Mixing and Coupling Methods in Transdisciplinary Research and Research-Based Learning

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I2S Co-conference Leuphana University Lueneburg / Germany, September 8-9, 2013
Overview

• General characteristic of transdisciplinary research settings
• How to foster traceability in highly unpredictable research processes
• Re-thinking our concept of methods
• Definition of transdisciplinarity
• Dimensions of integration
• A model for a transdisciplinary research process
• A collection of integration methods
Transdisciplinary Research Space

'in vivo' → 'in vitro' research
(Nicolescu 2008)
Transdisciplinarity is a reflexive research approach that addresses societal problems by means of interdisciplinary collaboration as well as the collaboration between researchers and extra-scientific actors; its aim is to enable mutual learning processes between science and society; integration is the main cognitive challenge of the research process.

(Jahn/Bergmann/Keil 2012)
Definitions

Transdisciplinarity is an integrative process whereby scholars and practitioners representing different disciplines and epistemologies, work jointly to develop and use novel conceptual and methodological approaches, that synthesize and extend discipline-specific theories, methods, and translational strategies, to yield innovative solutions to particular scientific and societal problems.

(Stokols/Hall/Vogel 2013)
The aim: Tasks of Integration in Transdisciplinary Research

- **Cognitive-epistemic dimension**: distinction between and linkage of expert/disciplinary knowledge bases, as well of scientific and practical real-world knowledge;

- **Social and organizational dimension**: distinction between and correlation of the participating researchers'/experts' different interests and activities;

- **Communicative dimension**: distinction between and linking of different linguistic expressions and communicative practices, with the aim of developing something like a common discursive practice

(Bergmann et al. 2012: 45)
A model: The reflexive transdisciplinary research process

A. Constitution and problem

B. 'Project execution': Co-production of solution-oriented connectable knowledge

C. Transdisciplinary re-integration and bringing results to fruition

Societal Problem

'Set project constitution' and problem framing

Scientific Problems

Societal Discourse

Scientific Discourse

Results for Societal Praxis

Results for Scientific Praxis
A model: The reflexive transdisciplinary research process
A model: Project constitution and problem framing
A model: Project constitution and problem framing

Building a research team: identifying expertise needed and distinguishing between specific contributions

Common description of the societal problem

Actor analysis

Hypotheses building / Group model building
Examples for Decontextualised Methods

Integration through formulation of hypotheses

Fig. 11: Simplified individual-based brown trout model. The model brings together the causes mentioned in the hypotheses, with their mutual dependencies, and shows how they directly or indirectly affect fish stocks and fish catches. Source: Burkhardt-Holm (2008): 131 (adapted by the author; with kind permission from Springer Science+Business Media B.V.)
A model: Project constitution and problem framing

Building a research team: identifying expertise needed and distinguishing between specific contributions

Actor analysis

Composing sub-teams and designing their inter-/transdisciplinary cooperation

Hypotheses building / Group model building

Development of a common language, common concepts and notions

Common description of the societal problem

Formulation of a common transdisciplinary research object (epistemic object)

Common formulation of inter- or transdisciplinary research questions – aiming at connectivity

Formulation of problem-oriented (NOT disciplin-oriented) research questions
A model: Co-production of knowledge

- **Societal Problem**
- **Scientific Problems**

Co-production of solution-oriented connectable knowledge

Constitution and problem framing
A model: Co-production of knowledge

Constitution and problem framing

Project design and integration strategy

Subprojects

Integration interfaces

Co-production of solution-oriented connectable knowledge

Integration interfaces

Collaboration

Coordination

Connectibility and synthesis provided by iterative / recursive procedures, td tandems etc.

e.g. multi-criteria assessment, models, development of new interdisciplinary methods (e.g. Mobility Style Analysis)
A model: The reflexive transdisciplinary research process

Societal Problem

Scientific Problems

Societal Discourse

Scientific Discourse

Results for Societal Praxis

Results for Scientific Praxis

Co-production of solution-oriented connectable knowledge

Re-integration through key questions aiming at strategies (society), concepts and methods (science)

Transdisciplinary Re-integration

Joint publication: formulating rules for common writing

Constitution and problem framing
Integration methods decontextualised – the methods and their analytical function in an epistemic order

Integration through:

a. Conceptual Clarification and Theoretical Framing
b. Research Questions and Hypotheses
c. Using and Developing of Integrative Scholarly Methods
d. Integrative Assessment Methods
e. Development and Application of Models
f. Artefacts, Products and Concepts as *Boundary Objects*
g. Procedures and Instruments of Research Organisation
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METHODS FOR TRANSDISCIPLINARY RESEARCH

A Primer for Practice
References


