swiss academies of arts and sciences

Tour d'Horizon of Literature 2020

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 2020 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

Abellio, R. and de Freitas, L. (2020): *A arte de L.F. e a gnose de R.A., por José Guilherme Abreu.*

− Two Masters approached each other from Philosphy and Art. Abellio assumes to be gnostic in the tradition of Kabbalah. Lima is close to Basarab Nicolescu and founder of transdisciplinarity. (JTi)

Augenstein, K. et al. (2020): *From niche to mainstream: the dilemmas of scaling up sustainable alternatives*. GAIA - Ecological Perspectives for Science and Society, 29, p. 143–147.

− Augenstein et al. (2020) discuss the dilemmas of scaling up sustainability alternatives that is of high interest in research to foster urgently needed transformative change. They decisively discuss how this effects the science and practice of transformative transdisciplinary research.
− The paper makes a very useful contribution (identifying three dilemmas of up-scaling from innovative/transformative niches) grounded in an acknowledgment of complexity and non-linearity key to understanding societal dynamics. The paper is also of utmost timeliness and relevance, given the less than 10 years remaining for a successful transition towards sustainability. (TMi)

Bagheri Alireza (ed). *Abortion: Global Position and Practices, Religious and Legal Perspectives.* Springer, Cham, Switzerland.

− In addition to his latest volume, Dr. Ali Bagheri has authored and edited numerous books and articles on a number of medical and bioethical topics that are relevant to the international transdisciplinary community. He has worked with the UN and WHO in the field of bioethics in the past, and continues to write and lecture on that topic. (RJo)

Collado-Ruano, J. (2020): *Filosofía de la innovación educativa y desarrollo de competencias digitales con las TIC.* In: Collado-Ruano, J. et al. (2020): Filosofía de la innovación y de la tecnología educative, p. 15-47.

− This study seeks to reinforce the digital skills in the professional profile of teachers with a transdisciplinary educational innovation philosophy which uses ITC. (FPa)

Freeth, R. and Vilsmaier, U. (2020): *Researching Collaborative Interdisciplinary Teams Practices and Principles for Navigating Researcher Positionality.* Science & Technology Studies, 33(3), p. 57–72.

− Interesting paper on the challenges researchers face when they study transdisciplinary projects in a co-productive way. They have to balance observation and participation, curiosity and care and impartiality and investment. (CPo)

Fritz, L. and Meinherz, F. (2020): *Tracing power in transdisciplinary sustainability research: an exploration*. GAIA - Ecological Perspectives for Science and Society, 29 (1), p. 41– 51.

− This paper makes an important contribution to Td research by analysing various in way in which power plays a role during Td projects. It identifies different forms of power relationships and traces their potential influence at different stages of Td research projects. (OEj)
− The article provides a concise summary of social theories of power. It illustrates how the three categories of power" become manifest in transdisciplinary knowledge productions processes. Thus it is very useful for conducting research in the field. (USe)

Gibbs, P. and Beavis, A. (2020): *Contemporary Thinking on Transdisciplinary Knowledge: What Those Who Know, Know.* Springer, Cham, Switzerland.

− Collection of understandings of and approaches to transdisciplinarity from very different angels. Interesting for those who want learn more about understandings beyond the dominate one in the European sustainability science context. (CPo)

Hodgson, A. (2020): *Systems Thinking for a Turbulent World: A Search for New Perspectives.* Routledge, London.

- Offers a deep dive into systems philosophy, including the phenomenology of time, and shows how this is relevant to the uniting of systems thinking and fututes practice. Very accessible to practitioners as well as having a great deal of depth (few authors are able to combine these two attributes). (GMi)

Jahn, T. et al. (2020): *Sozial-ökologische Gestaltung im Anthropozän.* GAIA - Ecological Perspectives for Science and Society, 29(2), p. 93 – 97.

- The paper deals with a very relevant topic for science and policy. It\'s a good guideline for further discussion as it provides helpful food for thought. (TMi)

McGregor, S. L. T. (2020): *Transdisciplinarity and Transpraxis.* Transdisciplinary Journal of Engineering & Science, 11.

- The praxis and transpraxis, their juxtaposition revealed that augmenting transdisciplinarity with transpraxis and vice versa is a noteworthy addition to both strands of thought. Transdisciplinarity gains reflexivity, dialogic exchange, transpraxis space, contingent universalities and provisionality, and the notion of deconstructing self-serving hierarchies. Transpraxis gains a rich methodology for creating new knowledge emergent from deconstructing self-serving hierarchies and binaries. It is enriched with the zone of nonresistance, the unifying Hidden Third, and a richer notion of resistance in the form of multiple levels of Reality. (AEs)

Meyer, E. and Peukert, D. (2020): *Designing a Transformative Epistemology of the Problematic: A Perspective for Transdisciplinary Sustainability Research.* Social Epistemology 34(4), p. 346–356.

- This publication provides inspiring food for thought on problem-orientation of transdisciplinary research. The concept of the problematic is interwoven with design research into \'problematic designing\' in order to open a new thinking practice. Since reading the paper, I can no longer use the colloquial words such as project design, research design and the like carelessly. (ALu)

Schäfer, M., Lux, A. and Bergmann, M. (2020): *Editorial to the special issue "Transdisciplinary Sustainability Research – Linking research processes and outputs to societal effects".* Virtual Special Issue in Environmental Science and Policy, 107, p. 206-210.

- The special issue aims at stimulating the debate on capturing links between transdisciplinary research processes, their results and intended (or unintended) effects as well as the challenge of categorizing and tracing different types of effects. It collects the broad understanding of impacts in transdisciplinary (sustainability) research and shows the clear needs for further research on this topic. (ALu)
- This Special Issue gathers a broad array of papers discussing the societal impact potentails of transdisciplinary research approaches and projects as a result of of the 3-year collaborative research project "TransImpact – Effective Transdisciplinary Research". (BSm)

Approaches, methods and tools

Caniglia, G. et al. (2020): *A pluralistic and integrated approach to action-oriented knowledge for sustainability*. Nature Sustainability, 4, p. 93-100 (2021).

– Caniglia et al. (2020) make a valueable contribution to better understand and co-design action-oriented knowledge, which is of utmost importance in transdisciplinary research. (DLa)

Ison, R. and Straw, E. (2020). *The Hidden Power of Systems Thinking: Governance in a Climate Emergency.* London, Routledge.

– This book offers a subtle and sophisticated view of systems thinking, and shows how it could transform global-to-local governance of one of the most pressing issues of our time. (GMi)

Pearce, B. J. and Ejderyan, O (2020): *Joint problem framing as reflexive practice: honing a transdisciplinary skill*. Sustainability Science, 15(3), p 636-698.

– This papers discusses the importance of joint problem framing in Td research and identifies key challenges to it\'s implementation. The paper introduces a tool for Td researchers to reflect on their own practice of joint problem framing. (OEj)

Pohl, C. et al. (2020): *Integrating systems and design thinking in transdisciplinary case studies.* GAIA- Ecological Perspectives on Science and Society, 29(4), p. 258–266.

– The authors present ETH Zurich's course Umweltproblemlösen, in which Bachelor's students in the environmental sciences use systems thinking to analyse a case, and design thinking to develop measures together with stakeholders. Participants thus produce transformation knowledge and anticipate their future role as transdisciplinary sustainability scientists. (AJo)

Raineau, L. (2020): *Regard socio-anthropologique sur la géologie de terrain en sciences de la Terre.* Natures Sciences Sociétés, 3-4(28), p. 260-269.

– An original anthropological view on the work carried on by geologist in the fields, their practices, language, etc. It reveals that they have a very phenomenological approach on site, leading to an inclusive standpoint about their environment and the concept of "nature", which seems quite different to the one of laboratory geologists. (BHu)

Rajagopalan, R. (2020): *Immersive Systemic Knowing: Advancing Systems Thinking Beyond Rational Analysis.* New York, Springer.

– This book offers two fundamental challenges to the methodology and practice of systems thinking. First, it argues that, despite several paradigm changes during the 20th Century, systems thinking still marginalizes arts-based methods and other forms of practice that go beyond the rational-analytic. Second, drawing on Indian philosophical ideas, it argues that there are two modes of human consciousness - \'striving\' and \'abiding\' - yet systems thinking assumes the former and mostly misses the importance of the latter. The book offers alternative practices that open up the boundaries of what could be considered a legitimate part of systems thinking. (GMi)

Robson-Williams, M., Small, B. and Robson, R. W. (2020): *Designing transdisciplinary projects for collaborative policy-making: The Integration and Implementation Sciences framework as a tool for reflection*. GAIA - Ecological Perspectives on Science and Society 29(3), p. 170-175.

– The Integration and Implementation Sciences framework is used for the evaluation of a transdisciplinary research project in a river catchment in New Zealand which aimed at supporting collaborative policy-making. In this Design Report, the authors draw conclusions concerning the inclusion of community values, the consideration of a project\'s losers, and uncertainty, among others. (AJo)

Research policy: funding, quality criteria, evaluation

Akademien der Wissenschaften Schweiz (2020): *Forschung für gesellschaftliche Innovationen an Fachhochschulen (FHs) – Potenziale, Rahmenbedingungen, Handlungsfelde*r. Swiss Academies Communications 15 (12).

— In Switzerland, universities of applied sciences have the legal mandate to take a complementary but equal position to universities in the research landscape - their potential to advance TD research is less disputed. In this publication fields of action for different stakeholders are identified and are aimed to initiate discussions in the institutions, in policy-making, among scientists and funding agencies. (TPa)

Heigl, F. et al.(2020): *Co-Creating and Implementing Quality Criteria for Citizen Science*. Citizen Science: Theory and Practice, 5(1), p.23.

— In this article, authors identify a set of quality criteria based on the experiences of Austrian Citizen Science projects and the existing international literature. By their nature, these criteria are context-specific, which is why a general application is not recommended without thoughtful reflection. They provide a good baseline. (TPa)

OECD (2020): *Addressing societal challenges using transdisciplinary research*. OECD Science, Technology and Industry Policy Papers, No. 88, OECD Publishing, Paris,

— The study by an international group of experts assessed 28 case studies. From this analysis, recommendations to various stakeholders in science and society were finally formulated on how science can effectively support solutions for complex societal challenges. (TPa)
— A great policy paper for advocacy of TD in policy making. (SRu)

Lawrence, R. (2020): *Advancing with transdisciplinarity: Effective responses for coronavirus.* Transdisciplinary Journal of Engineering & Science, 11.

— Since 2020, there are thousands of publications on coronavirus and Covid-19 but only a few that explicitly explain the advantages of transdisciplinary responses to the pandemic. The author argues for concerted action between different knowledge domains in order to combine diverse types of knowledge and ways of knowing that are needed before effective responses can be implemented. (RLa)

L. Verwoerd et al. (2020): Combining the roles of evaluator and facilitator: Assessing societal impacts of transdisciplinary research while building capacities to improve its quality. Environmental Science & Policy, 103, p. 32-40.

— This case study illustrates how social impact of td research can be assessed with an accompanying evaluation conducted by the facilitators of the td research as evaluators (combined role). Based on key TDR features, they provide qualitative evidence on outcome level (network effects, affective effects, cognitive effects, legitimizing effects) and impact level (knowledge enriched policy practice, revised policy agenda & plans, political support). Conclusion contains reflection on the benefits of the combined facilitator-evaluator-role and problematization of pre-defined evaluation criteria. (SSt)

Schikowitz, A. (2020): Creating relevant knowledge in transdisciplinary research projects - Coping with inherent tensions, Journal of Responsible Innovation, 7(2), p. 217-237.

— This article elaborates on tensions between coproducing policy-relevant knowledge, practically relevant knowledge, and scientifically relevant knowledge. It discusses the common (tensions-) coping strategy to work with models, as well as the resulting marginalization of knowledge that is not easily quantifiable. In the conclusions for funders alternative research career incentives, funding schemes for practitioners and institutional requirements are addressed. (SSt)

Case studies and reflections on research projects

Chenorkian, R. (2020): *Conception et mise en œuvre de l'interdisciplinarité dans les Observatoires Hommes-Milieux (OHM, CNRS)*. Natures Sciences Sociétés 28(3-4), p. 292-305.

− The author is leading the network of the Observatoires hommes-milieux (OHM), he has himself brought in the Institut Ecologie et Environnement of CNRS, interdisciplinarity constituting the main watchword of this program. He presents the theoretical and methodological perspectives which has been mobilised within this network since about ten years. (BHu)

Collado-Ruano, J., Silva Amino, C. D. (2020): *Educación transdisciplinar para un desarrollo sostenible y regenerativo: propuestas ecopedagógicas innovadoras del Sistema Educativo Ecuatoriano*. In: De Castro et al. (ed): Transdisciplinariedad y educación del futuro. Cátedra Unesco de Juventud, Educación y Sociedad; Universidad Católica de Brasília, Brasília, p. 55-80.

− This study describes the regenerative educational practices developed in the Ecuadorian Curriculo during few years, while it was implemented the TINI methodology. This transdisciplinary study combines scientific knowledge with ancestral wisdom, in order to raise environmental awareness among millions of ecuadorian students. (FPa)

Dannecker, P. (2020)*: Transdisciplinarity 'Meets' Power Structures: Challenges and Experiences of a Capacity Building Project on Transdisciplinarity*. Austrian Journal of South-East Asian Studies, 13(2), 175-192.

− The politics of hidden agendas and power relations is highlighted in this article based on collaborative research in Asia. These political dimensions are often ignored in articles about the co-production of knowledge, even those projects involving North-South collaborations. (RLa)

Guevara Pedemonte, N., Riera Gil, E. (2020): The EAPC Research Driver programme: Fostering better policies through knowledge transfer between academia, public administration and society In: European Public Mosaic, 10, Bridiging Science and Policy Making, p. 26-41.

− Reflections on an inspiring example of a td research programme, convened by a public administration school, that funds td research, provides capacity building and consultancy, and links td research to the use of public policy evaluation tools. Amongst others, it identifies challenge owners – directors of public bodies with the potential power to influence the issue at hand – and institutional mentors – public officers with managerial responsibilities – and involves them in research teams. (SSt)

Matschoss, K. et al. (2020): *Co-creating transdisciplinary global change research agendas in Finland*. European Journal of Futures Research 8(2).

− This article discusses why the co-creation of research for global change, based on the outcomes of a pilot program coordinated by Future Earth in Finland, is beneficial in terms of social engagement and responsibility. The approach involves concerted action at both national and community levels in order to respond effectively to sustainability challenges. (RLa)

Mitlin, D. et al. (2020): *Knowledge Matters: The Potential Contribution of the Coproduction of Research*. The European Journal of Development Research, 32, p. 544–559.

− The authors argue that academics are insufficiently self-critical about the power dynamics involved in knowledge production with social movements. (AMo)

Rose, M., Maibaum, K. (2020): *Meeting the challenge of (co-)designing real-world laboratories. Insights from the Well-Being Transformation Wuppertal project*. GAIA- Ecological Perspectives for Science and Society, 29(3), p. 154–160.

− Communication and organisation are crucial in real-world laboratories, which face the challenge of being expected to produce not only knowledge but also real-world change. The authors share their experiences and lessons learned from a real-world laboratory in Wuppertal, Germany. (AJo)

Pequito Mingo, J.A., Nobre Santos, M.I. and Tiaga de Oliveira, J. C. (2020): *Paisagens angolanas com vultos matemáticos, e outros académicos*. Arte e Cultura na Identidade dos Povos – Actas do XXIX Encontro da Associação das Universidades de Língua Portuguesa. P 401-439.

− Angola academy before University creation and after national independence is portrayed. Diaspora in other continents is one of the parts local scholars as well as others in diaspora- colonialism or cooperation- are analysed. (JTi)

Rüegg, S. R., & Häsler, B. (2020): *One Health continues to evolve for better health of people, animals and ecosystems.* Conexus, 3, p. 8–25.

− An account on knowledge and methodological gaps, when TD is applied to health in a holistic context. (SRu)

Scholz, R. W. et al. (2020): *Organizational vulnerability of digital threats: A first validation of an assessment method*. European Journal of Operational Research, 282(2), p. 627-643.

− Transdisciplinary process to identify and address vulnerabilities from digital practice in conjunction with expert and stakeholder workshops. (ORe)

Twelbeck, K. (2020): *Wheat: A powerful crop in US-American culture: Between politics and plant agency*. GAIA - Ecological Perspectives for Science and Society, 29(4), p. 235-242.

− A truly interdisciplinary case study examining the role of wheat in shaping US-American history and society. It is deploying new paths of analysing human-nature-relationships by using methods from the humanities and building on knowledge from the natural sciences. (USe)

Zinsstag, J. (2020): *Une seule santé : vers une science plus inclusive*. Bulletin de l'Académie suisse des sciences humaines et sociales 26 (2) , p. 1-7.
Zinsstag, J. (2020): *One Health: auf dem Weg zu einer integrierenderen Wissenschaft*. Bulletin der Schweizerischen Akademie der Geistes- und Sozialwissenschaften 26 (2), p. 27–31.

− The story of a Swiss veterinary and epidemiologist\'s discovery of the relevance of the\'One Health\' approach to his discipline in an African context, told by himself, opens a vast field of inter- and transdisciplinary exploration and collaboration. With a main focus on adaptation of medical research and intervention to the diversity of real life conditions and cultural contexts, a major point made is the often overlooked importance of language diversity in diagnosis and therapy and hence the place given to linguistics and linguists at the transdisciplinary workplace. (TBe)

Education

Chassé, P., Cogos, S. and Fouqueray, T. D. (2020): *La thèse interdisciplinaire en sciences de l'environnement, des défis à relever et des opportunités à saisir: regards de doctorants*. Natures Sciences Sociétés, 28(4).

– Three PhD students present the analyse of a survey carried out among other PhD students in Environmental Sciences in France, following a conference about interdisciplinary thesis. They point out the main identified difficulties and suggest some recommendations for a better integration of interdisciplinarity within doctoral studies. (BHu)

Collado- Ruano, J. et al (2020): *Educação, artes e interculturalidade o cinema documentário como linguagem comunicacional e tecnologia inovadora para a aprendizagem da metodologia P+D+I.* Texto Livre: Linguagem e Tecnologia, Belo Horizonte-MG,13(3) p. 376–393.

– The objective of the article is to reflect on the use of digital information and communication technologies (ICT) in the linguistic and educational processes of teachertraining in Ecuador. The research uses a transdisciplinary, qualitative, exploratory, descriptive, and analytical methodological approach, that delves into thedigital competences that teachers must develop to enhance artistic and intercultural languagesamong their students. As a result, the learning technologies used during the filming, development, and production of the film documentary 'The Lost Art of Education' are shown. Subsequently, a research, development and innovation (R+D+i) project ispresented that aims to spread the intercultural, plurinational, and multi-ethnic idiosyncrasy of Ecuador with the digital inclusion of an interactive educational video-game. It isconcluded that the of the 21st century needs a deep innovation of theories, methodologies, and didactic resources focused on revaluing the practices, customs, wisdom, and worldviews of ancestral peoples with technological tools, digital media, andaudiovisuals resources. (JCo)

De Castro et al. (2020): *Transdisciplinariedad y educación del futuro*. Cátedra Unesco de Juventud, Educación y Sociedad; Universidad Católica de Brasilia, Brasília. 260p

– This important free book offers in spanish, after a fisrt publication in portuguese last year, an overview of experimented tools and approaches for educational uses based on transdisciplinary approches. (FPa)

Estrada-García, A. (2020): Los principios de la complejidad y su aporte al proceso de enseñanza. Ensaio: Avaliação e Políticas Públicas em Educação, 28(109), p. 1012-1032.

– The research integrates an epistemological dialogue that guides to rethink education, specifically the teaching process, from a complex and transdisciplinary perspective. (AEs)

Visser, J., & Visser, M. (2020*): Seeking Understanding: The Lifelong Pursuit to Build the Scientific Mind*.Brill | Sense, Leiden.

– A transdisciplinary team of prominent scholars from across the spectrum of the natural, social, and human sciences, collaboratively shed light on what it takes humans to build and cultivate the scientific mind along the lifespan. The book is an important resource for rethinking the vital tenets of both formal and informal learning under conditions of the Anthropocene. Videographed conversations with the authors, available at the 'Building the Scientific Mind' YouTube channel, enhance the content of the book. (JVi)

Contributors

Thomas Bearth (TBe), Javier Collado Ruano (JCo), Oliver Ejderyan (OEj), Alex Estrada-García (AEs), Bernard Hubert (BHu), Almut Jödicke (AJo), Ruth Jones (RJo), David P. M. Lam (DLa), Roderick Lawrence (RLa), Alexandra Lux (ALu), Tobias Mickler (TMi), Gerald Midgley (GMi), Adriana Moreno-Cely (AMo), Theres Paulsen (TPa), Florent Pasquier (FPa), Christian Pohl (CPo), Ortwin Renn (ORe), Simon Rüegg (SRu), Ulrike Sehy (USe), Barbara Smetschka (BSm), Studer Sibylle (SSt), José Carlos Tiago de Oliveira (JTi), Jan Visser (JVi)

Project management and editing

Elena Paganoni, Tobias Buser and Theres Paulsen, td-net

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