

Transdisciplinarity in sustainability studies: Theoretical debates – methodological challenges and empirically gained experiences

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The contribution contains three parts:

1. Theoretical debates about transdisciplinarity in sustainability studies;
2. Tasks and methods of the transdisciplinary research process: in general and by means of the example of the project 'Sustainable Behaviour at Work and in Private Life';
3. Experiences gained, lessons learnt.

The first part starts with a short description of theoretical debates about transdisciplinarity since the seventies of last century when the notion was mentioned first. It explains that the current understanding of transdisciplinarity as a problem-oriented research type which is related to different scientific disciplines was developed already in the eighties by the philosopher Jürgen Mittelstrass. Within the frame of the upcoming sustainability studies in the nineties, this type of doing science emerged in different fields of research. In the German speaking countries transdisciplinary research in sustainability studies was promoted by governmental programs as 'KulturLandschaften' and 'proVISION in Austria and the program on 'Soziale Ökologie' (2000- 2010) in Germany.

Where do we stay? Current state of debate provides an elaborated body of theoretical ground lying of transdisciplinarity. With a working definition it might be described in the following way: *Transdisciplinarity is reflexive, integrative, method-driven research process aiming at the solution or transformation of societal problems and the arising scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge.*

Due to the complex and hybrid structure of the problems addressed with this research type of research, a central methodological challenge consists in developing appropriate methods of integration. Integration is demanded on different levels: (1) *Cognitive (epistemic or knowledge) integration* which links between scientific disciplines and everyday knowledge; (2) *Social and organisational integration* which links between the claims, activities, wishes and expectations of different individuals, groups and institutions, government programs, (3) *Communicative integration* which links between communicative practices of participating scientific and societal actors, and - if infrastructural and socio-technical elaborations are part of the project - (4) *Technical integration* which links between various material and technical elements of proposed solutions.

Most important for the current understanding is the insight that transdisciplinary research is a method-driven structured research process. Against this background a general model of the transdisciplinary research process will be presented in the *second part of the distribution*. It distinguishes three modes of access to a societal problem (a) a mode of access oriented towards everyday life, (b) a mode of access oriented towards science and (c) an integrative mode of access. Mode (a) focuses on societally defined problems which are being pushed to the fore by known societal actors and which are in need of practical solutions. These kinds of problems involve the knowledge and interests of societal actors (stakeholders). This research contributes to practical solutions to these problems; first, by translating the problem into a set of research questions and working on them in a multidisciplinary manner; and then by elaborating and evaluating possible solutions in interaction with stakeholders.

Mode (b), the scientific mode of access, is following an epistemological centred approach. The starting point is a complex problem internal to science, which involves the theories, concepts and general conceptions emerging from different disciplines trying to understand these problems. The results are scientific outcomes which might consist of new methods, models, concepts, general conceptions and, above all, new questions for research.

When dealing with hybrid and complex problems, both modes of access (c) are needed: societal and scientific approach. Thus, integration of both modes is central to this type of research.

In research processes with such an *integrative mode of access*, three phases of transdisciplinary integration can be distinguished: Phase A: Constituting a common research object, Phase B: Elaboration of new knowledge and integration, Phase C: Elaboration and valuation of two-dimensional results and implementation. Following this model, first the tasks and integration methods in general and then those used in the project 'Sustainable Behaviour' will be presented step by step.

With respect to *Phase A* specific focus will be given to the task '*Translation of a societal problem into a scientific problem description*', which is indispensable for every transdisciplinary project. Furthermore, different ways of theoretical framing are presented and on behalf of the project 'Sustainable Behaviour' it will be shown how *concept integration* was reached through selecting complementary disciplinary cores which allowed 'symmetric integration'. This conceptual integration was the basis for developing two general research questions which were taken up by all different disciplines of the project.

In *Phase B* a translation of the theoretical frame into an empirical research design takes place. With respect to this phase the method of '*Integration of terms and definitions*' will be

highlighted and exemplified on behalf of the project 'Sustainable Behaviour'. It became obvious when analysing the leading terms of the project that in sustainability studies and in workplace health promotion research the understanding of the notion 'sustainable' differs widely. To link together both meanings was decisive at the end also for the 'Two-dimensional results' in Phase C. The bridging of environmental aspects and health aspects of sustainable behaviour at work and in private life was reflected in the recommendations for companies. The toolkit elaborated for companies in the project recommends to introducing health aspects and at the same time environmental aspects into companies' provisions (as nutrition offerings and mobility funding and exercise activities). With respect to sustainability studies it shows clearly that health research and sustainability research need new concepts of linking both together on a conceptual level. The focus on behaviour and more specifically on routine-building as regards the spill-over from work to private life is a valid basis for this. Concerning *Phase C, Elaboration of two-dimensional results and implementation*, the method of 'interdisciplinary and transdisciplinary validation' is important to define priorities of solutions and recommendations. In the research process of the project 'Sustainable Behaviour' experts from different practice fields on one hand and from science of the other gave feedback on the drafted material for the toolkit. They evaluated the elaborated results of the project as highly interesting for both: the societal actors and also for different disciplines of science.

Considering these explanations the last part of the contribution will summarize some lessons learnt in this project, which are among others:

- Transdisciplinary research is a structured research process.
- Translation of a 'real world-problem' into scientific research questions is essential for defining the theoretical and empirical design.
- Clear responsibilities of the partners for tasks and sub-modules are important.
- The order of working steps according to project phases A – B – C should be defined at the beginning and then taken as the compass of the work in progress.
- Management methods as steering through defined goals for every working step are very helpful for this.
- Integration methods are indispensable in transdisciplinary research.

"If in future a transdisciplinary think collective (Denkkollektiv) is to develop, integration methods will constitute the core of the body of knowledge." (Christian Pohl and Gertrude Hirsch Hadorn, in Bergmann & Schramm 2008, 87)

References

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