

Upcoming Special Issue on Transdisciplinary Innovation

Scheduled for publication in August 2018

Disciplinary innovation has unlocked tremendous value for society, as has innovation at the intersections of two or more disciplines, such as mechatronics, bioinformatics, or other combinations of disciplines. However, today's world is becoming more connected, more complex, and more uncertain. This special issue sets out to explore the concept of transdisciplinary innovation as a means to address these challenges.

Transdisciplinary research and innovation are the approaches required to address real-world complex problems, such as poverty, environmental crises, crime, or chronic illness, that cannot be adequately tackled from the sphere of specific individual disciplines. Jean Piaget has been credited with introducing the term in 1970 at a seminar on interdisciplinarity in universities held at the University of Nice (Piaget, 1972). He argued that transdisciplinarity "will not be limited to recognise the interactions and/or reciprocities between the specialised researches, but [...] will locate these links inside a total system without stable boundaries between the disciplines." (ibid, p138) In other words, transdisciplinarity is a systemic approach, which shapes methodologies and frameworks to suit the problem, rather than an interdisciplinary approach, which typically focuses on combining aspects from two or more disciplines to create new knowledge (Klein, 2002).

Following the logic presented by Jantsch (1970) at the same event in Nice, and elaborated on by Max-Neef (2005), transdisciplinarity is distinct from multi-, pluri-, or interdisciplinarity. Multidisciplinarity does not necessitate the cooperation or coordination of disciplines. While pluridisciplinarity includes cooperation across disciplines, only interdisciplinarity includes coordination of the disciplines towards a desired outcome ("what can be done"). Transdisciplinarity adopts a more human- and value-centred approach to consider "what *should* we do?" and why it should be done (for whom).

As a result, transdisciplinary innovation is more than cobbling together modules, tools, or techniques from other disciplines to come up with something new and useful. It is the process of purposefully synthesizing and integrating these modules into a complex greater something that is designed to address a greater goal that is valued by individuals or communities.

Transdisciplinarity is associated with a variety of definitions and practices. Generally included characteristics of transdisciplinarity are that it is:

- Action-oriented: focussing on addressing real world complex issues.
- Participatory: considering not only scientific or academic knowledge, but also forms of practical, local and personal knowledge that have historically been undervalued.
- Continuously evolving: "disciplinary contents, structures, and interfaces change continuously through coordination geared to pursuit of a common system purpose" (Jantsch, 1970).
- Holistic: building an understanding of whole systems and their complexity (see Ackoff 1999) for an introduction in systems thinking, and Hasan (2014) for an overview of complexity theories).
- Purposive: building a deeper understanding of a common human and social purpose to direct our efforts, by bringing values and norms into play (Jantsch, 1970).

Transdisciplinary innovation is important to improve our understanding of the circumstances and creative practices that are required to address various complex issues the world is currently facing. It is not enough to rely on discipline specific analytical methods and data to decide which interventions we need to develop. We need to bring people from different disciplinary backgrounds together, build on their expertise, and create successful initiatives through practices that transcend each of their individual disciplines.

Working in transdisciplinary ways poses various challenges to practitioners. They have to embrace complexity and uncertainty, step outside the comfort zone of their own discipline, and face challenges of collaborating with people from different disciplinary backgrounds with differing worldviews. These challenges are exacerbated by the siloed way in which educational institutions, government, public institutions, and many businesses are organized. These same organizations, however, do more – and more require their staff to have transdisciplinary skills. Consistent with industry reports such as *The Future of Jobs* (WEF, 2016), employers are less interested in disciplinary knowledge and more interested in people skills required to collaborate across disciplines. The days are numbered for innovation by individuals in cubicles within functional silos.

What transdisciplinary innovation means in practice remains poorly understood. Since its introduction in the early seventies, there has been a rich scholarly discourse on the term transdisciplinarity, its philosophical underpinnings and epistemologies, and its theoretical implications, resulting in a broad range of academic publications. However, in addition to the academic discourse, we feel the time has come to bring together knowledge that is applicable and made accessible to the practical world of innovation. In this special issue, we invite papers that contribute to our understanding of transdisciplinary innovation practices, addressing questions such as:

- What are the practical skills and mindsets required to engage in transdisciplinary innovation?
- Who are the transdisciplinary innovators? Does it necessitate integrating multiple people across disciplines, or can it occur within individuals?
- When is innovation transdisciplinary? When it occurs, is it permanently fused together? Does it occur in intervals? Does it oscillate between disciplines?
- Where does transdisciplinary innovation occur? Is it limited to specialized transdisciplinary labs and spaces, or can it occur anywhere?
- Why encourage transdisciplinary innovation? Under what circumstances is a transdisciplinary approach superior to other approaches? Who or what types of problem is it for?
- How does transdisciplinary innovation happen? Are there transdisciplinary capabilities that can be cultivated to improve transdisciplinary innovation? Is transdisciplinary innovation deliberate or accidental? Can policies, guidelines, or governance frameworks cultivate transdisciplinary innovation?

This special issue aims to express this discussion in an accessible manner such that academics, industry, and the public sector can adopt the frameworks, models, and ideas presented in each article.

We invite submissions on transdisciplinary innovation from academics, practitioners, and public or civil servants from around the world. Submissions from transdisciplinary teams of authors are particularly encouraged.

References

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Timeline: Scheduled for publication in August 2018

- March 1: Interested authors submit 1-paragraph outlines or abstracts
- May 1: Full articles due – see author guidelines: timreview.ca/authorguidelines
- June 1: Reviewer feedback sent to authors
- July 1: Revised articles due
- August 1: Articles edited and ready to publish

Contact

- **Dr. Martin Bliemel, Guest Editor** Director, Diploma in Innovation, Faculty of Transdisciplinary Innovation, University of Technology Sydney, Australia
Martin.Bliemel@uts.edu.au
- **Dr. Mieke van der Bijl-Brouwer, Guest Editor** Senior Lecturer, Faculty of Transdisciplinary Innovation and Core Member of the Design Innovation Research Centre, University of Technology Sydney, Australia Mieke.vanderBijl-Brouwer@uts.edu.au
- **Chris McPhee, Editor-in-Chief** *Technology Innovation Management Review*
chris.mcphee@timreview.ca

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