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# Transdisciplinary environmental research: Building trust across professional cultures

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## ARTICLE INFO

### Keywords:

Collaboration  
Trust  
Professions  
Land-use  
Sustainability  
Qualitative  
Interdisciplinarity  
Transdisciplinarity  
Boundary

## ABSTRACT

With the challenges of researching complex topics such as those related to environmental sustainability and land use, there is a growing interest in transdisciplinary research promoting collaboration between research and industry, between different disciplines in research, and between different types of research organisations. However there is a need to know more about how collaboration is operating and approaches to building trust in these relations. This paper uses the detailed analysis of 10 case studies of research collaborations related to sustainability and environmental land-use to examine the different professional cultures among research collaborators, the incentives they have to cooperate, and the processes of building trust. The paper shows that trust is vital when crossing professional cultural boundaries as people are opening themselves to vulnerability and risk. The results show how trust is built between university researchers, environmental NGOs, private businesses and commercial advisory companies. Trust is shown to be built by having information on others, prior experience of working together, norms of cooperation, and sanctions exerted on those who might transgress norms of behaviour. Having incentives is a necessary but not adequate basis for having trust. These relationships are built up through existing relationships, building trust through progression of projects and the use of intermediaries or guarantors.

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## 1. Introduction

There are increasing calls for research that addresses complex environmental concerns to take interdisciplinary and transdisciplinary approaches, drawing upon research teams composed from different disciplines and professions (Scott et al., 1999; Thompson-Klein, 2004; DEFRA, 2011; Podestá et al., 2013). In a context of multiple competing objectives and uncertainty mono-disciplinary science alone is inadequate (Hochtl et al., 2006). There is a growing demand from the funders and users of more applied research for approaches that cross disciplinary and professional cultural boundaries in order to develop

knowledge that can increase productivity, promote environmental benefits and ensure public sector funded research is more relevant to the needs of business (Lambert, 2003).

This paper explores the incentives to cooperate in research through a detailed analysis of ten case studies of projects researching agricultural sustainability and land use. Taking the collaborative project as the unit of analysis, the process of building cooperation for environmental research is explored with a focus on the development of trust between research actors. While there is considerable public investment in collaborative research projects across the world, the challenge remains to know more about the process of building, and more importantly sustaining, collaboration (Demeritt, 2005; Mauz

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et al., 2012). Reflection on individual collaborative research projects once they come to completion provides valuable information (Bracken and Oughton, 2006; Jones and Macdonald, 2007; Podestá et al., 2013; Pohl, 2008; Romero-Lankao et al., 2013). However, this paper is able to examine the factors shaping the process of collaboration in research in more depth through comparative analysis of case studies. The different types of participants in collaborative research can result in very different incentives and challenges. The first research question is therefore: What are the different incentives and disincentives to collaborate? This research also shows that incentives on their own are not enough, and there is a need to understand the processes and relationships underpinning collaboration. This leads to the second research question: How is trust produced in collaborative research?

This paper contributes to debates on how to support collaborative interdisciplinary and transdisciplinary environmental science. The findings show how collaborative research projects need to understand issues of trust and power as people open themselves to greater risk and vulnerability while working outside their own organisation, outside their professions and when dealing with less tangible products such as 'knowledge creation' (Melin, 2000). Trust is shown to be based on information on other partners as well as sanctions. Underpinning these are profession-specific norms. This paper therefore contributes to knowledge by addressing the lack of understanding concerning how relationships that cross disciplinary and professional cultural boundaries are built.

## 2. Professional cultures and cross boundary relationships: towards a conceptual framework

### 2.1. Crossing cultures and transdisciplinary collaboration

In this paper we define research collaboration as the process of working together towards a common goal producing new knowledge (Katz and Martin, 1997). Collaborative research teams come together "to share expertise, credibility, material and technical resources, symbolic and social capital" in order to pursue common research goals (Hackett, 2005). Such teams are composed of people from differing professions and perspectives, including academics, practitioners and campaign groups. Collaborative research can go beyond crossing disciplinary boundaries (what is referred to as interdisciplinary research) to also include the crossing of professional cultural boundaries between practice and research. This can be termed 'transdisciplinary' or participatory research (Lawrence and Depres, 2004) that includes practitioners from a range of professions such as business, public service or the NGO sector becoming participants in research and co-creators of knowledge (DEFRA, 2011).

The bridging of such boundaries is a particular issue in the environmental arena where the subject matter crosses boundaries of disciplines and professions (Scott et al., 1999; Thompson-Klein, 2004) and touches "political and managerial priorities" (Bocking, 2010). There are calls for approaches that are "scientifically robust" but also "socially relevant" (Romero-Lankao et al., 2013) and embedded within the perspectives of policy and local actors (Cortner, 2000).

This has resulted in a growing emphasis on encouraging sustainable collaborative innovation and building relationships between academic and non-academic sectors, either through links between research and businesses, or research and practitioners in the field (Katz and Martin, 1997; Bammer, 2008; Lowe and Phillipson, 2009; Podestá et al., 2013). Internationally, there has been a drive to promote interdisciplinary research<sup>1</sup> from research funders (Bocking, 2010) who in turn are under pressure from national governments to demonstrate research impact. Environmental NGOs are engaging in research through employing researchers in house, or commissioning/co-funding research projects.

Interdisciplinary and transdisciplinary research brings new challenges of its own. Communication between participants, differing terminologies, methods and conceptual approaches are all challenges faced as participants learn to cooperate across disciplinary and institutional divides (Broto et al., 2009; Bracken and Oughton, 2006; Harris et al., 2009; Hackett, 2005; Mauz et al., 2012). Many interdisciplinary and transdisciplinary research projects pause to reflect on the process of research collaboration and some argue "co-reflection" among team members should be an integral part of such projects (Podestá et al., 2013; Roux et al., 2010). Such research has highlighted the importance of learning to collaborate and Broto et al. (2009) refer to interdisciplinarity as a social practice.

In this paper, we refer to the different incentives to collaborate coming from different professional cultures. We define cultures as distinct groupings with collective programming of the mind distinguishing the members of one group or category of people from another (Hofstede, 1997). We focus on the role of professional cultures but recognise that cultures are also articulated in terms of ethnicity, organisation, and even academic disciplines, or a combination of these cultural spheres (Dietz et al., 2010).

Cultures of professions or organisations can be distinguished based on organisational forms, expectations, reward systems and organisational objectives, and less consciously applied values and social norms (Schein, 2010; Davidson et al., 2001). Each culture can also be conceptualised as a 'thought collective' each with different 'thought styles' (Pohl et al., 2010). Cultural differences can be found between the researcher and practitioner community, or between science and other academic disciplines (Snow, 1964; Evely et al., 2008). Such boundaries are also evident in transdisciplinary research on sustainability, with Pohl et al. (2010: 269) exploring how research can "succeed in enabling a constructive dialogue between apparently incompatible worlds". The types of professional cultures involved in transdisciplinary research vary depending on the participants. Enengel et al. (2012) make a distinction between scientists, professional practice experts and actors involved in managing landscapes while Pohl et al. (2010) identify different values and interests of researchers compared to non-academic actors such as farmers.

<sup>1</sup> Examples include EU Framework 7 projects, Australian Research Council's Research networks, US National Science Foundation funded Engineering Research Centres, UK Rural Economy and Land Use programme, UK National Ecosystem Assessment and LINK.

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