transformation. Paper presented at 4S-EASST Conference, 25-28. August 2004, Paris.

Nötling, B., Voss, J.-P. & Hayn, D. (2004). Nachhaltigkeitsforschung - Jenseits von Disziplinierung und 'anything goes' [Sustainability Science - beyond discipline and 'anything goes']. *GAIA – Ecological Perspectives for Science and Society*, vol. 2004/4, pp. 254-261.

# Curriculum Vitae

## René Kemp

René Kemp is a senior researcher at MERIT in Maastricht and DRIFT in Rotterdam. He is an expert on the topic of environmental policy and innovation, a topic on which he consulted frequently and has written many articles and three books. His current work is on managing transitions to sustainability, a topic on which he advised the Dutch government. The policy model of transition management, which he developed with Jan Rotmans, has been adopted by the Dutch government in the 4th national environmental policy plan and is receiving a worldwide attention. He is member of the programme committee of the Energy research programme of the Dutch research council NWO and member of the commissioning panel of ESRC Sustainable Technologies Programme in the UK. He co-organised the international conference "Innovation, Sustainability and Policy" which took place May 23-25, 2004, in Seeon, Germany.
He was research director at STEP in Oslo and visiting researcher at IPTS in Sevilla, EAWAG in Switzerland, Foscari University in Venice and the Belfer Center of the Kennedy School, Harvard University. A list of publications and research projects he is working on can be found at http://meritbbs.unimaas.nl/rkemp

## Publications


Kemp, R., Parto, S. & Gibson, R.B. (forthcoming). Governance for Sustainable Development: Moving from theory to practice. *The International Journal of Sustainable Development*.

Kemp, René & Rotmans, J. (2004). Managing the Transition to Sustainable Mobility. In Elzen, B., Geels, F. & Green, K. (eds.). System Innovation and the Transition to Sustainability: Theory, Evidence and Policy, Edgar Elgar, Cheltenham, pp. 137-167.

Hoogma, R., Kemp, R., Schot, J. & Truffer, B. (2002). Experimenting for Sustainable Transport. The Approach of Strategic Niche Management. London: EF&N Spon.

Rotmans, J., Kemp, R. & van Asselt, M.B.A. (2001). More Evolution than Revolution. Transition Management in Public Policy. *Foresight*, vol. 3, pp. 15-31.

Kemp, R. (2000). Technology and Environmental Policy — Innovation effects of past policies and suggestions for improvement, OECD proceedings Innovation and the Environment, OECD, Paris, pp. 35-61.

Kemp, R. , Schot, J. & Hoogma, R. (1998). Regime Shifts to Sustainability through Processes of Niche Formation. The Approach of Strategic Niche Management. *Technology Analysis and Strategic Management*, vol. 10, pp. 175-195.

Kemp, R. (1997). Environmental Policy and Technical Change. A Comparison of the Technological Impact of Policy Instruments. Cheltenham: Edward Elgar.

Kemp, R. (1994). Technology and the Transition to Environmental Sustainability. The Problem of Technological Regime Shifts. *Futures*, vol. 26, pp. 1023-46.

Regular Session 2

Monday, June 6

16.20-18.30

# Integration and Synthesis – Sustainability Planning for City-Regions

## Authors

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## Abstract

To create consistent, feasible and societal robust development strategies for cities or regions it is necessary to take into account the multi-sectoral, multidisciplinary and multilayered nature of these systems.

A sustainability planning (SP) tool is needed to allow for a scientific approach which goes beyond reductionism and holism. The quality of the results relies on an adequate analytic partition and (re)-synthesis of the system (Synthesis) as well as on a adequate strategy to incorporate different sources of knowledge into the assessment (Integration). Otherwise the interrelations of the separated parts of the case will not be taken into account, which will lead to unforeseen conflicts, inconsistencies and unused synergy potentials.

In this article we present the embedded case study methodology (ECM) as integrative sustainability planning tool which relies on a multi-layered integration approach in the areas of methodology, process and systemic functions. The ECM allows to develop strategies for reaching consistent, robust, sustainable and desirable future goals through a systemic backward planning process.

The approach is illustrated with a case study on the long-term regional development of the Swiss canton Appenzell Ausserrhoden. Conclusions are drawn regarding the application of ECM to other areas of sustainability assessment.

# Curriculum vitae

## Alexander Walter

Alexander Walter studied environmental sciences at the ETH in Zurich. He graduated in 2003 and started his PhD at the Natural and Social Sciences Interface (Prof. Roland Scholz) at the Swiss Federal Institute of Technology Zurich (ETH) shortly after.

He gained extensive international experience in projects in Japan, the US, Mexico, Sweden, the UK and Cuba. Currently he is preparing a project of the Swiss National Science foundation, which will investigate future development perspectives of the capital of Cuba, Havana. He held scientific seminars on transdisciplinary case study research and embedded case study methods in Tokyo and Havana. He worked as a scientific tutor in the case study 2003/04.

He is the project leader of the international transdisciplinary network on case studies on urban mobility, which incorporates case studies in Switzerland, Austria, Sweden, Mexico City (planned), Tokyo (planned) and Havana (proposal pending). His work is co-financed by a grant from the Volvo Research and Educational Foundation's Future Urban Transport Program.

His PhD focuses on the process side of transdisciplinary research, with the key steps of case faceting and strategy building as main areas of investigation. His first publications identifies generic success factors of multi-actor planning and implementation processes, based on international case studies. His last publication demonstrates the importance of an integrative project architecture in transdisciplinary research, based on a case study for the regional development of a Swiss canton.

# Publications

Hockerts, K. & Walter, I. A. (under review). Mobility: Bringing together quality and efficiency. In Scholz, R.W., Shiroyama, H. & Susskind, L. (eds.) Green technology breakthroughs. New York: Kluwer AGS Book Series.

Walter, I. A. & Wiek, A. (in prep). Strategy derivation for sustainable regional development through formative integration. To be submitted to: *European urban and regional studies*.

Walter I. A., Scholz R.W. (in prep.) Soft approaches to planning - Are there soft success factors? To be submitted to: Transportation.

Regular Session 3

Tuesday, June 7

8.30-10.30

# Case study on genuine progress indicator methodology to measure sustainability in China

## Authors

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## Affiliation

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[3] Dept. of Environmental Economics & Management, Remin University of China, Beijing 100872, China

## Abstract

Developing new signals of development performance is a crucial work to monitor urban progress in the long-term. When policymakers confront the operational problems that how to reflect and measure urban sustainability, indicators have evolved as a very useful tool for evaluating progress made, and implementing sustainable development. There have been many studies concerning the development of sustainability indicators. One of these indicators recently proposed is Genuine Progress Indicator (GPI). This paper is a contribution to introduce the method and results of GPI to measure urban sustainability from China. Based on China's own realities, it attempts to further develop GPI methodology and calculates some components for GPI over a time series. Cases study (Suzhou, Guangzhou, Ningbo, and Yangzhou city in China) at urban level was discussed in this paper. The results of GPI calculations for the above four cases city over the period 1991–2001 are presented and analyzed, and are compared with other results from international cases research (such as USA, Australia or Scotland). At last, the paper discusses the advantages and limitations of GPI as an indicator or methodology to measure urban sustainability.

# Curriculum Vitae

## Zongguo WEN

Zongguo Wen obtained a PhD of Engineering in Environmental Science and Engineering from the Tsinghua University, Beijing, China. He currently holds a Post-Doctor position at the same Department. In 2001/2002, he worked in the international program management office, China State Development and Planning Committee /World Bank/ Global Environment Facility, a project of China Renewable Energy Scale-up Program (CRESP).

He was involved in the following selected research projects:

- Ecological Carrying Capacity of Dianchi Lake Basin in Yunnan Province, Funded by Kunming Environmental Protection Bureau of Yunnan province, 2003-2004
- Capital Extension Methodology: the Simulation Study into Policy Alternative towards Sustainable Development, funded by Tsinghua University, 2002-2005
- Models and Indicators to Measure Urban Sustainability and Eco-city, Funded by provincial Bureau of Environmental Protection of Guangzhou and Jiangsu, 2002-2004
- Capacity Building on Sustainable Development at the Beginning of 21 Century in China, Funded by the State Development Program Commission (SDPC), 2000-2001

Zongguo Wen focuses his research on industrial ecology, environmental management of enterprise; theory and models building for sustainability at regional and national level, such as monitoring urban sustainability; ecological planning for eco-city and river basin; model methodology development for energy-economic-environment at national level with system dynamics.

# Publications


Zhang Kunmin, Wen Zongguo, Du Bin, Song Guojun (2003). Assessment and Indicators for Eco-city. China Chemical Industry Press, Beijing, China.

Zhang Kunmin, Wen Zongguo, He Xueyang, et al. (2001). Capacity Building for Sustainable Development in China. Study on Strategy of China's Sustainable Development (Liu Jiang as Chief Editor). Beijing: China Agricultural Press.

Wen Zongguo, Zhang Kunmin, Li Wei, et al. (in press). Case study on the genuine progress indicator methodology to measure economic welfare in China. *Ecological Economics*.

Kun-min ZHANG, Zong-guo WEN (in press). Review and challenges on policies of environmental protection and sustainable development in China. *Journal of Environmental Management*.

Zongguo Wen, Kunmin Zhang, Liya Huang, et al. (in press). Genuine saving rate: an integrated indicator to measure urban sustainable development towards ecocity. *International Journal of Sustainable Development and World Ecology*.

# Varia

## Publication

All submitted papers will be published in the conference proceedings.

Selected papers will be considered for publication in a special issue of the international scientific refereed journal *Sustainable Development*, John Wiley & Sons.

## Further Questions

For questions regarding the symposium, please contact Arnim Wiek: wiek@env.ethz.ch

For questions regarding the conference, please contact Jouni Korhonen: jouni.korhonen@uta.fi

# Profile of the TCSR Group at the Swiss Federal Institute of Technology


## Mission Statement

The TCSR group conducts research on transdisciplinary decision support methods for facilitating transition processes of complex human-environment systems. Its approach to decision support for large-scale problems provides tools for organising this process in a structured and coordinated way. Sustainable development is used as a guiding concept for formulating the goals of the system in focus.

- Transdisciplinarity is seen as a core element for coordinating a transition process. It provides a framework for integrating the knowledge of a wide range of experts and stakeholders. At the same time a common base of knowledge is a promising starting point for cooperation between the involved stakeholders. Integrating not only interests, but also different modes of thought, expert's and local knowledge leads to more robust results. We also refer to this process as analytic mediation.
- The term decision support is used to indicate that the group develops and evaluates methods of creating, exploring and assessing possible future developments of human-environment-systems. These developments provide a sound foundation for the actual decision-making processes taking place in the according societal institutions.
- An integrated and goal-oriented project architecture provides the necessary structure to organise the process in a transparent, consensus-oriented manner.
- The expertise of the group lies in the area of decision sciences and systems sciences and their combination. Within those areas both quantitative and qualitative approaches are applied and integrated to achieve a comprehensive representation of the system and the decision process.

Research is done in the form of case studies concerning different issues related to sustainable development in the broadest sense, which is an established and accepted form of research in the fields of transition research and strategic planning. The case study approach is used to derive general aspects of decision making in complex and multi-actor decision situations from carefully selected and representative cases.

## Underlying concepts and theories

The following approaches are considered basic to the research of the group:

- System sciences
- Decision sciences
- Transition management research
- Sustainable development research
- Embedded Case Study Methodology
- Soft Operations Research
- Soft System Methodology Research

## Issues

The group members conduct research on the following issues:

- Development of City-Regions (Switzerland and internationally)
- Urban mobility (Switzerland and internationally)
- Waster Resource Management (Switzerland)
- Spatial planning (Switzerland)
- Technology development (Switzerland and internationally)

## Projects

- Wiek, A. & Scholz R.W. (in prep). Sustainability planning for robust urban development strategies in la Habana, Cuba (in cooperation with the Centre for Urban Studies at the Superior Polytechnic Institute José A. Echevarria (CUJAE), Cuba, the National Planning Institute of Cuba, and the Planning Office of Havana City).
- Siegrist, M. & Wiek, A. (since 2005). Transdisciplinary Case Study Research on Nanotechnology's Opportunities and Risks (in cooperation with partners from academic, private, governmental and non-governmental institutions in Switzerland)
- Wiek, A., Lang, D. & Stauffacher, M. (since 2004). Focal variable determination based on formative scenario construction for the development of the alpine regions of Switzerland 2005-2030 (in cooperation with various experts).
- Wiek, A. & Lang, D. (since 2003). Integrating intuitive and formative constructed scenarios for the spatial development of Switzerland 2005-2030 (in cooperation with the Federal Office for Spatial Development).
- Lang, D., Binder, C. & Scholz, R.W. (since 2003). Systemic views on sustainable development in waste management (in cooperation with Environmental Agency of Canton Zurich).
- Lang, D., Scholz, R.W. & Binder, C. (since 2002). Sustainability Potential Analysis of waste management systems (in cooperation with Environmental Agency of Canton Zurich).
- Walter, A., Wiek, A. & Scholz R.W. (since 2002). Innovation networks and transdisciplinary urban mobility case studies (in cooperation with Volvo, ETH-AGS).
- Scholz, R.W. et al. (since 1994, annual). Transdisciplinary Case Studies on organizational, urban, regional, societal development issues (in cooperation with various agents from academic, private, governmental and non-governmental institutions in Switzerland)

# Publications


Binder, C.,Hofer, C., Wiek, A., Scholz, R. W. (2004). Transition towards improved regional wood flows by integrating material flux analysis and agent analysis: the case of Appenzell Ausserrhoden, Switzerland. *Ecological Economics*, vol. 49, pp. 1-17.

Lang, D. J., Binder, C., Scholz, R. W., & Stäubli, B. (2002). Ideas for Assessing the Sustainability Potential of Human-Environmental Auxiliary Systems – The Case of Municipal Solid Waste Landfills. Paper presented at the IEMSs 2002, Lugano, Switzerland.

Lang, D. J., Binder, C. R., Scholz, R. W., Schleiss, K., & Stäubli, B. (submitted). Impact factors and regulatory mechanisms for material flow management: Integrating stakeholder and scientific perspectives - The case of bio-waste delivery. Submitted to: *Rescources, Conservation and Recycling*.

Lang, D. J., Binder, C. R., Stauffacher, M., Ziegler, C., Schleiss, K., & Scholz, R. W. (submitted). Material and money flows as means for industry analysis of recycling schemes: A case study of regional bio-waste management. Submitted to: *Rescources, Conservation and Recycling*.

Loukopoulos, P. & Scholz, R. W. (2004). Future Urban Sustainable Mobility: Using Area Development Negotiations for Scenario Assessment and for Participatory Strategic Planning. *Environment and Planning A*, vol. 36, pp. 2203-2226.

Posch, A. & Scholz, R.W. (eds.) (in press). Applying Transdisciplinary Case Studies as a Means of Organizing Sustainability Learning. *International Journal of Sustainability in Higher Education*

Scholz, R.W. & Wiek, A. (in press). Operational eco-efficiency – Comparing companies' environmental investments in different domains. *Journal of Industrial Ecology*

Scholz, R.W. & Tietje, O. (2002). Embedded Case Study Methods. Integrating quantitative and qualitative Knowledge. Thousand Oaks, London: Sage.

Scholz, R.W., Mieg, H.A. & Oswald, J.E. (2000). Transdisciplinarity in groundwater management: Towards mutual learning of science and society. *Water, Air, and Soil Pollution*, vol. 123, 477–487.

Scholz, R.W., Mieg, H.A., & Weber, O. (1997). Mastering the complexity of environmental problem solving with the case study approach. *Psychology Science*, vol. 39, pp. 169–186.

Stauffacher, M., Walter, A., Lang, D. & Wiek, A. (in press). Transdisciplinary Case Study Didactics *International Journal of Sustainability in Higher Education*

Wiek, A. & Binder, C.R. (in press). Solution spaces for decision-making – a sustainability assessment tool for city-regions. *Environmental Impact Assessment Review*

Wiek, A., Binder, C.R. & Scholz, R.W. (submitted). Functions of scenarios in transition processes. Submitted to: *Futures*.

Thompson Klein, J., Grossenbacher-Mansuy, W., Häberli, R., Bill, A., Scholz, R.W. & Welti, M. (Eds.). (2001). *Transdisciplinarity: Joint problem solving among science, technology, and society. An effective way for managing complexity*. Basel: Birkhäuser.

# Group Members

## Arnim Wiek

Arnim Wiek graduated as a Master of Philosophy at Free University Berlin (Germany) and as a Master of Environmental Sciences at Friedrich-Schiller University Jena (Germany).

He recently finished his PhD study on "Analytical, Projective and Evaluative Methods for Decision-making in Transition Processes" at the Natural and Social Science Interface (Prof. Roland Scholz) at the Swiss Federal Institute of Technology Zurich (ETH).

He is designated head of the Transdisciplinary Case Study Unit at this Institute, including the co-lead of the International Transdisciplinary Network on Case Study Research and Teaching.

He is working in transdisciplinary research and teaching projects. He worked as a scientific tutor in the Transdisciplinary Case Studies 2001, 2002, 2003, and as a coach in charge of preparing case study tutors for their teaching obligations in 2004. He is lecturer on transdisciplinary case study methods and co-leader of the current transdisciplinary case study on „Nanotechnology – Opportunities and Risks", which is carried out in cooperation with agents from industry, science, and government.

His work focuses on integrative concepts and methods for transition management of organizational and societal systems towards sustainable development. He specialized in scenario methodology and conducted several transdisciplinary scenario analysis projects with partners from industry, government, and administration.

### Publications


Binder, C.,Hofer, C., Wiek, A., Scholz, R. W. (2004). Transition towards improved regional wood flows by integrating material flux analysis and agent analysis: the case of Appenzell Ausserrhoden, Switzerland. *Ecological Economics*, vol. 49, pp. 1-17.

Scholz, R.W. & Wiek, A. (in press). Operational eco-efficiency – Comparing companies' environmental investments in different domains. *Journal of Industrial Ecology*

Wiek, A., Binder, C.R. & Scholz, R.W. (submitted). Functions of scenarios in transition processes. Submitted to: *Futures*.

Wiek, A. & Binder, C.R. (in press). Solution spaces for decision-making – a sustainability assessment tool for city-regions. *Environmental Impact Assessment Review*

Scholz, R.W. & Wiek, A. (eds.) (in prep). Transdisciplinary Case Study Research – Integrating methods for decision-making in transition processes. To be submitted to: Sage.


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# Daniel Lang

Daniel Lang studied Geo-Ecology in Bayreuth, Germany and Environmental Sciences at the Swiss Federal Institute of Technology Zurich (ETH). He graduated in Environmental Sciences in 2001.

He is currently finishing his PhD thesis at the Natural and Social Science Interface (Prof. Roland Scholz), ETH Zurich.

He worked as a scientific tutor in the ETH-NSSI Case Studies 2002 and 2003, and as a coach in charge of preparing case study tutors for their teaching obligations in 2004. In 2005 he holds a lecture in the department of environmental sciences on the basic regulation mechanisms of the anthroposphere.

His research focuses on analyzing, assessing and optimizing waste management systems in terms of sustainable development. More specifically, he develops a set of tools, which enables decision-makers to efficiently and effectively utilize limited resources for sustainably managing waste systems. The issues studied are: i) Analysis of physical fluxes, agent networks, regulatory mechanisms and their mutual interference; ii) Sustainability evaluation; iii) Optimization measures.

## Publications


Lang, D. J., Binder, C., Scholz, R. W., & Stäubli, B. (2002). Ideas for Assessing the Sustainability Potential of Human-Environmental Auxiliary Systems – The Case of Municipal Solid Waste Landfills. Paper presented at the IEMSs 2002, Lugano, Switzerland.

Lang, D. J., Binder, C. R., Scholz, R. W., Schleiss, K., & Stäubli, B. (submitted). Impact factors and regulatory mechanisms for material flow management: Integrating stakeholder and scientific perspectives - The case of bio-waste delivery. Submitted to: *Resources, Conservation and Recycling*.

Lang, D. J., Binder, C. R., Stauffacher, M., Ziegler, C., Schleiss, K., & Scholz, R. W. (submitted). Material and money flows as means for industry analysis of recycling schemes: A case study of regional bio-waste management. Submitted to: *Resources, Conservation and Recycling*.

Lang, D. J., Wiek, A., & Scholz, R. W. (in prep.). Selecting Parameters for system analysis applying the principles of functional adequacy and sufficiency. To be submitted to: *European Journal of Operational Research*.


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# Alexander Walter

Alexander Walter studied environmental sciences at the ETH in Zurich. He graduated in 2003 and started his PhD at the Natural and Social Sciences Interface (Prof. Roland Scholz) at the Swiss Federal Institute of Technology Zurich (ETH) shortly after.

He gained extensive international experience in projects in Japan, the US, Mexico, Sweden, the UK and Cuba. Currently he is preparing a project of the Swiss National Science foundation, which will investigate future development perspectives of the capital of Cuba, Havana. He held scientific seminars on transdisciplinary case study research and embedded case study methods in Tokyo and Havana. He worked as a scientific tutor in the case study 2003/04.

He is the project leader of the international transdisciplinary network on case studies on urban mobility, which incorporates case studies in Switzerland, Austria, Sweden, Mexico City (planned), Tokyo (planned) and Havana (proposal pending). His work is co-financed by a grant from the Volvo Research and Educational Foundation's Future Urban Transport Program.

His PhD focuses on the process side of transdisciplinary research, with the key steps of case faceting and strategy building as main areas of investigation. His first publications identifies generic success factors of multi-actor planning and implementation processes, based on international case studies. His last publication demonstrates the importance of an integrative project architecture in transdisciplinary research, based on a case study for the regional development of a Swiss canton.

## Publications

Hockerts, K. & Walter, I. A. (under review). Mobility: Bringing together quality and efficiency. In Scholz, R.W., Shiroyama, H. & Susskind, L. (eds.) Green technology breakthroughs. New York: Kluwer AGS Book Series.

Walter, I. A. & Wiek, A. (in prep). Strategy derivation for sustainable regional development through formative integration. To be submitted to: *Europen urban and regional studies*.

Walter I. A., Scholz R.W. (in prep.) Soft approaches to planning - Are there soft success factors? To be submitted to: *Transportation.*

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# Roland Scholz

Roland W. Scholz holds the Chair of Natural and Social Science Interface (NSSI) within the Institute for Human-Environment Systems (HES) at the Swiss Federal Institute of Technology Zurich (ETH). He is adjunct professor of Psychology at the University of Zurich. He was elected as the fifth holder of the King Carl XVI Gustaf's Professorship 2001/2002 hosted at Chalmers University of Technology and Gothenborg University (Sweden), and was visiting professor at MIT (Boston, USA), at Karl-Franzens-University of Graz (Austria), and at the University of Natural Resources and Applied Life Sciences of Vienna (Austria).

He specialized in Decision Sciences and Systems Analysis. His current research field is environmental decision making in human-environment interactions. Current topics are complex environmental system analysis and complex problem solving. He has developed a methodology for integrating qualitative and quantitative knowledge in complex real world case studies. The annual transdisciplinary ETH-NSSI case studies on sustainable urban, regional, and organizational development are a major activity of the NSSI group, and especially the TCSR Group.

# Publications


Scholz, R.W. & Wiek, A. (in press). Operational eco-efficiency – Comparing companies' environmental investments in different domains. *Journal of Industrial Ecology*

Posch, A. & Scholz, R.W. (eds.) (in press). Applying Transdisciplinary Case Studies as a Means of Organizing Sustainability Learning. *International Journal of Sustainability in Higher Education*

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Thompson Klein, J., Grossenbacher-Mansuy, W., Häberli, R., Bill, A., Scholz, R.W. & Welti, M. (Eds.). (2001). *Transdisciplinarity: Joint problem solving among science, technology, and society. An effective way for managing complexity*. Basel: Birkhäuser.

Scholz, R.W., Mieg, H.A. & Oswald, J.E. (2000). Transdisciplinarity in groundwater management: Towards mutual learning of science and society. *Water, Air, and Soil Pollution*, vol. 123, 477–487.

Scholz, R.W., Mieg, H.A., & Weber, O. (1997). Mastering the complexity of environmental problem solving with the case study approach. *Psychology Science*, vol. 39, pp. 169–186.


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