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PERSPECTIVE



On intersecting modes of responsibility in Australia and Aotearoa New Zealand: a case for reimagining responsible innovation

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ABSTRACT

This Perspective considers the potential value and limitations of introducing Responsible Innovation approaches from the Global North into Australia and Aotearoa New Zealand. We reflect on the relationship of predominantly Western European understandings of responsibility and endogenous ‘Antipodean’ forms of responsibility, including Indigenous relationalities, collective stewardship, and care that extends to more-than-human worlds. Commencing a dialogue between these different modes of responsibility, we outline incommensurabilities, complementarities, and tensions within two core dimensions of Responsible Innovation, namely anticipation and inclusion. To realise benefits from introducing Responsible Innovation and avoid neo-colonial enforcements of adventitious understandings of responsibility, ‘Antipodean’ practitioners need to understand their multidimensional cultural contexts with the aim of collectively reconfiguring responsible practices. Pursuing intercultural dialogue with ‘Antipodean’ modes of responsibility can, in turn, help to responsibly innovate Responsible Innovation outside of the Global North and strengthen the concept’s foundational ethos of collective stewardship by making it more inclusive and multifaceted.

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Introduction

The concept of Responsible Innovation (RI) has generated increasing interest among research, science, and innovation practitioners in Australia and Aotearoa New Zealand (hereafter Aotearoa) in recent years, often starting with considerations for whether, and how, associated practices can add value to local innovation efforts (e.g. Ashworth et al. 2019; Eastwood et al. 2019; Espig et al. 2022; Fielke et al. 2023; Finlay-Smiths et al. 2023;

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Jakku et al. 2023; Lacey, Coates, and Herington 2020). Some of this scholarship already reflects on possible conceptual limitations and the potential contribution of alternative forms of RI in the context of both countries' settler-colonial histories, such as Indigenous-led RI approaches (Macdonald et al. 2021). However, the inherent framing of responsibility embedded within the concept and its appropriateness within the 'Antipodes' has so far received limited attention. Deeper engagement with RI's moral foundations in relation to local contexts, communities, and cultures is required to determine the concept's value in Australia and Aotearoa. Insights emerging from these deeper engagements can, in turn, contribute to RI scholars' efforts to reimagine and reconfigure the concept beyond its origins in the Global North (Doezema et al. 2019; Gao, Liao, and Zhao 2019; Ludwig and Macnaghten 2020; Macnaghten et al. 2014; Reyes-Galindo, Monteiro, and Macnaghten 2019; Wakunuma et al. 2021). Such reimaginings of RI must not only consider the meaningful involvement of diverse participants or epistemological status of different forms of ('traditional') knowledge, but indeed the potential for more fundamental ontological and epistemological incommensurabilities as well as prospects for meaningful co-existence of different modes of responsibility.

In this sense, reference to the 'Antipodes' not only emphasises both countries' geographic opposition to Europe and particularly Great Britain, infused with connotations of British colonial expansion. The notion also points towards potential dissonances with predominantly Western European cultural understandings of responsibility shaped by western liberal thought and democratic traditions (de Saille 2015; Macnaghten et al. 2014; Owen, von Schomberg, and Macnaghten 2021). In Australia and Aotearoa, these cultural foundations can neither be taken for granted nor considered as encompassing all local forms of responsibility. It is thus crucial to attend to the 'Antipodean' moral landscapes and their diverse modes of responsibility, of which many predate discourses regarding the social responsibilities of research and innovation. This includes those of the countries' Indigenous populations, the Māori and Aboriginal peoples, who express responsibility *inter alia* through notions of relationality, reciprocal obligations of care, and kinship networks.¹ Moreover, Western European understandings may not account for the knowledges, traditions, and cultures of all 'Antipodean' settlers and settler descendants, including diverse groups of non-Europeans and those with European ancestry who have been influenced by diverse intercultural relations over generations.²

This Perspective considers the potential value and limitations of introducing RI approaches from the Global North into Australia and Aotearoa, and how the concept relates to 'other' forms of responsibility. Continuing a thread of questions posed since the inception of this journal, we reflect on how 'could RI be framed in other parts of the world' and whether 'Northern framings of RI travel and translate beyond borders, and should they do so?' (Macnaghten et al. 2014, 192). RI can offer local benefits if practitioners are prepared to collectively reimagine and reconfigure their practices through intercultural dialogue between RI and 'Antipodean' modes of responsibility. Meaningful engagement with the endogenous cultures of responsibility across the 'Antipodes' can, in turn, help to responsibly innovate global RI scholarship by making its underlying ethos of 'taking care of the future through collective stewardship of science and innovation in the present' (Stilgoe, Owen, and Macnaghten 2013, 1570) more inclusive and multifaceted.

The contours of endogenous modes of responsibility in Australia and Aotearoa

In Aotearoa, responsible research and innovation must include the meaningful participation of Māori, the country's Indigenous peoples, based on several formal agreements signed with the British Crown around 1840 (Finlay-Smiths et al. 2023). How such participation may occur and what conceptual implications emerge for RI have so far not been considered by contributions to this journal. Māori share intimate connections with Te Ao Tūroa (the natural world), which manifest through interwoven relationships between the social, material, and spiritual worlds. This interconnectedness is reflected in Māori ontology (Te Ao Māori) and core principles in Māoridom. Manaakitanga refers to the care for others and desire to enhance their mana (prestige), which in turn improves one's own mana. Whakapapa is crucial to Māori identity as it locates genealogical connections, traced back to specific waka (canoes) on which Polynesian ancestors travelled to Aotearoa, and associated relationships to the natural world, including ancestral mountains and rivers. Kaitiakitanga describes the guardianship Māori hold for the natural environment, of which humans are an integral part. Ensuring social and environmental wellbeing by enhancing the mauri (lifeforce) of living and non-living entities is thus crucial for Māori. Adherence to these and other cultural principles results in responsibility emerging in the form of reciprocal relationships of care across the human, natural, and spiritual worlds.

Following these interwoven relationships, many Māori-led research or business initiatives often focus on enhancing the wellbeing of communities and their natural environments, rather than being solely motivated by profitability or productivity gains. Māori wellbeing includes taha hinengaro (mental health), taha whānau (extended family health), taha tinana (physical health), and taha wairua (spiritual health), which are all closely linked to healthy environments (McIntosh, Marques, and Mwipiko 2021). Collective intergenerational forms of care thus include social, material, and spiritual dimensions that are not necessarily commensurable with the often-individualistic understandings of responsibility in the Global North (Trnka and Trundle 2017; Wakunuma et al. 2021).

In the country currently known as Australia, interlocking cultures of more than 250 Aboriginal nations have cultivated unique relationships of care and responsibility for millennia. The Aboriginal concept of Country frames these networks, including obligations towards, and between, more-than-human worlds. This holistic framework weaves together the biophysical (waterways, soil structures, forests, grasslands, boulders, and hydrological systems), sentient (more-than-human kin such as plant and animal species, fungal networks, mountains and rivers), and intangible (ancestral creator beings, spirits, dreaming tracks, and songlines) elements and beings of land-, sea-, and skiescapes.

These interlinked realms are governed by Indigenous relationality – spirals of complex kinship webs that ground and hold Aboriginal peoples together and in place. This relationality emerges as 'culturally specific and gendered axiologies, ontologies, and epistemologies that are connected to the earth' (Moreton-Robinson 2016, 71), enabling life to thrive 'in an active, sentient, mutually caring and multidirectional manner' (B. Country et al. 2016, 456). Thus, Aboriginal responsibility goes beyond reciprocity

to include deep and generous respect, centred in honouring the elements of an expansive geography and the cultivation of personal, communal, and environmental care. Aboriginal cultural knowledges, developed *in situ* for over 60,000 years, are inextricable from relationships with, and maintenance of, Country.

Transduction of RI approaches to Australian and Aotearoa contexts should also account for existing understandings of responsibility among non-Western settler and settler-descendant communities. Similar to other countries with large immigrant populations, both countries have significant groups of peoples from Pacific nations, Asia, Latin America and Africa, which all bring their own distinct ethics and modes of responsibility (Du Plessis and Fairbairn-Dunlop 2009; Hill 2001; Nortjé, Jones-Bonofiglio, and Sotomayor 2021; Viana 2023; Wakunuma et al. 2021). These modes may, for instance, emphasise the role of the family unit and broader community in decision-making and deliberation processes, as compared to more individualistic approaches dominant in the Global North.

Responsible innovation and ‘Antipodean’ modes of responsibility – an emerging dialogue

Attending to these endogenous and alternative modes of responsibility has implications for how ‘Antipodean’ RI approaches can be operationalised, and for understanding their potential benefits and limitations. While each culture of responsibility warrants engagement in its own right³, this Perspective begins to explore an intercultural dialogue between RI and ‘Antipodean’ modes of responsibility. We reflect on how the forms of care and relationality described above resonate with two well-established dimensions of RI, namely anticipation and inclusion (Stilgoe, Owen, and Macnaghten 2013).

Anticipation involves contemplation of the potential futures research and innovation can create. In Māori and Aboriginal epistemologies, anticipating the future not only implies considering intergenerational timeframes but also acknowledging inseparable connections to the past. This manifests in the ontological groundings of Te Ao Māori in extended kinship relations and lasting connections with the natural world. For Māori, ancestors are always present and the past guides decision-making, as exemplified in the whakatauki (proverb) ‘Kau Mua, Ka Muri’, which translates to ‘walking backwards into the future’. In similar contrast to linear western temporality, Aboriginal relationality is expressed through the cultivation of temporal frameworks that hold the past and future in dialogue with the present. This complex relational network emerges through Aboriginal ontologies and epistemologies that have been represented through the English word ‘Dreaming’. The Dreaming connects ancestors and descendants, the living and non-living, human and more-than-human in multidirectional kinship webs that sit outside of western time, inhabiting a space of ‘everywhen’ (Stanner 1979). How can the established suite of anticipatory practices within RI’s portfolio account for these interwoven, non-linear temporalities?

Furthermore, it is crucial to reflect on who anticipates consequences of research and innovation and to what end. Taking the example of communal wellbeing, one may primarily focus on economic or physical health indicators. In our contexts, however, broader sociocultural outcomes are often of equal importance, such as sustaining customs, ceremonial rituals, languages, and traditional practices that maintain

relationships with material and spiritual worlds. Such aspirations might manifest in Māori communities aiming to enhance the mauri (life force) of sacred waterways, while Aboriginal peoples seek to cultivate reciprocal relationships of care with Country. Anticipatory practices should be reconfigured to ensure acknowledgement of Indigenous epistemologies, voices, and holistic wellbeing as legitimate, and indeed indispensable, aspects of responsible innovation outcomes.

Inclusion refers to incorporating diverse people, worldviews, values, and knowledges. In Australia and Aotearoa, this may include more-than-human voices. Within Aboriginal moiety systems, individuals are enmeshed in complex kinship networks that include plants, animals, landscape features, and ancestral spirits. Research and innovation practices by and with Aboriginal communities, such as those drawing on story-telling, ceremony, or communication with Country, can be seen as sense-making interactions that are embedded in these contexts. For Māori, inclusion involves similar relationalities, with Papatūānuku (the Earth Mother) being deeply respected as a conscious being that, through observation, can guide decision-making. As humans were created last within Māori ontology, they are responsible for caring for Papatūānuku and all other entities. These reciprocal relationships have been formally recognised for some iwi (tribes) by granting legal personhood to the Te Urewera National Park in 2014 and Whanganui River in 2017 (Finlayson 2019; Iorns Magallanes 2019; Kauffman 2020).

Fostering inclusive practices within Australia and Aotearoa should then go beyond exercises in generic consultation and elicitation, which can manifest not only as inadequate but potentially extractive engagement practices. While such forms of inclusion have been critiqued, including by RI scholars, they remain prevalent within many research and innovation initiatives (Chalmers et al. 2014; Jarmai and Vogel-Pöschl 2020; Lezaun and Soneryd 2016; Nowak and Paton 2018; Smith 2021; Valkenburg et al. 2020). This can be problematic since many Indigenous concepts of relationality extend inclusion towards the inseparable connections between people and more-than-human entities across the past, present, and future. Indigenous practices of decision-making, including as part of innovation processes, are thus generally with and for others, making inclusive and ongoing engagement a core feature rather than an add-on activity. Attending to these interrelationships as forms of inclusion must also involve diversity in research and innovation participants and practitioners, which points towards systemic aspects of RI. Dominant science approaches and colonial legacies in Australia and Aotearoa have historically disenfranchised Māori, Aboriginal peoples, and ethnic minorities (Kendall et al. 2011; McAllister et al. 2022; Smith 2021; Viana 2023; Williamson, Provost, and Price 2023), resulting in research and innovation often done for, or at best with, Indigenous peoples and minority groups. One area where such inadequate forms of inclusion and legacies of extractive research are currently confronted is the growth of Indigenous Data Sovereignty movements, which prioritise Indigenous ownership of data that relates to, or affects, Indigenous peoples collectively or individually (Maiam nayri Wingara Indigenous Data Sovereignty Collective et al. 2023; Taiuru, Burch, and Finlay-Smiths 2023; Williamson, Provost, and Price 2023).

As this example highlights, realising the potential of forms of inclusion that go beyond generic, or even extractive, engagements requires dedicated infrastructures and mechanisms to better support Indigenous- and minority-led research and innovation. This

entails co-designing multifarious, and culturally safe, career pathways and leadership positions for Indigenous peoples as well as for people from culturally and linguistically diverse backgrounds. Are RI practitioners prepared and equipped to address such systemic aspects of inclusive ‘Antipodean’ research and innovation?

Reimagining responsible innovation

Following these reflections, we suggest that RI practitioners in Australia and Aotearoa must acknowledge potential ontological and epistemological incommensurabilities as well as prospects for meaningful co-existence of different modes of responsibility. While there remains a risk of morally marginalising ‘Antipodean’ modes by introducing exogenous RI approaches, we see value in intercultural dialogue that explores the potential local benefits of RI and thereby also contributes to the diversification of global RI scholarship. Operationalising RI’s underlying ethos of collective, future-oriented stewardship in Australia and Aotearoa requires collectively reconfiguring what constitutes responsible conduct. Drawing on Latulippe and Klenk (2020), these reconfigurations must ‘make room’ for Indigenous and other peoples’ cultures of responsibility and allow for the refusal of established RI practices if they are deemed unsuitable or as perpetuating colonial power relations. One insightful example in this journal of how ‘making room’ may be achieved in innovation practices is Macdonald et al.’s (2021) collaboration in northern Australia’s Kakadu National Park on country owned by the Jawoyn people.

The potential value of introducing RI into such ‘Antipodean’ contexts aligns with Ludwig, El-Hani, and others’ framework for intercultural transdisciplinary research, which acknowledges potential overlaps in Indigenous and Western ontologies, epistemologies, and ethics (El-Hani, Polisel, and Ludwig 2022; Ludwig 2016; Ludwig and El-Hani 2020). These overlaps remain partial in many cases. Where dissonances exist, they may complement or conflict with each other. These spaces of conflict and incommensurability demonstrate the limits of integrating multiple perspectives, which amplifies sociopolitical questions regarding Indigenous peoples’ self-determination and sovereign decision-making. This framing is equally applicable to ‘Antipodean’ contexts that can both benefit from, and be challenged by, dialogue between different cultural understandings of responsibility.

To build on complementarities with ‘Antipodean’ cultures of responsibility and constructively engage with creative tensions, RI practitioners should avoid pursuing predetermined practices or outcomes. Some RI approaches from the Global North may not be appropriate in Australia or Aotearoa. Others, however, could offer significant value for certain research and innovation activities, not least since both countries’ science and innovation systems continue to be characterised by Western institutional structures, development strategies, and performance indicators (see, e.g. Ashworth et al. 2019; Espig et al. 2022; Finlay-Smiths et al. 2023; Lacey, Coates, and Herington 2020; Manning and Walton 2021). Espig et al. (2022), for instance, contend that innovation efforts across two public research organisations in Australia and Aotearoa to support agricultural digitalisation can benefit from established RI approach but also face challenges to meaningfully engage with crucial ‘Antipodean’ aspects of responsible research and innovation, such as upholding Indigenous Data Sovereignty.

Within these settings, RI can contribute to opening up possibilities for doing research and innovation differently and more responsibly. To realise this potential benefit, RI practitioners need to first understand their multidimensional cultural contexts with the aim of reimagining responsible practices, including through the relational and place-based networks that bind Indigenous and other peoples' lifeworlds together. As others in this special issue note, resulting practices must then be open-ended, process-oriented, and reconfigured to emerge out of, and remain situated within, given cultural contexts.

Concluding remarks: towards responsibly innovating responsible innovation

This Perspective calls for reflexive evaluation of RI's value proposition and limitations within Australian and Aotearoa settings to avoid RI becoming a neo-colonial enforcement of adventitious understandings of responsibility. We emphasise that 'Antipodean' RI practitioners should not only consider their geographic opposition to RI scholars in the Global North, but also substantively engage with different local conceptions and practices of responsibility. This includes fostering a sense of collective moral imagination and collaborative deliberation that opens possibilities for meaningful dialogue between different cultures of responsibility. Such approaches would contribute to the 'unfinished journey' of RI (Fisher 2020; Owen, von Schomberg, and Macnaghten 2021). As demonstrated by a growing body of scholarship, critically evaluating RI's applicability and value outside of the Global North offers significant potential for the reimagination, reconfiguration, and responsible innovation of RI itself (Doezema et al. 2019; Gao, Liao, and Zhao 2019; Ludwig and Macnaghten 2020; Macnaghten et al. 2014; Reyes-Galindo, Monteiro, and Macnaghten 2019; Wakunuma et al. 2021).

Pursuing intercultural dialogue with 'Antipodean' modes of responsibility can strengthen RI's foundational ethos of collective stewardship by making it more inclusive and multifaceted. Core elements of the endogenous cultures of responsibility in Australia and Aotearoa – of which we only sketched the contours – have the potential to enrich research and innovation approaches aimed at responsibility and stewardship. Through their complementary dissonances, 'Antipodean' modes of responsibility reiterate the importance of human and more-than-human relationalities, interwoven temporalities, and reciprocal obligations of care across human, natural, and spiritual worlds. We invite RI practitioners to reflect on the intersections with such different modes of responsibility as part of the concept's ongoing development.

Notes

1. While helpful for our argumentation, we do not intend to homogenise European and 'Antipodean' cultural contexts. In fact, 'Māori' and 'Aboriginal' ethnic categories historically only emerged as shared ethnicities through common relations to British colonialism and the modern states of Australia and New Zealand.
2. On the evolving dynamics of indigeneity, 'native' identities, and autochthonous senses of belonging in settler-descendant societies see, for instance, Trigger's (2008) insightful reflections on multiple cultures of belonging and emergent senses of indigeneity in Australia or Dominy's (2001) ethnographic exploration of the ambiguous discourses surrounding settler-descendants' cultural senses of belonging and indigeneity in New Zealand's high country.

3. This should include perceived incoherences, tensions, and ‘undesirable’ aspects within each culture of responsibility and associated practices. Otherwise, one risks creating idealised portrayals of ‘other’ modes of responsibility, similar to what Kowal (2015) terms ‘sanitised differences’ that focus on the ‘good’ elements of Indigenous cultures, to the detriment of more meaningful engagements with the lived experiences of different forms of responsibility.

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