



Transdisciplinary Dilemmas and VIPs

Professor Nicholas Rowe
University of Auckland
UNESCO Chair in Dance
and Social Inclusion

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Transdisciplinary Research in Global Policy

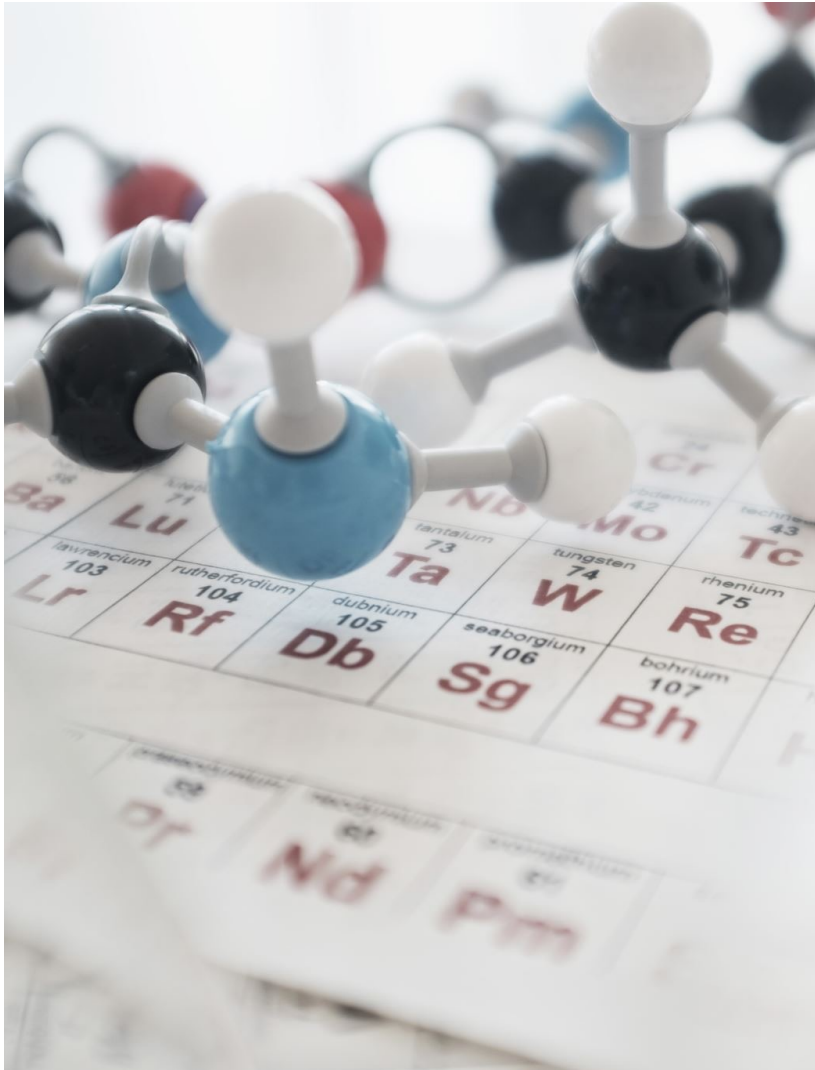
“Across the world, Universities are beginning to recognise the importance of trans-disciplinary research, not only in terms of generating new scientific knowledge/research excellence but also as a mechanism to link their research mission with their so-called 3rd mission to promote innovation and societal benefit....Specific actions that can be taken by universities include: **...introduction of (transdisciplinary) learning modules into science education and postgraduate training courses**”

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

“The complexity of both global challenges and questions in fundamental research stresses the importance of collaboration within and across the Natural Sciences, Life Sciences, Social Sciences, Arts, and Humanities. Over the past 10 years, interdisciplinary and transdisciplinary education and research have gained importance in national, European, and international research policies.”

-Wernli, D & Ohlmeyer, J. 2023. *Implementing Interdisciplinarity in Research-Intensive Universities*. League of European Research Universities





Activating Transdisciplinarity in Academia

“Serendipity can always play a role, but inter- and transdisciplinarity are more likely to be fruitful when the scientific and pedagogical methods are consciously chosen, developed, and implemented.”

Wernli, D & Ohlmeyer, J. 2023. *Implementing Interdisciplinarity in Research-Intensive Universities*. League of European Research Universities

“...proposers should describe how the consortium brings together the necessary disciplinary and interdisciplinary knowledge”

European Union. 2023. *Horizon Europe Programme Guide*. European Union



Transdisciplinary is an evolving concept:

“...would place (interdisciplinary) relationships within a total system without any firm boundaries between disciplines”

Piaget, J. (1972). “The epistemology of interdisciplinary relationships,” in *Interdisciplinarity: Problems of Teaching and Research in Universities*, ed. L. Apostel (Paris: Organization for Economic Co-operation and Development), 127–139.

“...is different academic disciplines working jointly with practitioners to solve a real-world problem.”

Klein, J. J., Grossenbacher-Mansuy, W., Bill, A., Scholz, R., and Welti, M. (eds) (2001). *Transdisciplinarity: Joint Problem Solving Among Science, Technology, and Society*. Basel: Birkhäuser Verlag.

“...is characterised by the involvement of multiple disciplines of science alongside end-users and stakeholders in collaborative research to address real-world sustainability issues.” (Duncan et al 2020)

Duncan, R., Robson-Williams, M., & Fam, D. (2020). Assessing research impact potential: using the transdisciplinary outcome spaces framework with New Zealand’s national science challenges. *Kōtuitui: New Zealand Journal of Social Sciences Online*, 15(1), 217-235.



Not interdisciplinary or multidisciplinary

Transdisciplinarity ...transcends mere convergence of disciplines:

- multidisciplinary is an uncommitted collaboration between different disciplines where experts use their traditional ways of addressing problems while maintaining their respective disciplinary perspectives.
- Interdisciplinarity generally works at the interface between a small number of pre-defined disciplines as a collaboration of different experts, with the aim of developing the most appropriate – and *singular*– approach, reflecting the parent disciplines.
- In other words, Interdisciplinarity and multidisciplinary still frame the problem from their disciplinary origins and then try and work together.
- Transdisciplinary research, in contrast, does not start from a disciplinary bias and is agnostic to which disciplines must be engaged. It is therefore open to diverse epistemological and ontological perspectives from across and beyond the social and natural sciences

Gluckman, P, Allen, K, Bardsley, A, Buklijas, T, Kaiser, M. (2021). "Transdisciplinarity and Universities: a path ahead" *Koī Tū: The Centre for Informed Futures*. <https://informedfutures.org/transdisciplinarity-and-universities-a-path-ahead/>

Transdisciplinary research...

- **approaches societal challenges** by framing questions through multiple domains and disciplines of knowledge;



Transdisciplinary research...

- **champions co-production and co-design** between academic and non-academic partners from industry, government and/or community;



Transdisciplinary research...

- **interweaves different knowledge systems and values** to work across theoretical perspectives and methodological practices;



Transdisciplinary research...

- **recognises that proposed solutions** require refinement through an iterative and inclusive process, to enhance its transformative societal impact.



*Students are engaged in
transdisciplinary learning
when....*

...they are working collaboratively with stakeholders to explore complex societal challenges beyond epistemological and ontological boundaries, generating new knowledge and transforming it into concepts, processes and products that are valued by others.



A transdisciplinary graduate...

...can address societal challenges and have an impact on the world by engaging stakeholders in an extended enquiry, unrestricted by disciplinary assumptions and values.



Transdisciplinary Collaboration

Collaboration means....

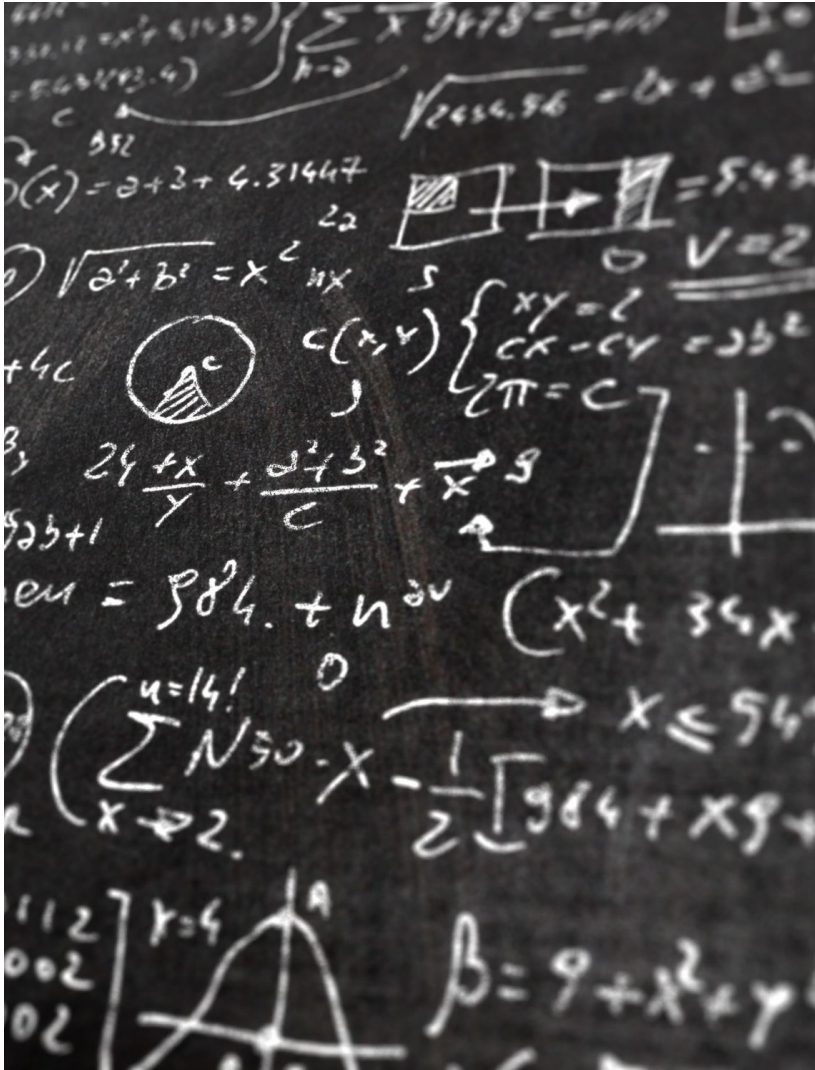
Rowe, N, Martin, R Ralph Buck & Alfdaniels Mabingo (2020): Teaching collaborative dexterity in higher education: threshold concepts for educators, *Higher Education Research & Development*, DOI: 10.1080/07294360.2020.1833843

...Cooperative models of professional activity streamline group productivity and product quality and are pervasive within service and assembly line contexts.

By contrast, collaboration is valued as a means of generating complex, innovative ideas that respond to diverse perspectives.

While collaborative endeavours inevitably involve phases of cooperation (teams working separately and in parallel), collaboration also requires cycles of discussion and decision-making amongst collaborators.

This tension between the productivity of cooperation and the creativity of collaboration can present a challenging polemic...



Collaboration requires...

Symmetries of:

- Actions
- Status
- Knowledge

Dillenbourg, P. (1999). *Collaborative Learning: Cognitive and Computational Approaches*. Elsevier.



Collaboration requires...

A purposeful sustaining of difference within:

- Group formation
- Group decision-making processes
- Group outputs and outcomes

Rowe, N. (2019). The great neoliberal hijack of collaboration: A critical history of group-based learning in tertiary education. *Higher Education Research & Development*, 39(4), 792–805.

Epistemological and ontological challenges for collaboration between:

Academic staff -
students

Academic
disciplines

STEM-CABLE

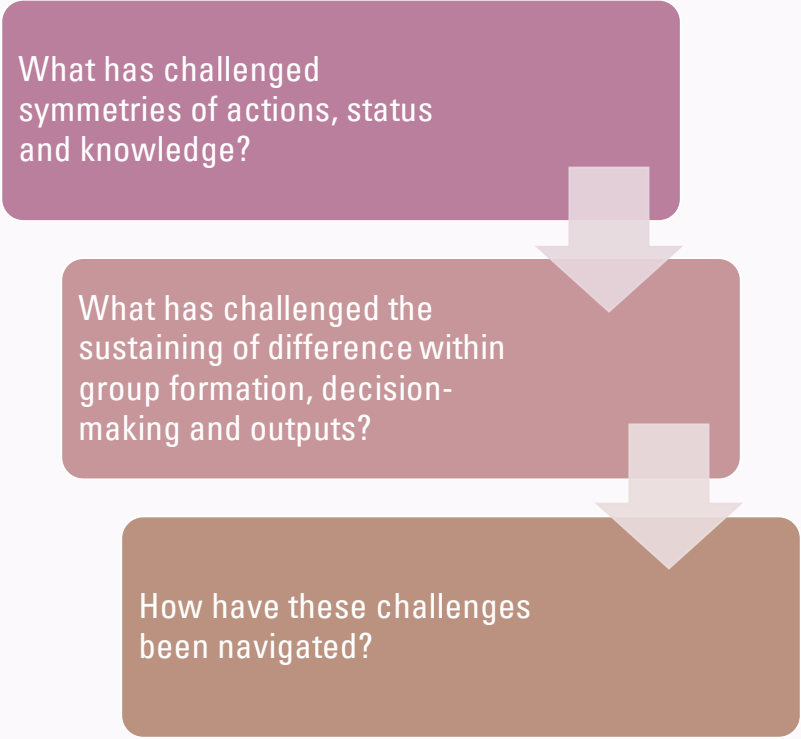
Quantitative-
Qualitative-
Critical-Creative

Academia –
Community-
Industry

Indigenous-
Non-Indigenous
worldviews

Researching Transdisciplinary Collaborations in VIP

What has challenged
symmetries of actions, status
and knowledge?



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graph TD; A[What has challenged symmetries of actions, status and knowledge?] --> B[What has challenged the sustaining of difference within group formation, decision-making and outputs?]; B --> C[How have these challenges been navigated?];
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What has challenged the
sustaining of difference within
group formation, decision-
making and outputs?

How have these challenges
been navigated?