

How to Organize Transdisciplinary Innovation Projects: A Case Study

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Abstract

Many of the grand challenges we face are wicked problems, the addressing of which require *transdisciplinary* approaches. On the one hand, transdisciplinary approaches to innovation—beyond multidisciplinary or interdisciplinary approaches—are *direly needed* to address societal challenges. On the other hand, the people involved can tend to *underestimate the difficulties* of transdisciplinary work. As if putting different people in a project will do the trick and no additional measures are needed. The authors work in a multi-year, transdisciplinary innovation project (*Wise Policy Making*, 2019-2022). This offers the authors opportunities to study *transdisciplinary* innovation from within and over an extended period. We are following a ‘single case study’ research design and in this research-in-progress paper we share our first findings and lessons learnt, grouped under themes like: Goal orientation; Openness; Differences; and Context—key themes in transdisciplinary innovation.

Problem

We are facing enormous challenges in ‘our common future’ (the conference’s theme): the climate crisis, the energy transition, political and cultural polarization, economic inequality, and many more. These are all ‘wicked problems’, the addressing of which requires *transdisciplinary* approaches (Brown et al., 2010; Bernstein, 2015; McPhee et al., 2018). We need to combine and integrate disciplines in ways that go beyond multidisciplinary or interdisciplinary approaches. We need to ‘deeply integrate and also transcend disciplinary approaches to generate fundamentally new conceptual frameworks, theories, models, and applications’ (Cooke and Hilton 2015: 5-6) and organize ‘active collaboration with public and private sector organizations, governments, and communities’, typically with an explicit social purpose (McPhee et al., 2018).

The problem that we focus on is that the people involved can tend to underestimate the difficulties of ‘combining disciplines’, e.g., the need to convince stakeholders to work with iterations (rather than work with a linear approach), to be *open* towards other people’s backgrounds (rather than staying within one’s own disciplinary ‘box’), to make *differences* between disciplines *productive* (rather than perceive these as problems), and to deal with (difficult) group dynamics in a *functional* manner, i.e. a manner that helps to achieve the project’s overall goal.

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Current understanding

The body of knowledge on transdisciplinary *research* is rather young and small (Brandt et al., 2013; Bernstein, 2015; Wickson et al., 2006; Hirsch Hadorn et al., 2008; Bergmann et al., 2012; Nicolescu & Ertas, 2013). Even less is known about transdisciplinary *innovation*. We can turn to *responsible innovation* (Owen et al., 2013), which has a similar orientation on societal needs. Little, however, is known on practically *organizing transdisciplinary innovation projects*. This is our paper’s focus.

According to Hirsch Hadorn et al (2008: 23), *Systems Theory* is of key importance to transdisciplinary research as an underlying theory. Because of our focus on *organizing* transdisciplinary innovation projects, we turned to *Systems Theory* as it was developed in the context of organizational learning, e.g., by Senge (1990) and Argyris (1999). More specifically, we turned to a theory of human systems (Agazarian, 2005), which enables us to look at a *transdisciplinary project team* as unit of analysis, and

to study such a team's need to simultaneously work on: its *primary task* and work towards a goal; on managing relationships with entities in its external *context*; and on managing its internal team *dynamics*—all of which happens in a dynamic equilibrium of enabling and restraining forces.

Research question

Our goal is to clarify what needs to be done *practically*, to manage transdisciplinary innovation projects successfully, i.e. effectively and efficiently, using *Systems Theory* as a theoretical background. Drawing from Wickson (2015), who discussed several qualities (*problem focus*; *evolving methodology*; *collaboration*) and quandaries (*integration*; *reflection*; *paradox*) of transdisciplinary research, we identified the following themes to focus our study on (these are *tentative* and likely to be modified during the research process):

Goal orientation: a focus on goals allows a system to focus its energy and efforts. Transdisciplinary innovation typically requires a focus on *unclear* and *unresolved* questions, which can all too easily lead to survival-oriented behaviour, rather than to functional behaviour, growth and transformation.

Openness: *openness* plays on the level of both the team as a whole and the individuals involved, e.g., in terms of *open mind*, *open heart* and *open will* (Scharmer, 2018) and in terms of *curiosity*, *creativity* and *collaboration* (Steen, 2013), e.g. in situations of uncertainty ('on the edge of the unknown').

Differences: we are interested in the ways in which the people involved are able (or unable) to recognize, appreciate and integrate differences of others, e.g., other people's expertise, world views, assumptions, methods and approaches—and in making these differences productive.

Context: a transdisciplinary project team will typically have to combine a goal orientation, dealing with (internal) openness and differences—and, possibly most importantly, to influence its (external) *context* in such a manner that it becomes an enabling force, rather than a restraining force.

Research design

We are interested in the *practice* of managing transdisciplinary innovation projects. Moreover, we want to explore the interplay between practice and theory, as advocated by, e.g., pragmatist John Dewey and social psychologist Kurt Lewin. We will make our findings relevant for practice.

The management and organization of transdisciplinary innovation project is a relatively new and under-studied topic in innovation management, which justifies our *exploratory* approach.

The authors work in a multi-year, transdisciplinary innovation project (*Wise Policy Making*, 2019-2022). This offers the authors an opportunity to study transdisciplinary innovation from within and during several years. We chose to study this project team with a 'single case study' research design; this 'single case' can function as a 'revelatory case' because we have 'an opportunity to observe and interpret a phenomenon previously inaccessible to scientific investigation' (Yin, 1994: 38-40). The authors' active involvement in the project (Josephine Sassen-Van Meer is project manager; Mark Bouman trains and coaches the project team member in collaboration and learning; the other authors coordinate parts of the project) makes our research a form of (*participatory*) *action research* (Guertler et al., 2019; McPhee et al., 2019), which requires *reflexivity* (Hibbert et al., 2010).

More specifically, we plan to involve all twelve project team members in this research, by organizing journaling exercises, e.g., to identify and discuss events that were meaningful to them (similar to *critical incident analysis*) and by organizing collaborative learning sessions, e.g., about enabling and restraining forces (Zafeirakopoulos & Van der Bijl-Brouwer, 2018). The authors plan to analyse the materials from these exercises and learning sessions (of course, with consent of the participants). We expect that this will deliver robust insights, based both on actual practices and on theory.

The goal of this paper is to make a first step in this research: to study the first 12 months of the *Wise Policy Making* project, and to clarify the role of themes like goal orientation, openness, differences and context (see above) in the practice of organizing of transdisciplinary innovation projects.

Findings

Since our paper is about research in progress; in April 2020 we will have first and tentative results.

Our plan is to study this project throughout its duration (2019-2021) and to write a series of papers and articles about it. The current paper is meant to present first findings, based on investigations between January and April: to collect, analyse and discuss 'lessons learnt' from the first 12 months of the project (January-December 2019). We already documented the interventions we used to promote transdisciplinary work in a 25 page manual; this forms a backdrop for our current study.

Contribution

We plan to deliver insights about the managing of transdisciplinary innovation projects. Regarding theory, we aim to clarify how one can manage transdisciplinary innovation projects successfully, e.g., in terms of conditions for success, enabling forces for the project team, managing expectations and relationships in its context, and facilitating openness and integration of differences within the project team. We plan to discuss our findings vis-à-vis themes like: goal orientation, openness, differences, and context (see above), and in relation to current debates about transdisciplinary innovation (e.g., McPhee et al., 2018) and action research (e.g., McPhee et al., 2019).

Practical implications

We expect that our results can help to make people in innovation management aware both of the *potential added value* of transdisciplinary innovation projects, and of the *practical difficulties* they may encounter. We plan to deliver practical recommendations for organizing and managing transdisciplinary innovation projects, e.g., in the form of success factors, related to the themes we plan to study (goal orientation, openness, differences, and context). Moreover, we expect that these insights and recommendations can empower people in innovation management to organize transdisciplinary innovation projects and help to solve the societal challenges that we are facing.

Feedback

We currently plan to work with themes like *goal orientation*, *openness*, *differences* and *context* in our research, and we are curious to hear suggestions for other or additional themes.

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Presenter profile(s)

Marc Steen, Josephine Sassen-Van Meer, Kees van Dongen and Tanja Vonk work at Dutch research and innovation organization TNO. The authors collaborate in a multi-year transdisciplinary innovation project that aims to promote wisdom in policy making, in order to address 'wicked problems'. The project team consists of twelve people, with very different disciplinary backgrounds, e.g., psychology, data science, industrial design engineering and political science. Mark Bouman has a background in management of change and innovation. His business The Art of Learning is specialised in organisational and team learning. He facilitates the research group in this project to with frameworks, key concepts and practices for collaboration and to productively combine their different disciplines.