1 Aligning diverse practices of transdisciplinarity for sustainability

Introduction

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> The anthropologist must get up at first light and remain alert until the last of the natives has gone to sleep (even then he sometimes has to watch over their slumber). He must try to pass unnoticed, and yet always be at hand. He must see everything, remember everything, take note of everything. He must be ready to make the most of a humiliating indiscretion, to go to some snotty-nosed urchin and beg for information and keep himself ever in readiness to profit by a moment of complaisance or free-and-easiness. Or, it may well be, for days together a fit of ill humour among the natives will compel him to shut down on his curiosity and simulate a sombre reserve. The investigator eats his heart out in the exercise of his profession: he has abandoned, after all, his environment, his friends, and his habits, spent a considerable amount of money and time, and compromised his health. And the only apparent result is that his presence is forgiven by a handful of wretched people who will soon, in any case, be extinct; whose main occupations are sleeping and picking their lice; and whose whim can decide the success or the failure of his whole enterprise.
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> (Claude Lévi-Strauss 1972, section 373)

As considerable as this description may sound to many academic field workers, it also depicts the traditional role of a researcher: testing theories, applying methods and gathering findings for the sake of generating new knowledge. However, this volume does not deal with traditional types of research. *Transdisciplinarity for Sustainability: Aligning Diverse Practices* is a book in which researchers across disciplines such as economy, ethics, management, design architecture and social science come together to discuss professional and personal narratives of transdisciplinary research and practice.

The first ideas for this book emerged during the annual conferences of the International Sustainable Development Research Conference in the last few years. In the tracks for Theme 1 of this society, regarding the fundamental approaches of sustainability research, various cases of TD research have been presented, and discussions included questions about communalities and diversity in methodological approaches and their implications. A book focusing on possibilities for aligning such diverse practices thus seems to be welcome in several ways. Contributors to this book draw from a rich body of research to examine the role of

transdisciplinarity and how it can add to realizing sustainable development, with all its challenges and opportunities. The authors of this volume discuss theories, tools, ethics, education and practice, as well as the roles of various stakeholders in concrete collaboration projects.

The book explores how diverse views, values and sources of knowledge in transdisciplinary research, often neglected in traditional academic enquiries, can be a valuable resource for sustainable development. Reference is made to transdisciplinarity in planning, education, environmental management, higher education and social sciences. This includes a discussion on how embedded ideas and values of all stakeholders can promote or impede knowledge generation. Each chapter draws on specific research, describing the context, explaining the methodology and illuminating important findings for transdisciplinarity.

Since researchers and students struggle to get an overview of the diverse discourses, Chapter 2 of this volume elucidates some crucial choices for the research design when applying transdisciplinarity. The chapter refers to sustainability science, which emerged as an interdisciplinary field addressing nature–society metabolism. The authors briefly thematize concepts of multi-, inter- and transdisciplinarity and introduce more recent transdisciplinarity concepts. Transdisciplinarity (TD) goes beyond intra-science collaboration and acknowledges a close collaboration with societal stakeholders. The chapter describes the history of transdisciplinarity, first in various disciplines and second in the field of sustainability science. This discussion also comprises arguments for surpassing interdisciplinarity in the context of sustainability. The authors conclude that overlapping and diverging assumptions in sustainability concepts have implications for the design and implementation of transdisciplinary research.

Chapter 3 discusses methodological features and principles to provide an overview of available tools for transdisciplinary researchers in the field of sustainability science. Transdisciplinary research entails a complex system of knowledge integration and aims for a comprehensive understanding to initiate societal transition towards sustainability. Methods of research address, among others, processes of organizing a network of knowledge carriers. The chapter describes strategic choices on different levels: for the research project, for the portfolio of the researcher and for the research institute. Conclusively, the authors summarize ideas relating to the architecture of an open and flexible transdisciplinary research process. They frame the intertwined cycle of knowledge production in science and interventions in practice and underline the importance of multi-actor collaboration at all levels, by integrating approaches available in methodological literature into a six-step process model for transdisciplinary research. Acknowledging the essential flexibility in the design of TD research processes, they discuss eight key guiding principles to be applied in TD.

The aim of Chapter 4 is to make ethics accessible to transdisciplinarity by presenting a systematic overview of ethical ideas present in TD literature. It discusses transdisciplinary collaboration (TDC) and ethics with a focus on sustainability issues, more specifically questions and challenges related to sustainable planning and design within the limits of ecosystems. The chapter illustrates and analyzes

how concepts can be applied in a TDC process related to sustainability, with the help of an example from planning and design practice in a rural area in Nepal. The chapter suggests an integrative ethical approach to TD and emphasizes two conditions for successful transdisciplinary collaboration: diversity and openness.

Chapter 5 elaborates on the conceptual work underpinning TD by addressing questions on how to conduct a TD project; how to deal with stakeholders; and how to coordinate the internal and external relations of research projects. The chapter presents a bottom-up approach of modifying concepts and identifying gaps, such as the qualifications required to successfully conduct TD research. It describes challenges identified by practitioners over 25 years of TD research in the field of sustainability science. Collecting and discussing TD research experience, the chapter illustrates an innovative way of developing criteria and advice applicable for TD practitioners. Ex-ante (and ongoing) reflection, understanding stakeholder diversity, recognizing projects as agents and comprehending methodological diversity are seen as key elements for dealing with the multiple TD challenges. Adding to the six-step model in Chapter 3, a six-step, step-by-step approach to support successful TD planning and implementation, based on past experience, is conclusively suggested.

In Chapter 6, a transdisciplinary capacity building project is presented in the field of sustainability and environmental management. The goal of this interuniversity project, with partners from Uganda, India, Nepal, Norway, the Netherlands and Portugal, was to develop sustainability and environmental management curricula and industry training seminars that meet local, regional and international needs and to train students, university staff and companies. The chapter introduces a stepwise model of environmental management and sustainability tools to frame the project's activities, which facilitated the cooperation of academics from multiple disciplines for the development of material for academic and practical use. Practical application of environmental management and sustainability methods were made an accessible part of local business capacity with help of case studies. The authors conclude with a recommendation to explicitly implement stakeholder collaboration across partner universities to achieve more extensive TD in capacity building projects.

Chapter 7 further discusses joint knowledge creation in the field of architecture and design. Knowledge is an integral part of innovation and problem-solving strategies. Problem solving is often accompanied by knowledge generation and involves a wide range of disciplines and associating experts. The overall resulting knowledge, often referred to as scientific knowledge, is fundamentally a combination of scientists' expertise, achieved from methodologies in their respective disciplines. The role and contribution of societal knowledge is less recognized, as is the significance of interplay between different knowledge types. This chapter refers to transdisciplinary collaboration to illustrate some of the crucial choices a practitioner in a design project has to make, depending upon the context. The chapter presents challenges associated with knowledge integration, based on four aspirations of transdisciplinary research, and analyzes epistemological challenges by reflecting on the oscillating role of the practitioner in an architecture project in

Nepal. Transdisciplinary characteristics of the project are outlined, and reflective practices in each phase based on the practitioner's transcending role in knowledge generation and integration are evaluated. In conclusion, the importance of reflective practice in sustainability research that aims at transdisciplinary collaboration is highlighted.

Chapter 8 refers to sustainable development in the field of entrepreneurship by presenting a transdisciplinary approach within the field. The chapter starts with a discussion of the historical evolution of entrepreneurship from a transdisciplinary lens and explains that even though the term TD has not yet been used in the field until recently, clear transdisciplinary features are visible and have influenced the evolution of entrepreneurship over time, e.g. through collaboration projects within and beyond the academic sphere. Through an analysis of recent entrepreneurship concepts, the author shows that knowledge generation in the field is significantly influenced by certain types of transdisciplinary collaboration. The chapter concludes by showing that impacts may in practice only be visible over longer terms. It also argues that one needs to view transdisciplinary processes beyond individual projects since substantial problems and complexity are beyond the scope of individual cases. Finally, it observes that processes of transdisciplinary approaches are by definition not smooth, and there are many different actors and aspects that need to be coordinated and integrated.

In Chapter 9, the role of higher education and the types of knowledge production in which researchers engage within sustainability teaching and learning are thematized. The chapter points out that most TD research and practice is designed and evaluated within a developed world context; studies from the developing world are almost non-existent. The author introduces Emergent Transdisciplinary Design Research (ETDR) as a context-relevant methodology for students undertaking TD research in a developing country and presents a case study from rural Burundi, East Africa, to illustrate how ETDR can be operationalized within PhD research. Challenges to conducting TD research as an individual researcher in a high-risk context with low levels of social and educational quality are discussed. The chapter illustrates how societal problems can be tackled in an individual transdisciplinary research effort by using ETDR but also illustrates the dilemmas for young researchers and their academic institutions.

Chapter 10 raises critical questions on knowledge co-production needed for meeting the 2030 agenda for sustainable development and the role that transdisciplinary research plays regarding social sciences. The authors claim that despite the increasing literature on transdisciplinary research, significant practical and ethical issues to realize transdisciplinary research 'in the field' often go unaddressed. They employ a novel dialogical approach to highlight the multi-stranded perspectives. The chapter connects theory and practice through co-author narratives in responding to questions such as *how do underlying assumptions involved in TD research affect the research process?* and *how can TD research lead to enhanced sustainability outcomes in the context of the 2030 agenda?* The chapter reveals inherent tensions and paradoxes of diverse perspectives, values and knowledge systems in society with the aim of introducing TD for sustainability as a reflexive practice that questions taken-for-granted theories, practices and policies.

The brief summary of the chapters demonstrates that transdisciplinarity is a multi-perspective endeavour. The volume intends not just to transgress the boundaries of our disciplines but also to bridge the gap between theory and practice by looking in both directions, towards the efforts of academics to develop sustainable solutions and towards the efforts of practitioners and stakeholders in implementing them. Establishing common ground for transdisciplinary research is challenging. Sources and generation of knowledge are heterogeneous, originating from various fields, such as the natural sciences, social sciences, lay actors and various social sectors. Transdisciplinarity approaches differ, practice is scattered and methodologies are often applied pragmatically. Acknowledging the polyvalent character of transdisciplinarity, this volume illustrates the range and influence of ideas, methods and applications from different academic disciplines rather than presenting a 'how to' guide to transdisciplinarity.

Discussing concepts and implications for research and rich examples of practice, this book will be key reading for postgraduate and doctoral students in sustainability studies and across a range of disciplines, including economy, ethics, management, design, architecture and social science. It will be of interest to academics teaching research methods and developing transdisciplinary research, and to professionals working in transdisciplinary collaboration projects that facilitate sustainable development.

Reference

Claude Lévi-Strauss, Tristes tropiques, translated from the French by John Russell. Publisher, New York, Atheneum. Creation Date, 1972, c1961.