

INNOVATION URGENTLY NEEDED: PRINCIPLES FOR MANAGING INTER- AND TRANSDISCIPLINARY APPLIED MANAGEMENT RESEARCH PROJECTS

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ABSTRACT

In this research note, we argue that due to the necessities of involving a multiplicity of stakeholders, issues of inter- and transdisciplinarity, and the constant need for learning, applied management research projects face challenges that cannot be solved (only) with conventional linear project management approaches. Suitable approaches that are available in other research fields have not made it into management research yet. Thereafter, we present a literature review on inter- and transdisciplinarity research project management. With these findings we aim to contribute to the transfer and translation of inter- and transdisciplinary principles to AMRPs. We finally deduce the four core principles of transdisciplinary project management from literature. These principles offer a change of focus from project management to process management and open up to an integrative form of solving challenges of innovation and research in diverse groups.

Keywords: *Applied management research, project management, transdisciplinarity, interdisciplinarity.*

1. INTRODUCTION

Applied research projects are drivers of innovation in Western society (Mazzucato 2015). Applied research uses “scientific methodology to develop information to help solve an immediate, yet usually persistent, societal problem. The applied research environment is often complex, chaotic, and highly political, with pressures for quick and conclusive answers, yet little or no experimental control.” (Bickman and Rog 2009, p. X) Applied research differs from basic research through its focus on knowledge use instead of knowledge production, broad instead of narrow questions, practical instead of statistical significance and theoretical “opportunism” instead of “purity” (ibid, X-XI). In the same line, applied management research projects (AMRPs) scholars support companies in developing new solutions to practical challenges in a reflective manner. However, managing those projects is not easy. As inter- and transdisciplinary endeavours they must be understood as highly complex systems with a) flexible goals, b) often experiencing changes in the framing as well as c) containing complicated social dynamics.

2. CROSS-OVER BETWEEN FIELDS

Although literature states a general need to improve the quality of project management for innovative inter- and transdisciplinary teams in the context of applied management research (Flyvbjerg 2006, Hagen 2009), scholars only recently started discussing agile methods outside the ICT environments, and possible options such as design thinking are

seldom used in applied research projects. On the other hand, we see well developed handbooks and guidelines for inter- and transdisciplinary approaches from other disciplines, particularly from environmental science, which could be used. We assume that this situation arises from a path dependency in management research, but also from a problem of translation between management and environmental research.

Other than in “only” interdisciplinary projects where people from different disciplines but the same societal system (for example science) work together, transdisciplinary research projects bring together people coming from different societal systems such as science and economy (Scholz et al., 2002). This is the case in AMRPs where researcher work with companies, NPOs, policy makers and societal groups. AMRPs are transcending the borders between scientific disciplines as well as between practice and research (Bergmann et al. 2010, p. 38).

3. TOWARDS A TRANSDISCIPLINARY APPROACH TO AMRPs

It has become common to apply conventional project management approaches in AMRPs (Dietrich and Heilemann 2011). These approaches imply a concept of rationality which understands work and manpower as definable sizes and favours a command and control approach in management including upfront linear project planning in milestones (waterfall model), sets of steps (sequential model) or phases (linear model) (Dalcher, Benediktsson and Thorbergsson 2005; Fernandez and Fernandez 2009). However, since the late 1990s voices point to the need for more appropriate project management approaches for innovative projects that allow taking into account their contingency and complexity (for example Lindkvist, Söderlund, and Tell 1998; Williams 1999; Engwall 2003). In addition, the 1990s debate on the nature of management research demanded from applied research projects insights, outcomes and results that would be relevant to practitioners (for a summary, see Tranfield 2002).

These requirements demand for alternative project management approaches that enable project managers to handle:

- The uncertainty and complexity of the process.
- The multiplicity of stakeholders with different perspectives, expectations and needs that have to be involved.
- Issues of inter- and transdisciplinarity in the project team and beyond (Baumann et al., 2005).

Interestingly, there is a growing body of research particularly from environmental science (for a summary, see Lang et al. 2012), but also from other disciplines such as regional studies (for example Rudzite 2006, Humphrey and Shaw 2004), artistic research (Fischer-Lichte and Wulf 2001, Harboe 2010) or information technology research (for example Fernandez and Fernandez 2009) that develops alternative project management approaches. Such approaches would allow management research “*as a practically oriented social science*” to support managers through “*providing a basis for justifying their decision-making and actions*” (Tranfield 2002; p. 378). They are mostly transdisciplinary, i.e. problem – oriented and inspired by concepts of research labelled as “mode 2” (Gibbons et al. 1994), “post-normal” (Funtowicz and Ravetz 1993) or “triple helix” (Etzkowitz and Leydesdorff 2000).

For example, transdisciplinarity research in environmental science so far developed from close attention to the interaction between the mode of research, its contents and its impact. During the past 20 years, a broad consensus and understanding of Mode 2 research as a change of paradigm evolved. Mode 2 research aimed at enabling researchers to deal with themes of larger complexity, uncertainty and the involvement of diverse stakeholders

(Hirsch Hadorn, Pohl and Bammer 2010) and to manage the integration of diverse research practices as a cognitive task (Hollaender et al. 2008). Such approaches offer a lateral view and structure of projects based on guidelines and principles and a progression in which phases can be identified. These qualities reflect and support the cultural change taking place in the workplace in general defined as Enterprise 2.0. (Petry 2012).

Management research so far largely ignored project management approaches from other disciplines (Baumann et al. 2005, p. 6). Only recently, the claims for alternative project management approaches for management research seem to increase again (Kapsali 2011, Paletz 2012). We assume here that the reason might be that transdisciplinary project management approaches particularly from environmental science or artistic research are not immediately compatible with the logics and frames of applied management research. Sustainability science takes its point of departure from solving “life-world” questions (Hirsch Hadorn, Pohl and Bammer 2010), something that might not sound familiar to management researchers and their partners from business. Translating the transdisciplinary project management method to AMRPs seems to hold a particular challenge and at the next level, also to R&D or innovation projects in private organizations.

4. LITERATURE REVIEW: FOUR PRINCIPLES FOR ARMPS

In order to outline the state of the art of research, we conducted a literature review. Method wise we followed the process suggested by Pittaway et al. (2004) and searched in the ISI Web of Science for papers with combinations of the key words “interdisciplinary”, “interdisciplinarity”, “transdisciplinary”, “transdisciplinarity”, “research project”, “project management”, “research” and “management”. We are aware that we could have integrated other words into the literature query such as “project coordination”, “team management”, or “multidisciplinarity”, just to name a few. We however decided to focus the literature review strongly on our core research question in order to create a valid base for analysis of extant work.

A total of 557 papers resulted from the literature query. From these, we excluded papers that appeared minimum twice. We ended up with 343 papers that matched our query. To this sample, we added the 10 chapters of the Handbook of Transdisciplinary Research (Hirsch Hadorn et al., 2008), so that we had a total amount of 353 papers. The papers come from environmental sciences (115), information technology and engineering (101), pharmaceutical and health care systems research (53), research and education systems studies (48), management research (23), civil engineering research (4), aviation and space (4), physics (3), law (1), and arts (1).

278 articles in our sample *don't* discuss inter- or transdisciplinary research project *management issues*. 74 papers (interdisciplinary: 57; transdisciplinary: 17) mention that inter- or transdisciplinary projects require a special project management approach and/or offer solutions to the challenges of such projects. 23 of them (interdisciplinary: 21; transdisciplinary: 2) do not go further than this claim. 21 papers (interdisciplinary: 17; transdisciplinary: 4) discuss project management issues at a rather abstract level.

We used a qualitative open coding content analysis as suggested by Miles and Huberman (1994) where we coded the project management approaches reported in the empirical parts of the remaining 30 papers. We identified four principles that seem to enable and foster integrative transdisciplinary research. These principles all directly hinge with individual responsibility, imagination and initiative:

1. **Dialogue** acts as a development and communication tool - from meetings to a conscious exchange and development process.

2. **Materiality** creates objects and images by concrete modeling and visualizing (including prototypes) that allow the team targeted negotiation processes.
3. **Iterativity** provides a dynamic process flow and flexible planning.
4. **Reflexivity** support a continuous placing and reflection of the team in relation to the project objectives and results.

5. LIMITATIONS AND FUTURE RESEARCH

Several limitations apply to a study like the one we conducted. As nicely summarized by Pittaway et al. (2004; 140), these concern:

- Definitional issues as the terms “interdisciplinary” and “transdisciplinary” are quite ambitious.
- Challenge to synthesise data from a range of different disciplines and their publishing preferences.
- Potential biases that might have emerged from the disciplinary perspective of the researchers when coding the papers.

Moreover, the study looked for empirical findings and not into conceptual or theoretical studies. More research is needed to theoretically and conceptually root the findings presented here.

Currently, the identified principles form a basis for an applied research project aimed at developing - in collaboration with the partners from industry and project management specialists - a project management toolbox for managing inter- and transdisciplinary projects.

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