Futures 65 (2015) 17–27

Contents lists available at ScienceDirect

Futures

journal homepage: www.elsevier.com/locate/futures

Scientists' situated knowledge: Strong objectivity in transdisciplinarity

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ARTICLE INFO

Article history:
Available online 4 November 2014

Keywords:
Transdisciplinarity
Objectivity
Sustainability science
Pro-poor
Resource
Governance

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.

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

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http://dx.doi.org/10.1016/j.futures.2014.10.011
0016-3287/

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 co-production.

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 co-production is not yet well clarified. A critical epistemological aspect of 'mode 2' knowledge co-production 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 co-production 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 co-production?

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 co-production. 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

notably in natural sciences. Accordingly, scientists might be perceived as neutral or objective observers having no stake or vested interests in their research objects. Referring to the social sciences, Max Weber argued that objectivity, in a narrow sense of the word (Harding, 1993), is an unreachable goal due to scientists' subjective interpretations of social action and social behaviour (Weber, 1949). Another milestone in the criticism of scientific objectivity in general was set by Thomas Kuhn, in his analysis of how the implicit social hierarchy of scientific paradigms influences whether or not contradictions to a paradigm are taken up (Kuhn, 1962). These points have been strongly echoed, leading to intense debates, such as various editions and varieties of the so-called dispute around a 'value-free' science in German-speaking social sciences (Topitsch & Albert, 1971) and the 'science wars' in the United States in the 1990s (Ashman & Barringer, 2005). In particular, critical theory and postmodernism have subscribed to criticism of objectivity (Sarup, 1993).

Standpoint theory is a more recent critical theory that is enlightening in this regard. Most prominently, feminist standpoint theorists such as Sandra Harding (Voss et al., 2006; Harding, 1992, 1995) have criticized the conventional conception of scientific objectivity as 'weak objectivity'. Due to biases of individuals and shared biases of scientific communities, 'weak objectivity' is only able to provide partial and distorted answers. Standpoint theory acknowledges that all human thought arises in a particular social situation and can only be partial, so that knowledge claims are always socially situated. One's social situation both enables and sets limits on what one can know.

Without subscribing neither to epistemological relativism nor to objectivity as understood by proponents of 'neutral science', Harding and others argued for a 'strong objectivity', which follows stronger standards for 'good method' in order to maximize objectivity. To achieve this, scientists have to reflect on their social situatedness in the social matrix and the implications that this has for their position, their perspectives, and their power.

Moreover, some positions in the social matrix are more fruitful for research than others. According to Harding and other feminist scholars, some social locations are more privileged in terms of exercising power and influencing scientific agendas. At the same time, this implies that those individuals and communities are unable to see the social mechanism leading to dominance and discrimination of ideas and people and thus are unable to see their own biases. Gender is understood as just one way of how discrimination and marginalization occur – along with race, class, ethnicity, among others – which lead to multiple and individual constellations of dominance and discrimination. The argument is that research starting off from marginal lives offers more enlightening perspectives because this allows seeing humans' relationship with each other and with the natural world without the biases that those immersed in a dominant group are unable to see. This means researchers taking their lives and perspectives which offer better initial angles for critical and reflexive investigation.

This does not call for naively assuming the viewpoints of those marginalized groups, but rather pursue a logic of discovery that uses the critical potential as a starting point, including several different and possibly conflicting marginal lives. Thereby, 'less false' (Harding) and more objective accounts of the world can be obtained.

Upon this background, this paper aims to explore the added value, potentials, and limitations resulting from bringing transdisciplinary knowledge co-production into dialogue with standpoint theory and the notion of 'strong objectivity'. For that purpose we analyse, and reflect upon, how the design of a project and process aiming at co-producing knowledge on pro-poor resource governance has benefited from the use of 'strong objectivity'. This paper analyses a recent transdisciplinary research initiative conducted by the Institute for Advanced Sustainability Studies (IASS) and the International Fund for Agricultural Development (IFAD), together with civil society organizations in (CSOs) in six countries: Bangladesh, Bolivia, Brazil, Burkina Faso, Ecuador and India. The research initiative focussed on the issue of 'Pro-Poor Resource Governance under Changing Climates' (ProPoorGov). It explicitly assumed a normative position towards resource governance. We understand pro-poor resource governance as governance systems that are not defined from the outside, but of which the contents are co-defined directly involving the poor actors in the decision-making processes. They therefore aim, by their nature and structure, at outcomes that are able to favour the poor (Johnson & Start, 2001; Borras & Franco, 2010).

In a first step (section two), we present how the key principles of transdisciplinary research were translated into the design, implementation, and practice of the process of knowledge co-production. In a second step we analyse and discuss 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. 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. Future transdisciplinary research might increase its transformative potential if its validity is measured not towards 'mode 1' ideals of objectivity, but towards societal robustness, an increase of reflexivity, and communicative action to which transdisciplinarity is able to contribute.

2. Results: steps and challenges when implementing transdisciplinary research

In order to argue for attaching more importance to the objectivity question in transdisciplinary research, this section briefly presents evidence gathered in the practical application of the principles of transdisciplinarity in a particular research initiative, the ProPoorGov project. Several contributions to the literature on transdisciplinarity have pointed out the challenges of incorporating transdisciplinary principles in research design, implementation of activities, and evaluation (Brandt et al., 2013; Fazey et al., 2014; Lang et al., 2012; Wiek, Ness, Schweizer-Ries, Brand, & Farioli, 2012). We acknowledge that some recurrent challenges are largely explored in the academic debate – for instance the necessity of reaching broad acceptance on consistent frameworks, with accompanying common terminology. Thus, we focus on describing those practical challenges more directly related to the objectivity concern.

2.1. The research project 'Pro-Poor Resource Governance under Changing Climates'

2.1.1. Rationale and approach

After the 2008/09 food price crisis, land has re-emerged at the core of the rural development agenda (Cotula, Vermeulen, Leonard, & Keeley, 2010; Deininger et al., 2010), triggering a broader debate on resource governance (Palmer, Fricska, & Wehrmann, 2009), and, more precisely, what is and how to attain pro-poor governance (Borras & Franco, 2010; Zoomers, 2011). In many countries, a rich body of progressive land legislation already exists, which intends to make the livelihoods of resource users more food secure and less vulnerable, and contribute to sustainable resource use (RRI, 2012). However, the conditions in which rules are put into practice are severely affected by institutional constraints, such as government performance, information asymmetries, and power imbalances. As a result, it is not rare to find blatant gaps between formal legislation design and its implementation (Bardhan, 2000). In these situations, local civil society organizations (CSOs) that work for and with poor rural groups have been trying different strategies to cope with this disconnection. CSOs are placed in a favourable position when it comes to understanding the local context and background, which might be restricting or diverting the implementation of resource governance legislations addressing access, tenure, and transparency (Fraser, Dougill, Mabee, Reed, & McAlpine, 2006; Pokorny, Prabhu, McDougall, & Bauch, 2004). Even more importantly, by pursuing a local political agenda and actively engaging in political processes, CSOs have first-hand experience of power disputes. Thus, getting deeper insights into their strategies and building bridges between the grassroots level and policy arenas of different levels is highly useful with a view to improved pro-poor governance. A transdisciplinary research project on pro-poor governance of land and related resources was initiated by an international development organization and a research institute. This starting point entails an explicit normative positioning for pro-poor governance, and therefore engages with communities, CSOs, and other stakeholders. This was not a problem, but a necessary requirement for achieving 'strong objectivity'. In practical terms, this meant that all stakeholders – including the international organization and researchers – had to share a common goal and an agreed-upon set of values towards how resource governance should be transformed. This point was essential for linking to the question of objectivity and is further reflected upon in the discussion section.

2.1.2. Implementation

During the execution of the project, several challenges emerged. Before discussing two relevant examples, it is necessary to outline the implementation steps of the ProPoorGov project. Without questioning the usefulness of simplifying schemes–usually suggesting to distinguish between three phases of transdisciplinary research (Hirsch Hadorn et al., 2008; Lang et al., 2012) – the following section describes the conduction of the ProPoorGov project in seven steps: (i) identification of partner organizations, (ii) identification of cases, (iii) formulation of research questions and boundaries of the cases, (iv) choice of analytical frameworks, (v) data collection, (vi) elaboration of analysis (seven case studies and synthesis analysis), (vii) discussion and communication of results. Obviously, one can argue for clustering these steps, but keeping a finer distinction facilitates the understanding and analysis of the different roles that each step played during the implementation of the project.

Firstly, guidelines for the selection of partner organizations (phase i) were elaborated upon by the researchers in coordination with the respective contact person within the international organization responsible for their operations in the targeted countries: Bangladesh, Bolivia, Brazil, Burkina Faso, Ecuador, and India. Other contacts were also established with persons known from past research experiences. It was explained that the selection guidelines should serve as loose recommendations for exploring cases and partners in the context of a high degree of flexibility. After receiving a number of suggestions and consultations with potential partner researchers, a partnership was established. Table 1 presents the list of partners involved and a very brief description of each organization.

The second phase consisted of selecting the cases for study (phase ii). Rather than instructions, the guidelines served as locators of the specific selected case inside the wider topic of research, in this case, governance of natural resources. A similar procedure as with the identification of partners was taken. The research staff elaborated loose guidelines that were presented to, and discussed with, the CSOs. A very high degree of flexibility was communicated to CSOs; different possible cases were jointly discussed, transferring the ultimate decision to the local CSOs. In most cases, CSOs suggested only one option, while in others two or more were indicated. This deliberative mode of negotiating the cases allowed the advancement of the production of a shared and context-sensitive understanding of problems and potential solutions.

The formulation of the research questions that set the boundaries of the cases (phase iii) was a key activity in the research collaboration. Since this process requires a deeper dialogue on the different understandings around a given context, a twofold approach was taken. First, a pilot workshop with only two CSOs (Brazil and India) was organized, with participation of staff from a diverse set of institutions including the Food and Agriculture Organization (FAO), universities, and the German Development Cooperation Agency (GIZ), among others. The main purpose of this event was to experiment with how such a diverse group could reach consensual decisions on the boundaries of the two cases through jointly elaborating a set of research questions to be addressed in the case studies. Second, in the case of all other partners (Bangladesh, Burkina Faso, Bolivia and Ecuador), research staff visited the CSOs in their localities, participating in field visits and holding several rounds of dialogue with the respective organizations, in order to reach a consensus on the research questions.

In this initiative, analytical frameworks were selected (phase iv) in parallel with the elaboration of the research questions. The researchers suggested the use of two main analytical tools: (i) an adapted institutional change framework based on new institutionalism (Ensminger, 1992; Haller, 2010), complemented by elements of the (ii) sustainable livelihoods framework

Table 1
Project partners: civil society organizations.

	Name	Short description
Bangladesh	BRAC	BRAC is a development organization dedicated to alleviating poverty through empowering the poor. Founded in Bangladesh in 1972, BRAC activities now cover the whole county. Their programme includes agriculture and food security, microfinance, education, health, legal empowerment and social enterprises among other areas. More concretely, a case study has been carried out in collaboration with BRAC's research and evaluation division (RED), an independent research unit within the framework of the organization. The division has been playing an important role in designing BRAC's development interventions, monitoring progress, documenting achievements, and undertaking impact assessment studies. www.brac.net
Bolivia 1	Fundación Tierra	Fundación Tierra is a Bolivian non-governmental organization (NGO) dedicated to discussing ideas and developing proposals for the rural sustainable development of indigenous, native and peasant groups. With more than 20 years of experience, Fundación Tierra works through action research and aims to influence policy in Bolivia in favour of marginalized and excluded rural populations. It supports indigenous, native and peasant groups by building capacities in management, negotiation, participation and policy incidence. Fundación Tierra research areas include agrarian issues, food security, indigenous rights, democracy and local governance, and the applied action research methodologies favour strong involvement of communities at the local level. www.ftierra.org
Bolivia 2	CDE, Faculty of Agronomy/UMSA La Paz and Fundación PIAF-El Ceibo	The Centre for Development and Environment (CDE) is an interdisciplinary research centre of the University of Bern, Switzerland. CDE's overarching goal is to produce and share knowledge for sustainable development cooperation with partners in the global north and south. Under the scope of this research, CDE has collaborated with the Faculty of Agronomy of the Universidad Mayor de San Andrés (UMSA), situated in La Paz, and with Fundación PIAF-El Ceibo. www.cde.unibe.ch Fundación PIAF was created by the Central do Cooperatives El Ceibo as a non-profit organization serving the needs of cooperates and their families. One of its main activities consists of providing technical assistance and fostering knowledge sharing among cocoa producers of Alto Beni. The foundation is also responsible for monitoring compliance with organic agriculture standards, for providing micro-credit and for managing social support, such as health, education and retirement programmes. www.elceibo.org
Brazil	PATAC	PATAC (*Programa de Aplicação de Tecnologias Apropriadas às Comunidades*) is a civil society organization with over 40 years of history aimed towards the strengthening of family farming in semi-arid Brazil. In direct cooperation with local family farming organizations, PATAC promotes sustainable rural development in the State of Paraíba, the Brazilian Northeast, through the dissemination of agroecological practices and the use of participative and bottom-up processes. PATAC supports use of local and original biodiversity, adapted to the conditions of the environment, and supports small-scale, low cost technologies to conserve and store water, forage and native needs. PATAC's intervention methods favour reinforcement of local knowledge and community-driven sustainable development. http://patacparaiba.blogspot.de/p/patac.html
Burkina Faso	GRAF	GRAF (*Groupe de Recherche et d'Action sur le Foncier*) is a non-profit organization founded in 1999 and a member of LandNet West Africa. GRAF is a network of people interested in land issues such as conflicts and acquisitions, decentralization, and governance of natural resources. The organization focuses on research, capitalization, publication, and advocacy. GRAF aims at conducting research on land issues at the local level, involving all stakeholders in a genuine national debate on the political and legal options regarding land, and acknowledging and using local expertise. Striving for the diversification of perspectives, analyses, and proposals, GRAF gathers researchers, practitioners, and decision makers. In past years, GRAF has received significant attention and has been involved in governmental processes. www.graf-bf.org
Ecuador	SIPAE	SIPAE (*Sistema de Investigación de la Problemática Agraria en el Ecuador*) is a research network working on agrarian policies at the local and national level. It operates a platform for action-research development, fostering social dialogues, elaborating political proposals, and connecting scientific investigation with social movements dealing with rural and agrarian problems. SIPAE's mission includes the support of a socially and environmentally sustainable agriculture, in defence of food sovereignty and collective economic, social, cultural, and labour rights. It aims to contribute to different research efforts, articulating and complementing new knowledge in rural and agrarian topics. www.sipae.com
India	Seva Mandir	Seva Mandir is an Indian non-profit organization founded in 1968 that has been working for 40 years with the rural, predominantly tribal population in the Udaipur district of Southern Rajasthan. SevaMandir's work centres on efforts to strengthen the sense of collectivity and cooperation among communities with the goal of improving social equity and increasing resilience to climate change. The organization carries out activities in 626 villages and 56 urban settlements. Seva Mandir supports communities in the (re)establishment of common lands through negotiations that are often prolonged to free it from privatization and development and to protect the degraded lands and put equitable benefit sharing mechanisms in place. www.sevamandir.org

Source: Authors' field data and organizations' websites.

(Scoones, 1998; Solesbury, 2003). Substantial discussions took place between researchers and CSOs around the necessity, appropriateness, and feasibility of using these frameworks for guiding data collection and analysis. In the cases of Brazil and Bangladesh, CSOs opted to complement the research with other analytical tools derived from a theoretical basis that they were more familiar with. In the resting cases, in order to assure a higher level of comparability across cases, the frameworks

proposed by the researchers were used. Taking account of the resulting analytical diversity for the researchers generated additional requirements for all case studies, in order to assure that these commonalities could be explored in all case studies.

It was jointly decided that both researchers and CSOs participate in data collection (phase v). This was considered necessary for the researchers to develop a deeper understanding of the local *problematique*, and for CSOs it enabled the development of a more pluralistic view, enriched by the researchers, on the issues being studied together. Similarly to data collection, the elaboration of analysis (phase vi) was also designed as a joint exercise between researchers and the CSOs' staff. The teams engaged in substantial dialogues, and in an iterative process for the elaboration of two main products: individual reports for each case study, coordinated by the respective local CSOs, and a final report that addresses, compares and analyses all case studies, coordinated by the research staff. The results of the case studies are not further described here, but they are being documented (Rosendahl et al., 2015).

Communicating and discussing the case studies with a broader set of stakeholders (phase vii) were also key activities in the project. In some cases, such events were conducted even before the elaboration of any written materials, while in others reports and briefs were already prepared prior to the events. Essential points raised in those events were taken up in the final reports. In more precise terms, two main activities were aimed at generating this discussion, thus contributing to triggering social processes towards pro-poor resource governance. The first comprised local and/or national workshops, organized either in the capitals of the regions where the cases were located, or in the national capitals. In these workshops, a wider range of audience members took part: local administrative staff, political decision makers from different government levels, development practitioners, journalists, and representatives from other civil society organizations. These workshops served not only as opportunities for presenting and discussing results, but also as occasions for building bridges between CSOs and decision makers. The second activity consisted of a final workshop with the presence of all CSOs, the initiating organizations, besides other invited stakeholders.

Based on the CSOs assessments conducted in the final phase, they perceived several gains that led to their empowerment. First, the project provided them with financial resources that allowed them to document and analyse their experiences more than they usually are able to do; this allowed them to increase their knowledge base, which inter alia can serve for future advocacy work. Second, it also increased their visibility, for example by means of media coverage following the national workshops. Third, these workshops further contributed to an increased reputation perceived by political decision makers who, in several cases, mentioned that they found the study highly useful and acknowledged the role of CSOs in policy design. They acknowledged furthermore that this is contrary to their common perception of CSOs being merely disturbing organizations. Fourth, particularly during the concluding workshop, CSOs could establish links not only with the other involved organizations working on similar issues or in similar conditions, but also to decision makers of the international organization. Lastly, the project implied a capacity building element, as young researchers were often involved in the case studies. In sum, CSOs improved their access to decision making processes, and also achieved an increased standing in the eyes of local and national political decision makers and the international organization.

2.2. Challenges faced during implementation

As commented above, several challenges to transdisciplinary research have already been addressed in scientific discussions. However these challenges, directly related to the objectivity concern, have not been at the forefront of these contributions. Through exploring these sorts of challenges found during the implementation of the ProPoorGov project, important gaps in existing practices in transdisciplinarity might be revealed for further transdisciplinary endeavours.

Two challenges, general in nature and interrelated, emerged during the research process: the question of how much control over the process is ceded from researchers to CSOs, and the question of the influences of different pre-existing positions on the issue. The latter was associated with correspondent different expectations, which in some cases led to divergences on particular decisions about the research.

2.2.1. Researchers controlling the process versus joint leadership

First, mandated to carry out the research by, and in collaboration with, an international organization, the researchers were in the position of initiating the contacts and research activities and of coordinating the elaboration of several case studies. All phases of the research were indeed conducted jointly, i.e., in collaboration with the different partner organizations. However it implied a clear and non-ceded coordination role taken by the researchers. They were the people giving the allowed time, setting guidelines for case selections, and, together, indicating the core steps of the research processes. Yet this was combined with a high degree of flexibility in order to adjust the different schedules and work cultures, respond to any concerns, and negotiate as much as possible. This can be illustrated by the choice of analytical framework expected to allow for a common thread and a common denominator for subsequent synthesis analysis. The researchers chose an institutional change framework (Ensminger, 1992; Haller, 2010). However, it turned out that some organizations were not comfortable with such a general and abstract analytical framework, and did not see clearly how this would translate to their cases. In other cases, organizations deliberately adopted the framework. The researchers did not insist on using it. Instead, they decided to be more flexible and engage themselves with the cases without an elaborated framework, reducing the analytical tools to five thematic 'minimum requirements' covering key topics of land governance. Aiming to ensure a common analytical thread, the following points were addressed: (i) 'what are the current resource use patterns?', (ii) 'what are people's perceptions of the influence of resource use patterns on their livelihoods?', (iii) 'what is the

natural resource governance regime that underpins the observed resource use patterns?', (iv) 'what capacity do poor rural people have to adapt their livelihoods to changing environments (socio-economic and physical variations including climate)?', and (v) 'do these adaptation strategies include changes in resource governance or do they operate through different strategies?'. Thus, the decision on the framework was a negotiated one, in which room for manoeuvre was certainly allowed, but coordination was not ceded.

2.2.2. Differences in values and positions towards the issue

Second, in the course of the research, situations of incongruity between the respective civil society organization and the researchers occurred in some cases, regarding certain aspects of how to carry out the research. These were related to different pre-existing perceptions of the issue – pro-poor land governance – and the different positions of the respective CSO and the researchers. As an illustration of this point, one case study on community-based management of common land was jointly elaborated with a CSO in Rajasthan, India. They have been working with rural poor populations and lobbying for community-based management of common land for more than four decades, and wanted the study to be a documentation of successful cases that they could use afterwards for influencing local political decisions. Discussing the selection of villages for the case study, the researchers were opting for a balanced set of successful cases, unsuccessful cases, and cases in which no external intervention on community-based management of common land had been undertaken. This generated discussions and negotiations, and revealed different understandings about expectations and the nature, approach, and purpose of the case study.

Reflecting on these incidences, it becomes clear that they emerge from different positions and perspectives on the issue. CSOs obviously do take sides, but researchers too have their own values and positions that they implicitly or explicitly bring into the research.

Civil society organizations, on the one hand, openly take sides and have a clear-cut position on different issues, which they might justify on the basis of their vision of society, and its relation to the planet. It could be argued that one reason for this is that CSOs have stronger social and personal ties with the people directly affected by the problem, at least compared to researchers. Moreover, CSOs have a stronger and more direct interest in aligning the outcomes with their positions, given their high pressure to demonstrate to their funders and beneficiaries that their approach to tackling the problem is successful. Researchers, on the other hand, are often perceived as being neutral and objective actors following rational scientific criteria without having a stake in the issue. This, we argue, is generally wrong, and not only in cases in which they explicitly assume a normative position, such as in the described pro-poor project.

It is worth mentioning, however, that in this particular case the divergences were not fundamental in nature, as there was a common ground to strive for a transformation of land governance for the benefit of poor rural populations. Thus, CSOs and researchers started the transdisciplinary work from a common denominator, a normative standpoint. Against this backdrop, different expectations and ideas of the implementation were altogether of minor significance, albeit not irrelevant. This points to the general fact that each stakeholder in a transdisciplinary process, including the scientific one(s), has a specific position and standpoint that influences the process and outcomes, regardless of whether or not they are aware of them and make them explicit. This is a major point elaborated in the following section.

3. Discussion: control, objectivity, and normative positions in transdisciplinary research

The literature on transdisciplinarity has extensively discussed and acknowledged how different types of knowledge, held by different types of stakeholders, can be integrated in processes that ultimately lead to new co-generated knowledge, which is socially robust (Nowotny, 2000b) and has the potential for societal transformation. It seems that one of the main assumptions taken by the proponents of this approach is that the different stakeholders can indeed effectively collaborate, at best on equal footing, although stakeholders may have different values, and, more importantly, may have different influences over how the transdisciplinary process is conducted (Novy & Bernstein, 2009; Seidl et al., 2013; Stauffacher, Flüeler, Krütli, & Scholz, 2008). We argue that this assumption needs to be revisited, pointing to the following aspects: how transdisciplinarity projects are controlled, how researcher – in a setting in which all stakeholders naturally have different positions impacting on the research – position their values and opinions, and how transdisciplinary processes can be conducted when normative positions towards the issue are assumed and even benefit from this. We discuss these concerns in this section, using evidence from the ProPoorGov project described earlier. More precisely, we elaborate on the issues of: (i) coordination and control; (ii) criticism of scientific objectivity applied to transdisciplinarity; and (iii) the rationale for adopting a pro-poor approach in transdisciplinary research.

3.1. Coordination and control in transdisciplinary research processes

As described earlier, the ProPoorGov project was initiated between an international organization and a research institute, and included only at a later stage a broader set of stakeholders. The fact that transdisciplinary projects rarely emerge as joint initiatives of all stakeholders has already been explored by earlier academic contributions (Lang et al., 2012; Wiek, 2007; Wiek, Scheringer, Pohl, Hirsch Hadorn, & Valsangiacomo, 2007). Indeed, initiative is often taken by scientists alone, who become responsible for engaging other actors more deeply connected to the practicalities of the issue. Therefore, as the

literature states, one challenge in this regard is that researchers and practitioners can achieve unbalanced levels of ownership, which in turn can limit the transformative potential of transdisciplinary research.

In the case of the ProPoorGov project, an approach that favoured a balance between central coordination and flexibility was ultimately reached by the means of negotiations conducted throughout almost the entire process. As described, the researchers operated with broad criteria for case selection and analytical framing. Furthermore, they generally acted flexibly and placed strong emphasis on discussion, deliberation, and joint agreements. However, they retained control over the research process as a whole, giving timelines, for example, and indicating general activities. This fact of retaining the authority and having a leading and coordinating role may jeopardize the claim of transdisciplinary projects of collaborating on an equal footing (Novy & Bernstein, 2009; Seidl et al., 2013; Stauffacher et al., 2008). How equal can the collaboration really be in a situation in which a certain degree of authority is nevertheless evident? Joint leadership (Scholz, Lang, Wiek, Walter, & Stauffacher, 2006), i.e., coordination and control being ceded to stakeholders, has only partially been strived for in the project in question.

Certainly, there are different degrees of engagement and of ceding control. Brandt et al. (2013), referring to Krütli, Stauffacher, Flüeler, and Scholz (2010), for example, distinguish between four types of practitioners' engagement in transdisciplinary research, characterized by different intensities of their involvement. Namely, they cite (i) information, (ii) consultation, (iii) 'collaboration', and (iv) empowerment. Collaboration is defined as participants having a 'notable influence on the outcome', and empowerment as the case in which the authority to decide is given to practitioners. In addition, regarding the degree of involvement, interaction between, and authority transferred to actors, Mobjörk (2010) suggests a qualitative difference between consulting and participatory transdisciplinarity. The participatory type would be achieved if actors could effectively engage in equal terms, actively contributing to knowledge co-generation and mutual learning.

Generally agreeing to the existence of gradual differences of involvement between the extremes pointed out by these authors, we further argue that instead of only one notion, different levels of empowerment can be achieved without necessarily devolving full authority in the process. Even more importantly, we argue that initiating and controlling the research implies assuming a powerful position and thereby produces power asymmetries that might potentially prevent an equal footing. This is a relevant consideration often only marginally taken into account in transdisciplinary research literature.

As mentioned in Section 2.1.2, access to decision-making processes was improved for civil society organizations in the frame of the ProPoorGov project. They also achieved greater recognition as meaningful contributors in the eyes of local and national policy makers and international organizations. Empowerment, in this sense, was achieved, even though decisive authority was not fully devolved, challenging classifications that disregard the different ways of achieving empowerment.

The second point in addressing the issue of ceding control in a transdisciplinary project goes beyond scholarly categorizations of practitioners' involvement, and questions the claim of being able to collaborate on an 'equal footing'. In the vast majority of transdisciplinary projects, researchers are the people who retain control over the basic phases of the process. The simple claim to work on an equal footing, based on an equal involvement in the process, we argue, negates and disguises this control and associated power with coordination roles. Different stakeholders necessarily bring their pre-existing power to the transdisciplinary process, creating a situation of power asymmetry. It could be argued that the transdisciplinary process, through its rules and procedures, tries to level the playing ground. Yet it is an open empirical question as to what extent the power asymmetries can effectively be attenuated during the process. The simple fact of engaging different stakeholders under certain conditions alone falls short of addressing power imbalances, and taken alone does not lead to the claimed 'equal footing'. Clearly, as a catchword and claim, 'equal footing' represents an ideal-typical construct that is certainly not completely achievable. In order to realistically engage with stakeholders – possibly striving for a normatively declared aim of altering the status quo – one has to acknowledge the existing power asymmetries instead of disguising them. This is of particular importance when it comes to how researchers position themselves in transdisciplinary research. We argue that no actor can ever be neutral, and therefore they need to be transparent and explicit about their positions, values, and judgements. This point is further elaborated in the following section.

3.2. Criticism of scientific objectivity applied to transdisciplinarity

When arguing against the excessively restricted notion of objectivity defended by those claiming a 'neutral science' conception of objectivity (Harding, 1992, p. 577–578), Harding suggests a couple of strategies in order to identify the hidden social assumptions that restrict scientific objectivity. She mentions these assumptions '... tend to be shared by observers designated as legitimate ones, and thus are significantly collective... values and interests, and ... tend to structure the institutions and conceptual schemes of disciplines'. By adopting strong objectivity, researchers would not negate the existence of these assumptions, quite the contract, they would reflect on how these influence and restrict the 'identification and conceptualisation of scientific problems and the formation of hypotheses'. Thus, by identifying and reflecting on these social assumptions, strong objectivity would assist on distinguishing 'those values and interests that block the production of less partial and distorted accounts of nature and social relations... and those... that provide resources for it'.

In our understanding, there are clear correspondences between these arguments and the concept of reflexivity as proposed in transdisciplinarity (Lang et al., 2012). As commented before, both reflectivity and strong objectivity draw our attention to the fact that these social assumptions are related to social positions and their derived power. Thus, one of the implications of acknowledging and critically reflecting on these assumptions that frame and constrain the formulation of

research problems, hypotheses and methods is that, then, these should not be set a priori in the research phase. Instead, as a proposed procedure, transdisciplinarity invites researchers to jointly co-define the *problematique* in collaboration with the objects of knowledge, such as non-scientific stakeholders. Moreover, applied to transdisciplinary projects, strong objectivity and reflexivity[1] 'forces' scientists not to consider themselves as subjects of knowledge – i.e., external and disconnected observers of a given object of study – but also as objects of knowledge – scientists as real stakeholders, i.e., having a stake in the issue.

This calls for explicitly not attempting to do a 'God trick' (Harding), i.e., claiming neutrality and 'weak objectivity'. Instead, it asks for an explicit and transparent self-positioning, more precisely for outlining the locatedness and the positions of the involved subjects of knowledge, in particular of the scientific stakeholders. It is somehow striking that although claiming a reconfiguration of the role of scientists in research processes as 'epistemediators' (Wiek, 2007) or bridge makers between the worlds of science and practice (Jahn, Bergmann, & Keil, 2012), transdisciplinary literature has rarely been addressing how social positions and pre-existent values of scientists themselves might influence the direction of the co-generation process. In the next part of the discussion section, we explore how the values and positions of the researchers involved in the ProPoorGov project indeed influenced the normative decision of approaching land governance with a pro-poor orientation.

3.3. Adopting a pro-poor approach in transdisciplinarity: a rationale

As indicated by standpoint theory, 'taking sides' when studying a given issue is unavoidable, given the social positions and pre-existing values held by stakeholders, including scientific ones. This certainly also applies to transdisciplinary research. However, instead of seeing it as a hindrance, we argue that transparently assuming a pro-poor position related to resource governance should be seen as an asset in transdisciplinary projects. We argue that research committed with 'strong objectivity' could objectively contribute more realistic elements to pro-poor governance than research based on neutral but 'weak objectivity'.

Standpoint theory not only provides a strong argument for making explicit researchers' situatedness and positions when addressing a given object of study; it also provides an epistemological argument for choosing to address resource governance through a pro-poor approach. Consideration of the perspectives of marginal actors allows for a better understanding of social order and of the different structures that constrain the expression of their perspectives, and which impede their concerns from being considered in decision taking. Standpoint theory argues that one's social situation enables and sets limits on what one can know. Critically unexamined dominant positions are more limiting than others as they are unable to generate the most critical questions. Therefore, research shall take marginal lives as a starting point for examining human relations with each other and with the natural world. Researchers will thereby be able to produce less partial and distorted understandings. In this sense, marginal lives provide meaningful scientific problems and research agendas.

Certainly, assuming positions in transdisciplinary research has its implications. One worth mentioning relates to which stakeholders are invited to participate and collaborate in the joint exercise. In the case of the ProPoorGov project, as already described in the previous sections, the researchers and international organizations deliberatively chose to invite only organizations working with and for poor rural groups. It could be argued that this selection does not represent a comprehensive set of actors that could have a stake in the governance of resources. This argument is valid in the sense that transdisciplinary research profits from diversity and plurality of perspectives and groups involved in the process. Nevertheless, this does not imply that transdisciplinary collaboration should try to achieve a proportional representation of the 'real world' when selecting stakeholders. Evidently, in the case of ProPoorGov project, the private sector, investors, local governments and others groups have primarily not been approached by the researchers and thus have participated much less in the process than actors who were known to be outspoken proponents of pro-poor approaches.

This biased selection was a deliberate decision. We argue that it represents an understanding of a problem-oriented composition of stakeholders for a research process, based on a 'strong objectivity' approach. Our aim was not a fully and comprehensive deliberative process including all potential stakeholders, but rather a transdisciplinary exploration of several cases of resource governance, starting off from marginal lives but including a variety of perspectives. The perspectives of marginalized groups are structurally underrepresented in governance processes and it is a well-known problem of transdisciplinary processes that disadvantaged stakeholders do not have the resources – time, money, professional assistance, in some cases proficiency in English, among others constraints – to participate and often are intimidated to speak up in such settings (Innes & Booher, 2010).

The ProPoorGov project aimed at jointly documenting and analysing cases of importance to marginalized groups and resource governance in general, specifically emphasizing their perspective, yet not naively assuming the positions of those collaborating CSOs or marginalized groups but exposing and balancing it with other views. A broader deliberative process with a more comprehensive set of stakeholders was not within the scope of the project, as this would have requested substantially more time and funds. Nevertheless, points of view and perspectives were very diverse even within the "pro-poor" frame adopted, certainly enriching the transdisciplinary collaboration and its goals of co-producing knowledge. This reflected the different missions and scale the participating organizations had, for instance the differences between

[1] Reflexivity as conceptualized by Bourdieu is an epistemological precondition for sociological science. (Bourdieu, 2000) P. Bourdieu, Pascalian meditations, Stanford University Press, Palo Alto, 2000.

international and more local organizations, or between CSOs more focused in policy advocacy and others focused on supporting smallholder farmers in field activities. Furthermore, in most cases, the research provided a trigger and starting point for more comprehensive discussions with other stakeholders within regional and national levels, in the sense that research results were used by the collaborating CSOs in other debates and negotiations or taken up by relevant government authorities. In this sense, transdisciplinarity based on 'strong objectivity' rather aims at strengthening the silences or marginalized voices in the governance process.

Finally, it is important to stress that opting to transparently assume a normative position does not signify blind agreement with all positions brought to the transdisciplinary dialogue; in fact, the reality is quite the contrary. An important component of transdisciplinarity refers to the instigation of self-reflection for all stakeholders, which in turn can generate mutual learning processes. In the ProPoorGov project this required intensive dialogue and negotiation over contested issues and positions. By being transparent and not hiding behind the neutrality label, scientists avoid simply reproducing statements. It is through these intense dialogues and occasions triggering self-reflexivity that actors are susceptible to reconsider their values and opinions, mutual learning takes place, and new knowledge is co-generated. As indicated by Bird referring to Weber (Harding, 1993), there *always* exist value judgements in science. Reaching objectivity requires not only making these transparent and accessible, but also necessitates submitting those judgements to an open and rational debate. We understand that this holds true for transdisciplinary research as much as it does for other scientific approaches.

4. Conclusion

The analysis and design of the implementation of the transdisciplinary research project 'Pro-Poor Resource Governance under Changing Climates' revealed two important challenges. First, the question of how much control is ceded in a transdisciplinary process was found to be crucial in the sense that it affects the power balance between the stakeholders. Second, disagreements between researchers and civil society organizations occurred in relation to specific aspects of how to carry out the research. Although scientific and non-scientific actors shared a common goal and a given set of values towards how resource governance should be transformed, these slight divergences clearly represented different perspectives on the issue.

Contrasting with other transdisciplinary projects described in the literature, the complete devolution of authority to practitioners in the process was never strived for. We argued that initiating and controlling the process implied assuming a powerful position, and thus generated asymmetries that might potentially prevent an equal footing. Nevertheless, it was argued that the empowerment of civil society organizations has been achieved without fully ceding authority. This was only possible using an approach that favoured a balance between central coordination and flexibility, under which negotiations were conducted throughout the entire process. The question of control and its implications for power balances in the process have only marginally been touched upon in the transdisciplinary literature. The fact of engaging different stakeholders alone falls short of addressing power imbalances, and does not lead to a claim of equal footing.

This is of particular importance when it comes to how researchers position themselves in such collaborations. It was argued that epistemological debates around scientific objectivity could provide a number of insights as to how to deal with the different positions. Standpoint theory shows that everybody has a specific social situatedness that both enables and limits what one can know. Feminist authors in particular have called for a 'strong objectivity' that requires the explicit and transparent positioning of oneself: this also holds true for scientists. Furthermore, standpoint theory provides an argument for not only making researchers' situatedness explicit, but also for choosing to address resource governance from a pro-poor approach. Starting research from marginal actors allows for a better understanding of the social order and the structures that constrain their expression.

Given the potential for societal transformation usually associated with the transdisciplinary approach, power dimensions associated with researchers' control and standpoints, surprisingly, have rarely been explicitly discussed in transdisciplinary literature. Relating to the objectivity question and fulfilling the standards of 'strong objectivity' might generate less partial accounts of contested issues such as resource governance in future transdisciplinary studies.

Acknowledgements

This material is based upon work supported by the International Fund for Agricultural Development (IFAD) under grant number GIR-1355 IASS. We acknowledge Franziska Linz and three anonymous reviewers for their valuable comments, which substantially improved the quality of the paper.

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