Tour d'Horizon of Literature 2021

td-net
Network for Transdisciplinary Research

In order to give an overview of key literature in the area of inter- and transdisciplinarity, td-net invites every year experts in the field to list recent key publications (see list of contributors, page 9). In this document, we present literature published in 2021 with short annotations written by the experts that recommended the publications.

We would like to thank the contributors for their inputs and are looking forward to another productive year for inter- and transdisciplinary research.

All previous "Tour d'Horizon of Literature" issues can be found on *our website.*

This document is interactive: the references are hyperlinked with the matching website.

Categories

Theories and epistemologies

Henze, J. (2021): *Zur Wissenschaftlichkeit transdisziplinärer Forschung*. GAIA - Ecological Perspectives for Science and Society, 30(1), p. 35-43.

- Connects the discourse on transdisciplinary research to overarching principles of science ethos in the philosophy (Mertonian norms) of science that apply to all scientific disciplines. Well-grounded structuring and discussion of ambiguities about the scientific nature of transdisciplinary research. Publication in German. (SJa)
- The distinct character of transdisciplinary science is discussed. (KKa)
- Winner of the GAIA best paper award 2021. (CKu)
- This paper is building an important bridge. It suggests standards of research practice for transdisciplinary research that complements as well as differentiates disciplinary standards. In this way it argues for the relevance of transdisciplinary research and shows its particular features in close connection to what is seen as \'scientific\' in the science system. (JKn)

Lam, D. et al. (2021): *Transdisciplinary research: towards an integrative perspective*. GAIA – Ecological Perspectives for Science and Society, 30(4), p. 243-249.

- Lam et al. suggest an integrative perspective in transdisciplinary research to support transformative change. For this the four aspects context dependencies, formats and methods, societal effects and scientific effects of transdisciplinary research should be regarded with an integrative perspective in phases of a transdisciplinary project. (DLa)
- Up to date and with the proposed focus on the interrelations between the four themes context dependencies, innovative formats and methods, societal effects, and scientific effects forward looking. The article can provoke reflection on next directions in transdisciplinary research. (TMi)

Pohl, C. et al. (2021): *Conceptualising transdisciplinary integration as a multidimensional interactive process*. Environmental Science and Policy, 118, p. 18-26.

- Knowledge co-production and transdisciplinary research (TDR) involve researchers from different disciplines, fields, professions, and private and public sectors. Integration of their approaches is crucial to sustainable development. Toward that end, the article present an elaborated conceptual framework for integration based on five steps. (DFa)
- There is no one-size-fits-all approach or methodology for integration. Integration, understood as manifold interactions, is a key process in transdisciplinary research and knowledge co-production. It should not remain a mere buzzword – discussion in this article help to avoid that. (TPa)

Wamsler, C. et al. (2021): *Linking internal and external transformation for sustainability and climate action: Towards a new research and policy agenda*. Global Environmental Change, 71.

- Valuable systematic literature review and a useful model tha can lead to a society of care. The paper presents also a roadmap for a future research agenda. (ADi)

Woiwode, C. et al. (2021): *Inner transformation to sustainability as a deep leverage point: fostering new avenues for change through dialogue and reflection*. Sustainability Science, 16(3), p. 841–858.

- This paper fortifies the call for more emphasis of the role of inner transformation for sustainability and considers the inner dimension as a deep leverage point. (ADi)

Wuelser, G. et al. (2021): *On which common ground to build? Transferable knowledge across cases in transdisciplinary sustainability research.* Sustainability Science, 16, p. 1891–1905.

- Attempt to identify first elements of a body of knowledge (transferable knowledge) of TDR (CPo)

Approaches, methods and tools

Gertschen, A. (2021): *Transdisciplinary research partnerships with business and civil society in the North-South context Opportunities and risks for researchers and funding institutions in Switzerland*. Swiss Academies Communications, 16(7).

- This publication critically assesses transdisciplinary cooperation in the north-south context. There is a specific focus on business stakeholders, which is not so common in the TD publication landscape. (JGr)

Moreno-Cely, A. et al. (2021): Breaking monologues in collaborative research: bridging knowledge systems through a listening-based dialogue of wisdom approach. Sustainability Science, 16, p. 919-931.

- The Circle of dialogue of wisdom methodological approach explores the role of listening in bridging different knowledge systems in collaborative spaces. (AMo)

Hemström, K., et al. (2021): *Transdisciplinary knowledge co-production: a guide for sustainable cities*. Practical Action Publishing.

- Based on long-standing experiences of co-producing in various context, this compilation mangages the balancing act between providing insights transferable to future endeavours and brief, deeply contextualized illustrations - with ease and in a very reader-friendly language. It provokes relection, encourages differentiated views on challenges and limitiations, and sparks the desire to experiment, learn and share. (SSt)

Renn, O. (2021): *Transdisciplinarity: Synthesis towards a modular approach.* Futures, 130.

- This article proposes a modular concept for a transdisciplinary scientific approach combining and integrating curiosity driven research with goal oriented (advocacy) knowledge generation and catalytic, process-oriented expertise. (RLa)

Schneider, F. et al. (2021): *Co-production of knowledge and sustainability transformations: a strategic compass for global research networks*. Current Opinion in Environmental Sustainability, 49, p. 127-142.

- A strategic tool to foster co-production of knowledge in interrelated fields of action among global sustainability-oriented research networks. (TTr)

Schwarz, R. M. and Bennett, L. M. (2021): *Team effectiveness model for science (TEMS): Using a mutual learning shared mindset to design, develop, and sustain science teams.* Journal of Clinical and Translational Science, 5(1), p. 1–6.

- Interesting overview of challenges teams have to cope with, very helpful juxtaposition of mindsets and of topics to focus on. (CPo)

Shape-ID (2021): *The SHAPE-ID Toolkit: Overview, trajectories, and user guidance*. Zenodo.

- This publication provides a directory for the SHAPE-ID toolkit and all the other SHAPE-ID documents published open access on Zenodo. It is a key resource to find out about the current state of the art on inter- and trandisciplinarity and AHSS integration. (IFl)

Research policy: funding, quality criteria, evaluation

Collado-Ruano, J., Segovia-Sarmiento, J. and Silva-Amino, D. (2021): *Education, poverty, and gender: An intercultural and decolonial analysis in the Andean region*. Cadernos de Pesquisa, 51.

- The objective of this article is to contribute to the Sustainable Development Goals (SDGs) 1, 4, and 5 in the Andean Region, based on a critical, intercultural, and decolonial dialogues. The methodology systematizes, analyzes and interprets data obtained from the comparative study in the seven Andean countries, using different poverty, educational, and gender indexes from 2007 to 2017. As a result, the article allows to know the political, economic, educational, and social evolution in Argentina, Bolivia, Chile, Colombia, Ecuador, Peru, and Venezuela. An intersectoral approach is also developed in order to recognize the conditions of structural inequality suffered by indigenous and Afro-descendant peoples of these Andean societies. To conclude, proposals are made to (re)think and (re)build strategies, plans, and public policies in the region. (FPa)

Fletcher, I., Lyall, C., and Wallace, D. (2021): *Pathways to Interdisciplinary and Transdisciplinary Research: the SHAPE-ID Toolkit*. Zenodo.

- Clear, concise and actionable policy action points are needed now that IDR and TDR are accepted as the way forward for the research ecosystem. This third SHAPE-ID policy brief introduces the SHAPE-ID Toolkit and presents recommendations to policymakers and funders on what needs to change to increase inter- and transdisciplinary research, involving the Arts, Humanities and Social Sciences to maximise effective responses to societal challenges. (GLi)

Hanusch, F. and Schad, M. (2021): *Hydrogen research: Technology first, society second*? GAIA 30(2), p. 82-86.

- Hydrogen futures are in the making right in front of our eyes and will determine socio-ecological path dependencies for decades to come. However, expertise on the societal effects of the hydrogen transition is in its infancy. Future energy research needs to include the social sciences, humanities and interdisciplinary studies: energy cultures have to be examined as well as power relations and anticipation processes since the need for (green) hydrogen is likely to require a massive expansion of renewable energy plants. (AJo)

Laursen, B. K., Gonnerman, C. and Crowley, S. (2021): *Improving philosophical dialogue interventions to better resolve problematic value pluralism in collaborative environmental science*. Studies in the History & Philosophy of Science 87, p. 54-71.

- The article discusses strategies for addressing problematically plural values. It lanches the discussion on how to better combine dialog that help to detect problematic value differences with complementary tools – listed in an extensive appendix - to help teams coordinate these differences. (SSt)

Schäfer, M., Bergmann, M., and Theiler, L. (2021): *Systematizing societal effects of transdisciplinary research*. Research Evaluation, 30(4), p. 484–499.

- Addresses the often raised, but seldomly systematically analysed theme of societal impact. (KKa)
- Schäfer et al. contribute to understanding the societal effects of transdisciplinary research projects. The heuristic includes the temporal and spatial dimension of occurring effects (first-, second- and third-order) and characterizes possible forms of effects. (DLa)
- This paper introduces an approach to systemize societal effects in terms of forms of effects as well as the distance from a transdisciplinary research activity in space and time. This helps researchers and evaluators to grasp the spectrum of what societal effects can be and facilitates their reflection. (JKn)

OECD (ed.) (2021): *Reducing the precarity of academic research careers*. OECD Science, Technology and Industry Policy Papers, 113, OECD Publishing, Paris.

- This report offers recommendations and a set of policy options to improve working conditions and professional development, better link funding to human resource policies, make governance more inclusive, promote equal opportunities and diversity, improve human resource management, promote inter-sectoral and international mobility, and develop the evidence base on research careers. There is a need to make transitions into and out of academia, industry and other sectors easier. (TPa)

Case studies and reflections on research projects

Dreyer, M. et al. (2021): *Too big not to fail? On the design and execution of inter? On transdisciplinary research using the example of the large-scale project ENavi*. GAIA, 30(1), p. 29–34.

- This design report reflects the inter- and transdisciplinary cooperationin a large-scale research project (the Kopernikus project Energy Transition Navigation System (ENavi)) that was lacking a designated problem and project constitution phase. The high number and strong heterogeneity of the project participants combined with the large spatial frame created particularly difficult conditions for inter- and transdisciplinary cooperation. The authors also outline the approaches to solutions for these challenges developed by the project, and draw lessons for inter- and transdisciplinary large-scale projects. (AJo)

Estrada, A. et al. (2021): La transdisciplinariedad del currículo para fomentar la equidad social en las Instituciones de Educación Superior del Ecuador. *Práxis Educativa,* 16, p. 1-15.

- The aim of the article is to address, from a complex, intercultural and transdisciplinary perspective, the pedagogical practices that are carried out in university classrooms. It also develops an epistemological position that defends social equity through the inclusion in the curricula of those ancestral knowledge that favour reflection and the rethinking of the current way of life of society. The methodology used is analytical, exploratory and interpretative, and follows a non-experimental design. (FPa)

Fam, D. and O'Rourke, M. (2021*): Interdisciplinary and Transdisciplinary Failures. Lessons Learned from Cautionary Tales*. London, Routledge.

- This book helps interdisciplinary and transdisciplinary researchers and practitioners learn comprehensively about what doesn't work. Documenting details of project failure matters–not only as an illustration of experienced challenges but also since projects do not always follow step-by-step protocols of preconceived and theorized processes. (DFa)

Fraude, C. et al. (2021): *Creating space for reflection and dialogue: Examples of new modes of communication for empowering climate action*. GAIA, 30(3), p. 174–180.

- This article highlights the need for more systematic development and evaluation of transformative communication spaces and formats. These are much-needed insights to understand the potential of reflection and dialogue for influencing our beliefs, emotions, motivations and perceptions of climate change. (TMi)

Goldberg, R. F. and Vandenberg, L. N. (2021): *The science of spin: targeted strategies to manufacture doubt with detrimental effects on environmental and public health.* Environmental Health, 20(33).

- TD attempts to achieve coherence in narratives and action. In this paper, the authors explain how vested interests are defended by creating the opposite: doubt and dissent. The paper creates awareness of the socio-economic context that may impact on well intended projects. (SRu)

Hitziger, M. al al. (2021): *System Thinking and Citizen Participation Is Still Missing in One Health Initiatives – Lessons From Fifteen Evaluations*. Frontiers in Public Health, 9.

- A meta-perspective drawn from a variety of projects, summarising the current state of transdisciplinarity and participation in the \One Health\" domain." (SRu)

Kastenhofer, K. and Molyneux-Hodgson, S. (eds.) (2021): Community and Identity in Contemporary Technosciences. Cham, Springer.

- Edited volume addressing identity options and identity constellations in contemporary inter- and transdisciplinary science and research. Includes a comprehensive introductory chapter on changing conceptions of identity and community in STS and on the far-reaching implications of identity patterns in the technosciences and sustainability sciences. (KKa)

Kristof, K. (2021): *Erfolgsfaktoren für die gesellschaftliche Transformation.* GAIA, 30(1), p. 7–11.

- In her essay, Kora Kristof sets out both the basic competencies and procedural competencies of change agents necessary for successful transformation and also succinctly summarizes the key success factors for the change process. In doing so, she formulates in a clear, practice-oriented language and avoids the scientific language of relevant professional publications, which is often off-putting for potential users of the research results of transformation research. With her essay, Kora Kristof helps to ensure that the research findings of transformation research are better applied in practice and that the upcoming important social transformations hopefully take place more quickly. (TMi)

Lawrence, R. J. (2021): *Creating Built Environments. Bridging Knowledge and Practice Divides* (1st ed.). London, Routledge.

- This book presents and illustrates innovative contributions applied during the planning of built environments, with case studies focusing on five strategic domains and the interrelations between them. These recent contributions apply concepts, methods and tools that enable concerted action between stakeholders involved in policy definition and project implementation. These methods and tools include experiments in living- labs, prototypes on site, virtual simulations and agent based modeling, as well as participatory approaches with citizen science for data collection, the development of alternative scenarios, and visioning plausible futures. (RLa)

Marcelín-Alvarado, M. A., Collado-Ruano, J. and Orozco-Malo, M. (2021): *Intercultural universities in Mexico: decolonizing the intercultural philosophy of education.* Language and Intercultural Communication, 21(5), p. 618–630.

- This article develops a qualitative, descriptive, and analytical methodological approach, to critically rethink the problems of cultural and linguistic inclusion that indigenous peoples fase. The modern/colonial world-system and the geopolitics of knowledge that hegemonic countries impose upon others are introduced. Then, this study describes the historical and political context that led to the creation of inclusive initiatives in universities. Later, it explains the educational philosophy that intercultural communication adopts in two educational centers. As a result, this work discusses the intercultural communication between indigenous and hegemonic populations. (FPa)

Maturana, B., Salama, A. M., and McInneny, A. (2021): *Architecture, urbanism and health in a post-pandemic virtual world*. Archnet-IJAR, 15(1), 1–9.

- This article is based on a review of more than 70 submissions, and 15 articles by 35 scholars have been retained, including publications by educators and practitioners from 12 countries. The authors explain the need to embed transdisciplinarity in current and future built environment research. (RLa)

Moreno Cely, A. (2021): *Transforming higher education in Bolivia by linking two contra-hegemonic movements: agroecology and the Decolonial turn.* International Journal of Qualitative Studies in Education, p. 1-18.

- This study describes a Bolivian higher education program on agroecology that has been running for more than three decades. The program bridge academic and Indigenous and Local knowledge using transdisciplinary and community-based approaches to foster dialogue among different knowledge systems. (AMo)

Osinski, A. (2021): *Towards a critical sustainability science? Participation of disadvantaged actors and power relations in transdisciplinary research*. Sustainability (Switzerland), 13(3), p. 1–21.

- Shows how different conceptualizations of sustainability seem to frame the expressions of transdisciplinary involvement – especially differences in the involvement of disadvantaged actor groups, the application of deliberative formats and the mitigation of power differentials. (SJa)

Pinheiro, S. L. and Pasquier, F. (2021): *Social Environmental Inequalities in France When Facing Covid-19 Health Crisis.* Transdisciplinary Journal of Engineering and Science, 12, p. 17–20.

- One of the lessons that we take from this health crisis due to COVID-19 is that the problems are allinterconnected, and for that, transdisciplinarity analyses will be more and more needed to face it as well asa transdisciplinary pedagogical approach that might help us to connect the dispersed knowledge. Besidesthat, the virus comes with a strong pedagogy in itself that remind us the social inequalities presents insociety. Moreover, those social inequalities cross several layers of a health map, touching environment,education, relations, community and so on. In the direction of a transdisciplinarity education, Pasquier(2020 [4]) evokes that "it is more urgent than ever that transdisciplinary education truly transmit in alively way the human values and not just the humanistic ones". In a sense that help us "to look for waysof doing things that are fair, that is to say that are in the correctness of the action, correctness that wewill define by: an appropriate approach, carried out in the right moment, in good proportions and for agood duration". (JCo)

Rudow, A. and Bugmann, H. (2021): *Waldlabor Zürich: Das Reallabor für angewandte Forschung und umfassenden Wissenstransfer zu Waldthemen nimmt Gestalt an*. GAIA - Ecological Perspectives for Science and Society, 30(3), p. 200-203.

- \Waldlabor Zürich\" is a living laboratory for applied research and comprehensive knowledge transfer on forest topics. Designed for a lifetime of 100 years, it offers unique possibilities of long-term research. It is run by an association comprising all relevant stakeholders, thus enabling disciplinary, interdisciplinary, and transdisciplinary work. (AJo)

SHAPE-ID. (2021): *SHAPE-ID Toolkit Resources - Case Studies Collection*. Zenodo.

- This publication illustrates the roles that Arts, Humanities and Social Science research and creative practice can play in inter- and transdisciplinary research through short accounts of innovative research projects, funding schemes, organisations and infrastructures. (GLi)

Vega, K. A., Schläpfer-Miller, J., and Kueffer, C. (2021): *Discovering the wild side of urban plants through public engagement*. Plants People Planet, 3(4), p. 389–401.

- A project that combines citizen science, ecological research, cultural theory and arts and demonstrates how such wide-ranging collaborations are essential for ecological research about socioecological systems. Published in an inter- and transdisciplinary journal that is rooted in disciplinary ecology (New Phytologist Trust). (CKu)

Education

Boor, I. et al. (2021): *Meaningful Assessment in Interdisciplinary Education - a practical handbook for university teachers*, Amsterdam University Press B.V.

- Calls for a strong connection between academia and the rest of society are growing. Universities are expected to play a critical role both in conducting research and in educating a new generation of academic professionals. This handbook inspires to implement innovative assessment methods that assess higher-order skills and/or interdisciplinary learning outcomes rather than assessing solely the acquisition of knowledge. (TPa)

Pasquier, F. (2021): *Mobiliser la dimension du spirituel en education.* Leadership spirituel en pratiques, p. 295-301.

- Trois cadres théoriques pour rendre opératoire le spirituel en education : Les principaux concepts et les épistémologies que nous mobilisons pour permettre ce type de travail et pour élaborer des propositions utilisables en Sciences de l'Éducation et de la Formation s'appuient sur trois domaines. D'abord la Transdisciplinarité (Nicolescu, 1996), avec la pensée complexe (Morin, 1992), la théorie des systèmes (Bertalanffy et Chabrol, 2012) et la question de la conscience (Guillemant et Morisson, 2015). Ensuite la Psychologie Transpersonnelle (Descamps, 1993), sur les questions de liberté, de responsabilité et d'éthique. Enfin les Humanités Numériques, depuis les artefacts technologiques et les technologies éducatives (Bourgatte, Ferloni et Tessier, 2016) jusqu'à la technontologie (Lemos & Kern, 2009) : la technique fusionnée à l'ontologique. (JCo)

Rogga, S. and Zscheischler, J. (2021): *Opportunities, balancing acts, and challenges - doing PhDs in transdisciplinary research projects*. Environmental Science & Policy, 120, p. 138-144.

- Very comprehensive compilation of the challenges PhD students have to cope with in TDR projects. (CPo)

Searle, M. et al. (2021): *Illuminating Transformative Learning/Assessment: Infusing Creativity, Reciprocity, and Care Into Higher Education*. Journal of Transformative Education, 19(4), p. 339–365.

- This article offers an inspiring reflection on how to assess transformative learning in higher education (HE) and can contribute to the transformation of assessment practices in HE and beyond. The overall approach the authors present is also inspiring for TD and collaborative learning processes that aim to foster reflection, and helps teaching staff to rethink conventional teaching and assessment practices. (ADi)

SHAPE-ID. (2021): *SHAPE-ID Toolkit Resources - Annotated Bibliography collection*. Zenodo.

- This document compiles annotated bibliographies of the key readings on inter- and transdisciplinary research from the academic literature and from European research policy literature. (GLi)

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