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Scientists' situated knowledge: Strong objectivity in transdisciplinarity

Judith Rosendahl^{a,*}, Matheus A. Zanella^a, Stephan Rist^b, Jes Weigelt^a

^a Institute for Advanced Sustainability Studies (IASS), Germany

^b Centre for Development and Environment (CDE), University of Bern, Switzerland

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ABSTRACT

Although transdisciplinary research has started addressing important epistemological challenges, as evidenced by the discussion about 'mode 2' knowledge production, its relation with postulations of 'scientific objectivity' is not yet well clarified. A common way of dealing with the epistemological challenge of situated knowledge production, as proposed by transdisciplinarity, is to point to the fundamental aspect of reflexivity. But reflexivity also includes being aware that power and control over the object is derived from the social position of researchers, an issue not often explicitly discussed in transdisciplinary research. Reflexivity thus represents an important but insufficient principle for guaranteeing appropriate levels of self-reflection within a process of knowledge coproduction. We therefore hypothesize that transdisciplinary research could greatly benefit from feminist scientific tradition, in particular the insights of standpoint theory and the concept of 'strong objectivity'. We analyse, and reflect upon, how a recent transdisciplinary research initiative – conducted together with civil society organizations in (CSOs) in six countries: Bangladesh, Bolivia, Brazil, Burkina Faso, Ecuador and India – has benefited from the use of 'strong objectivity'. We analyse how the social position of all stakeholders, including ourselves as the scientific actors in this initiative, influence the process and conditions of transdisciplinary knowledge co-production, and we discuss how power and control by scientists affects the process and conditions of interaction. Thereby we argue for the necessity of explicitly assuming sides in contested contexts for reaching objectivity in transdisciplinary research.

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1. Introduction

After more than 20 years of conceptual and practical development, transdisciplinary research has started addressing important epistemological challenges, taking advantage of action research (Stokols, 2006) and new science paradigms, such as post-normal science (Funtowicz & Ravetz, 1993; Gibbons et al., 1994). We understand transdisciplinarity as part of a process of knowledge co-production between scientific and non-scientific actors, involving the co-production of systems, target, and transformation knowledge (Hadorn et al., 2008; Hirsch Hadorn, Bradley, Pohl, Rist, & Wiesmann, 2006). At the beginning, the process of knowledge co-production concerns the identification of jointly defined societal problems, often

* Corresponding author. Present address: Institute for Advanced Sustainability Studies (IASS), Berliner Str. 130, D-14467 Potsdam, Germany. Tel.: +49 31128822383.

E-mail address: judith.rosendahl@iass-potsdam.de (J. Rosendahl).

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related to specific issues of sustainable development (Schneider & Rist, 2013). The societal problem agreed upon serves as a common denominator for co-producing *system knowledge*, i.e., how the system works that produces the *problematique* under scrutiny. System knowledge is generally based on the integration of, and dialogue between, various scientific and non-scientific perspectives on the issue at hand. The integration of different perspectives – that might even include different epistemic foundations of knowledge (Aeberhard & Rist, 2009) – is a fundamental feature of transdisciplinary research. Typologies of different forms on integrating multiple perspectives are also used for distinguishing different types of transdisciplinary research (Mobjörk, 2010). The values underpinning the framing of ‘what the problem is’ are generally made explicit and serve as *target knowledge* that expresses a set of shared normative principles that define the values to which a solution of the problems should be attached. Finally, systems and target knowledge feed into *transformation knowledge*, which shows what type of collective action can be used for changing the system in view of the principles expressed in the form of target knowledge.

One way of approaching the epistemic dimension of transdisciplinarity is understanding it as ‘mode 2’ knowledge production. In opposition to classical, rather positivist forms of knowledge production (called ‘mode 1’), transdisciplinary ‘mode 2’ knowledge production aims at producing ‘socially robust’ rather than classical ‘scientifically objective’ knowledge (Nowotny, 2000a). ‘Mode 2’ is open towards the following five aspects: multiple interactions between a larger number of experts and sites of expertise (i), different forms of knowledge and actors representing them (ii), science leaving the academic field and ‘meeting the public’ (iii), allowing it to speak back to science, peoples’ interests, concerns and perspectives entering into science (iv) and, in some cases, providing essential data for every aspect of the research process (v) (Michael, 2000). Socially robust knowledge is often assessed by appreciating how the process of knowledge-coproduction within the specific social and political milieus in which it happens achieved to be salient, credible and legitimate (Cash, Borck, & Patt, 2006); the epistemic quality of research is measured not towards an abstract ideal of scientific objectivity, but in function of the socio-political quality as perceived by the various actors involved in transdisciplinary knowledge coproduction.

Although ‘mode 2’ knowledge production represents important progress with regard to the formulation of basic epistemological principles, their conceptual and methodological operationalization into concrete activities of transdisciplinary knowledge coproduction is not yet well clarified. A critical epistemological aspect of ‘mode 2’ knowledge coproduction concerns its relation with postulations of ‘scientific objectivity’, i.e., understanding how to deal with the implied influence of the observer on the research object and how to deal with the values and social positions represented by the researcher and other non-scientific stakeholders (Harding, 1993; Voss, Bauknecht, & Kemp, 2006).

A quite common way for dealing with the epistemological challenge of situated knowledge production, as proposed by transdisciplinarity, is to point to the fundamental aspect of reflexivity as an intrinsic component for the conceptual and epistemological (Holland, 1999; Truffer, 2007), as well as for the practical levels of transdisciplinarity (Truffer, 2007). In the definition of transdisciplinarity offered by Lang et al. (2012) reflexivity plays a primordial role in integrating the method-driven scientific process of knowledge coproduction that is ‘... aiming at the solution or transition of societal problems and concurrently of related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge’.

However, reflexivity also involves being aware that power and control over the object is derived from the social position of researchers, and politically dominant groups influencing scientific agendas – e.g., policy makers, funding agencies. Furthermore, there are less evident mechanisms that exert influences on science through defined institutional structures, research priorities and strategies, languages, narratives, and discourses (Harding, 1995).

Practically, political and power dimensions are often not explicitly discussed in transdisciplinary research, although this approach has been suggested as an avenue for generating transformative knowledge able to question existing power structures and alter the status quo (Rist, Chidambaranathan, Escobar, Wiesmann, & Zimmermann, 2007). Particularly when power asymmetries between stakeholders are evident in the research collaboration process, to implicitly neglect or to simply negate these might have important implications for the transformative potential of transdisciplinary science. Moreover, scientific actors, analogous to non-scientific ones, also hold a position in the social matrix, and subsequently a set of pre-existing ideas on how to address the issue at stake. If this condition is taken into account, the following questions emerge: How are the involved stakeholders positioned? What power is derived from that position? How do the different stakeholders try to influence knowledge coproduction?

With regard to these specific questions on the effects of the mutual influences of the observer on the observed, reflexivity as proposed by transdisciplinarity represents an important but insufficient principle for guaranteeing appropriate levels of self-reflection within a process of knowledge coproduction. We therefore hypothesize that transdisciplinary research could greatly benefit from feminist scientific tradition in which the roles and influences of researchers on actors with whom they interact receive significant attention. Feminist scientific traditions therefore provide theoretical and conceptual guidance for dealing with the ‘objectivity challenge’ of transdisciplinarity. Standpoint theory, as elaborated in feminist studies, provides one avenue for addressing the issue of political and hidden power dimensions within projects and practice of research. The point of divergent positions and their impact on the transdisciplinary or any other research process relates to the longstanding epistemological debates around ‘objectivity’ in science since the mid-19th century. The notion of scientific objectivity, both in social and natural sciences, has been criticized from a number of different perspectives, referring inter alia to subjective processes of object selection, to measurements, to shared beliefs within a given scientific community, and to the relativity of all perspectives. However, the idea of scientific neutrality and objectivity widely persists in society, and

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