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To cite this article: Suliasi Vunibola & Matthew Scobie (2022) Islands of Indigenous innovation: reclaiming and reconceptualising innovation within, against and beyond colonial-capitalism, Journal of the Royal Society of New Zealand, 52:sup1, 4-17, DOI: [10.1080/03036758.2022.2056618](https://doi.org/10.1080/03036758.2022.2056618)

To link to this article: <https://doi.org/10.1080/03036758.2022.2056618>



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Published online: 04 Apr 2022.



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Islands of Indigenous innovation: reclaiming and reconceptualising innovation within, against and beyond colonial-capitalism

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ABSTRACT

From Vision Mātauranga and Callaghan, to Silicon Valley and billionaire space races, ‘innovation’ is becoming a placeholder for particular conceptions of progress. The concept is almost exclusively, however, associated with capitalist innovation for profit. This dominant and exclusionary framing has the effect of obscuring innovative knowledge and practices that occur outside of colonial-capitalism. This study places the concept of innovation under a critical Indigenous lens to rethink and reclaim innovation as a crucial aspect of Indigeneity, within-and-against, and beyond the colonial-capital relation. We provide two mini qualitative case studies of Indigenous innovation within-and-against and beyond colonial-capitalism from across the vast historical and contemporary scope of Te Moana-nui-a-kiwa. Together these cases extend Indigenous innovation to include collective struggle for collective wellbeing. In doing so, this study creates diverse theoretical and empirical space for a past, present and future of Indigenous innovation.

ARTICLE HISTORY

Received 31 January 2022
Accepted 15 March 2022

HANDLING EDITOR

Wendy Larner

KEYWORDS

Indigenous; innovation; case study; pacific; Māori

The realm of science fiction once imagined self-driving cars and space tourism. These are now realities that innovation brought to life. This sort of innovation dominates the conventional ‘disruptive’ entrepreneurial narrative, with individual heroes at the story’s centre. These innovations are merely the tip of the iceberg. Fixating on these only reveals what is above the surface, and obscures the majority of innovation below. Although the focus of innovation in policy, media and research is often for-profit innovation (production), there are many aspects of innovation that are not explicitly for-profit (reproduction). These are about how we can lead the kind of lives we value and have reason to value (Waring 1988; Sen 1999; Dalziel and Saunders 2014). This essay expands the concept from productive to reproductive innovation, and Indigenous innovation enables us to do this.

Innovation and the capacity for dynamic adaptation is a defining trait of Indigeneity (Stevens 2015). These have taken many forms over time as Indigenous Peoples have adapted within and innovated beyond contemporary limits. Examples include but are

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not limited to navigation, housing, agriculture and climate resilience (Gegeo 1998; Fujieda and Kobayashi 2013; Chand et al. 2014; Irwin and Flay 2015; Vunibola and Leweniqila 2021). But these forms of innovation do not play into a convenient colonial narrative of Indigeneity as fixed in a static, pure, pre-colonial past (Reid and Rout 2016). The assumptions of this narrative are that colonialism and capitalism brought civilisation and progress to stagnant cultures around the world (see Rodney 1972 for critique). This narrative erases Indigenous innovation in the past, present and future.

Innovation is a key theme within Vision Mātauranga (Ministry of Research, Science & Technology 2005) which suggests an acknowledgement by the Crown of the possibilities for Indigenous innovation. Although innovation is conceived broadly within the spirit of this document, the key theme Indigenous Innovation is immediately rendered in service of economic growth. Innovation does not always occur in the productive sphere, in conventional businesses or entrepreneurial frameworks (Gibson-Graham and Roelvink 2014; Peredo et al. 2019). It is not always patented, copyrighted and monetised. Often it is in pursuit of social, intergenerational, decolonial or climate justice. This essay surfaces forms of innovation within-and against, and beyond the colonial-capitalist frame that Indigenous Peoples have been either forced into or excluded from. By colonial-capitalism, we mean the intimate relationship between capitalist expansion and colonial dispossession, which has driven the relationship between colonial powers and Indigenous Peoples for centuries (Wakefield 1849/1914; Rodney 1972; Coulthard 2014; Ince 2018).

We present two case studies of Indigenous innovation. Firstly, Te Kerēme, the Ngāi Tahu Claim offers an example of Indigenous innovation within-and-against the status quo. This does not necessarily rely on 'traditional' Indigenous knowledge but instead illustrates that Indigenous Peoples can incorporate knowledge and practices in service of their self-determination. Secondly, we explore the case of Aviva Farms in Fiji, which is a diversified Indigenous business based on customary land, as an example of Indigenous innovation beyond the status quo. This case draws from Indigenous knowledge to overcome the exploitative and extractive practices that were introduced through colonialism. Both cases are examples of collective innovation for collective wellbeing as a key trait of Indigenous innovation. This framing overcomes the dominant individualising and inequality blind conceptions of innovation as traits solely possessed by entrepreneurial individuals and re-establishes innovation as a context for positive change. We build on the recent intervention of Pecis and Berglund (2021), who offer an intersectional feminist critique of innovation studies and present opportunities to move beyond these critiques. This reconceptualisation of innovation opens space for collective efforts by Indigenous and ally researchers, practitioners and activists committed to the collective advancement of social justice, developing capabilities, and achieving aspirations for self-determination. Indigenous innovation is the agency to pursue opportunities for Indigenous wellbeing and autonomy.

From anti-Indigenous innovation to Indigenising innovation

The dominant innovation narrative has evolved from Joseph Schumpeter's (1942) perspective. In brief, Schumpeter (1942) argues that entrepreneurial innovation is central to economic change, because innovation can create temporary monopolies, which enable abnormal profits that competitors soon copy. These temporary monopolies

provide necessary incentives for innovation. This narrative obscures alternatives. Capitalist innovation is driven by the expansion of profits. In its coupling with productivity as rationale and outcome, it demands the production of social and environmental ‘externalities’. Some are exploited, others are excluded, and impacts are written off as ‘external’. Conceived in this narrow way, innovation is thus fundamentally contradictory – it makes production more efficient, but constrains the reproduction of life ways. In practice, innovation is promoted as a solution to all things in life; yet despite colossal investments of energy and resources, it has yet to reveal the capacity and vision to confront global crises and improve collective wellbeing. Moreover, as Linda Tuhiwai Smith argues following Jerry Mander, innovation is bound into an imperative to suppress and destroy Indigenous alternatives (Mander 1991; as cited in Smith 1999). Commentators are calling for more diverse forms of innovation in service of sustaining communities globally (MacCallum et al. 2009; Gibson-Graham and Roelvink 2014).

Pecis and Berglund (2021) explore innovation as an institutional context by drawing from Mazzucato (2013) who offers an alternative narrative. In this narrative, innovation across much of the twentieth century was embedded within a collective praxis in which the state played a critical role as ‘orchestrator of the future’ by incentivising different actors to contribute to this future and enact the unknown together (Pecis and Berglund 2021). As neoliberalism took hold, states were rearticulated from orchestrators of the future to equals of enterprise, enabling accumulation to proceed because existing social and environmental limits constrained growth. This de-institutionalisation brought the individual to the fore of innovation. Because of these historical and political changes, it has become difficult to sustain the collective impetus of innovation.

Innovation is thus viewed as practice in context. For Pecis and Berglund, this offers alternative possibilities for relationships between race, gender and innovation. Drawing from hooks’ capitalist patriarchy and intersectionality (1984/2000), Mazzucato’s entrepreneurial state and the changing context of innovation (Mazzucato 2013), and Fraser’s redistributive justice (Fraser 1995). They define innovation as a revolutionary act for the common good, as well as a terrain for economic growth and social development (Pecis and Berglund 2021, p. 994). Such a definition re-centres concerns with people, values and issues, and the inequalities and racism that can underpin them. By situating innovation as a context rather than the work of an individual or a technology, the authors open up an understanding of innovation from the margins, push the margins to the centre, and propose a more radical and inclusive innovation.

Our argument takes this recent questioning of innovation and its individualisation and commercialisation in a specific direction – to the relation between innovation and Indigenous self-determination. We start by emphasising two caveats: assuming that states play a potentially constructive role as ‘orchestrators of the future’ risks missing the point that states are historically specific social relations embedded in wider political economies (Sturman 2021).

Innovating from the margins requires an explanation of how innovation marginalises. Innovation is entrenched in masculine practices, role models are mainly white men, and the contributions of women are less likely to be considered innovative (Pettersson 2007; Danilda and Thorslund 2011; Alsos et al. 2013; Wikhamn and Knights 2013; McIntyre 2015; as cited in Pecis and Berglund 2021). Those that innovate from these margins are more likely to innovate in ways that are not ‘valued’ within capitalist production,

despite enabling capitalist production to continue. The same is the case for Indigenous Peoples whose knowledge and practices are set up as traditional and fixed in a pre-colonial past. We agree with Pecis and Berglund (2021) that the time is ripe for alternative ways of thinking, conceptualising and envisioning innovation. Their study, which centres on the experiences of black women innovators, guides our study on collective Indigenous innovation. Black women or Indigenous interventions reveal ‘paradoxical spaces’ of resistance where innovation can be reinvented. Practising innovation for equality can co-opt the concept of innovation in a feminist or Indigenous way.

In this paper, we examine collective innovation for collective wellbeing as a key trait of Indigenous innovation. We see innovation more in the service of reproduction than production namely in shaping how we reproduce ourselves historically and culturally specific ways. This framing interprets innovation as a context for positive change rather than the individualising and inequality blind conceptions of innovation as the practice of entrepreneurial individuals.

Indigenous innovation

Indigenous Peoples have always been innovators, but colonial interests have obscured this innovation. Eurocentric representations of Indigenous Peoples as backward and uncivilised, driven by Darwinian theories of racial hierarchy, were dominant from the mid-nineteenth century (Fry 2019). These representations differ from place to place depending on perceived differences and similarities to the colonists. This represents at worst, systematic racism weaponised for colonial interests, and, at best, a profound inability to recognise and understand place-based adaptation and innovation essential for sustaining Indigenous livelihoods.

But colonial-capitalism has created enduring structures that Indigenous Peoples now live within-and-against. This has not only mutated external visions of Indigeneity and the capacity for innovation, but internal visions of Indigeneity and the capacity for innovation. This internalised colonialism can manifest as reactionary traditionalism. Reactionary traditionalism is a logical consequence of the essentialisation of Indigenous knowledge in direct opposition to Western knowledge as a dichotomy (Hogan 2000). Reactionary traditionalism seeks to create a positive cultural identity to resist against negative internalised characteristics by reversing the colonial narrative and representing ‘the West’ as corrupt and the Indigenous culture as moral (Reid and Rout 2016; following Hogan 2000). A natural result is that some activities useful for the wellbeing of Indigenous communities can be uncritically rejected as non-Indigenous or ‘not from here’. A secondary result is that many gaze inwards from moralised, external positions and glimpse only static, and often romanticised, traditional practices or ‘culture’.

In contrast with reactionary traditionalism, orthodox traditionalism does not remain committed to either an ‘old’ static identity, or a ‘new’ hybrid identity, but embraces external ideas and technologies through values and practices embedded in Indigenous tradition (Hogan 2000; as cited in Reid and Rout 2016). Broadly within an orthodox traditionalist approach, Stevens (2015) draws from Te Ahukaramū Charles Royal who complicates the notion of mātauranga Māori by suggesting it can be understood as both knowledge framed by Māori epistemology and knowledge of multiple origins held by Māori people (Royal 2012). Tā Tipene O’Regan suggests that using new

technologies to continue enduring practices means ‘we are being “extraordinarily Māori” because in his opinion “the defining characteristic of Polynesian and Māori culture historically is [the] capacity for dynamic adaptation”’ (Stevens 2015, p. 64). Although Stevens and others here do not necessarily use the word ‘innovation’, they are creating a broader space within which Indigenous innovation has, does and will occur.

Limitless examples of Indigenous innovation exist outside of the traditional narrative if one merely stops to look. Navigation requires knowledge of aerodynamics for sails and hydrodynamics for bodies to power 700 + capacity double-hull canoes that explored and continue to explore the Pacific (Irwin and Flay 2015). Indigenous housing requires vernacular architectural design and joinery work, which was and continues to be adaptive to climate adversities (Fujieda and Kobayashi 2013). Indigenous agriculture requires soil science and agrarian techniques, including carbon sequestration, to support generations of life with limited resources (Gegeo 1998; Vunibola and Leweniqla 2021). Indigenous climate resilience requires the ability to forecast weather patterns for preparation and support climate resilience and adaptability (Veitayaki 2006). In seafood economies, initiatives are drawing on science funding to refine Indigenous technologies, investigate cross-iwi tikanga, and mobilise environmental science to strengthen hapū-based economies, farm wild toheroa with Indigenous methods, and fish sustainably at commercial scales (see e.g. Sustainable Seas Challenge 2022).

Three strands of literature engage with Indigenous innovation broadly understood. A multidisciplinary body of literature explicitly explores Indigenous innovation (for example Drahos 2011; Drahos and Frankel 2012; Alexiuk 2013; Huaman and Sriraman 2015; Peredo et al. 2019; Ruckstuhl et al. 2019a, 2019b). A second strand explores ideas peripheral to Indigenous innovation, such as entrepreneurship, tribal and community economies (Peredo 2001; Peredo et al. 2004; Bargh 2012; Dana 2015; Reid and Rout 2016; Amoamo et al. 2018; Mika et al. 2018; Steven et al. 2019; Vunibola and Scheyvens 2019; Scheyvens et al. 2020; Reid et al. 2021). And a third strand focuses on the role of innovation broadly in pursuit of resilience and self-determination (Wesley-Smith 2007; Cornthassel 2012; Coulthard 2014; Finau and Scobie 2022). These multiple strands reveal the complex nature of Indigenous innovation in colonial contexts, because innovation is not always directly associated with moving beyond the status quo but is sometimes about advancing Indigenous interests within-and-against it.

Having briefly explored the conventional innovation narrative, problematised this following Pecis and Berglund (2021), and introduced Indigenous innovation as an alternative context, we have illustrated the need to think beyond innovation for production and profit, to innovation for reproduction and life. This leads to the broad research questions, how is Indigenous innovation implicated in struggles within-and-against, and beyond the status quo? And what are the implications of this for innovation more broadly? Next, we briefly outline how this research question was addressed before turning to the findings.

Methods

The case studies of Indigenous innovation in this essay are based on two field-based doctoral projects. The first is with Ngāi Tahu, an Indigenous group in Te Waipounamu, the South Island of Aotearoa (New Zealand). This study explored the formation and

contemporary practices of Te Rūnanga o Ngāi Tahu, the organisation tasked with managing the collective settlement resources of Ngāi Tahu people. The principles of kaupapa Māori were followed where appropriate (Smith 1999) and the study was conducted by a Ngāi Tahu person, based on informal and formal conversations, documentary reviews and participant observations. The second case study followed a culturally appropriate qualitative methodology called Uvi (tropical yam) (Vunibola 2020). This was developed for studying Indigenous development on customary land in the Pacific. This research investigated Aviva Farms located at Natalau village, Nadi, Fiji. The principles of the vanua framework (Nabobo-Baba 2008) were followed while the Indigenous researcher was immersed within the bula vakavanua (Indigenous Fijians' way of life). Talanoa (formal and informal conversation) was utilised as a specific method within this broader setting. While neither of these cases were necessarily about Indigenous innovation at the time, similar themes were observed within both cases so that when the researchers came together to discuss the findings of the cases they found broader commitments to innovation requiring further critical exploration. This essay is a manifestation of that critical exploration. This methods section is necessarily brief, but more detail can be found in outputs from related studies (Scobie et al. 2020, 2021b; Vunibola and Scheyvens 2019).

Indigenous innovation within-and-against, and beyond colonial-capitalism

In this section, we explore two case studies that illustrate innovation both within-and-against, and beyond the status quo to improve the lives of Indigenous Peoples. These are collective innovations for the collective good, and are particular manifestations of self-determination. All of these innovation strategies are necessary as Indigenous Peoples deploy particular means towards particular ends when they are available, and as they see fit.

Within-and-against: The Ngāi Tahu Claim

Many Indigenous Peoples now live within the colonial-capitalism that we have described. Despite struggling for self-determination beyond this framework, innovation is still required within-and-against it to improve people's lives on the ground today. Between 1849 and 1998, Ngāi Tahu were involved in a seven generational struggle against the Crown to settle particular grievances (TRoNT n.d.b). During the peak of the negotiations in the early 1990s a central question emerged around how the total settlement value would be ascertained and negotiated (Fisher 2017, 2020). The Crown felt it only needed to update earlier settlements and was constrained by Treasury and the contemporary economic situation, while Ngāi Tahu felt the amount returned should reflect the value of what was lost. Out of this emerged a quantification of loss process.

Martin Fisher outlines the quantification of loss process in the Ngāi Tahu publication, *Te Karaka* and we rely on his outline here (see also Fisher 2020). The Crown framed the quantification of loss as based on current needs, Ngāi Tahu framed it as a matter of loss of property rights to be resolved. Treasury dedicated significant resources to calculating how much it would cost to address the needs of Ngāi Tahu citizens, to elevate them to

a nationally median level of prosperity. Meanwhile, Ngāi Tahu went about quantifying the loss of their property and rights based on their tenths principle. Ngāi Tahu believed that one-tenth ('tenths') of each purchase would be reserved for them to live and would guarantee a 'stake' in the capitalisation of New Zealand (Waitangi Tribunal 1991). Ngāi Tahu and their legal and financial advisors used calculative practices to determine their loss to be \$1.3 billion NZD (1992). This was a consciously conservative estimate because it ignored the economic potential of those lands over the 130 years of dispossession. This was too large and unrealistic for the Crown, and Treasury countered with an unexplained sum of \$100 million. So while the Crown was constantly setting limits and parameters for settlements and their value, Ngāi Tahu were countering with sophisticated calculative practices to advance their interests based on their value of loss. This is an example of innovation within-and-against the contemporary framework.

Because of the settlement's uncertainty for Crown finances, Crown agencies began a policy development process that eventually evolved into the 'fiscal envelope'. The Crown introduced the fiscal envelope in 1994 and stated that the total value of all treaty settlements throughout the country would be NZ\$1 billion in 1994 terms. Although this was eventually dropped, the \$170 million maximum established within this policy has embedded the financial limits of settlements. Ngāi Tahu objected to this policy, with lead negotiator Tā Tipene O'Regan referring to it as a lolly scramble, pitting iwi against iwi for a limited pool of compensation (Fisher 2017). The response of the two iwi negotiating at the time (Waikato-Tainui and Ngāi Tahu) was the relativity mechanism. 'Our anxiety was that over time, as settlements became more broadly politically and socially accepted, we would find ourselves relatively disadvantaged compared to others' (Tā Tipene O'Regan, in Brankin 2017). The mechanism was an 'insurance' against the obvious potential overflow of the fiscal envelope, which entitled each iwi to a percentage of that overflow (17% for Waikato-Tainui and 16.1% for Ngāi Tahu). The negotiators determined that rather than struggling for more cash and assets to compensate for loss, 'bolt-ons' would be a compromise between the competing pressures of quick and fair settlements (Brankin 2017). This complex tool would not deliver any direct value until triggered in 2012 (TRoNT n.d.a). Te Rūnanga o Ngāi Tahu has disputed the Crown calculation each year (Brankin 2017), and whenever this happens, complex negotiations and arbitration are required. The Crown paid \$68.5 m to Ngāi Tahu in 2012 and \$180 m in 2017. While the independent arbitration is confidential, some of this has found in favour of the Crown and some in favour of Ngāi Tahu with a further \$52.5 m being paid to Ngāi Tahu as a result of the resolved disputes (Office of Treaty Settlements 2021). In an information document *Relativity Speaking* Te Rūnanga o Ngāi Tahu describe being familiar with relativity over time, adapting to new climates, welcoming new peoples, and struggling against the Crown for past injustices (TRoNT n.d.a).

Relativity clauses have come under fire from the public and media as 'double dipping' or Treaty top-ups (Wall and Parahi 2018) but are part of the initial settlement (Brankin 2017). They have also been reasonably criticised by other iwi and hapū who are still constrained by original quantum (\$170 million) but do not have relativity clauses (Te Aho 2017). Despite this, it is indisputable that they were innovative mechanisms within and within-and-against the constraining circumstances that occurred, not necessarily driven by a pre-colonial Indigenous knowledge but rather by Indigenous Peoples struggling for self-determination. Treaty settlements have rightly come under criticism for redefining

and constraining rangatiratanga and quantifying loss into a solely financial form (Mutu 2018; Wynyard 2019; Barber 2020; Scobie et al. 2021a), Ngāi Tahu and other Indigenous groups have innovated within-and-against this process in order to improve the material circumstances of their current and future generations based on the wishes and struggles of past generations. They were given financialised parameters within which to negotiate and try to restore mana, but with their supporters, they developed these innovative compromises. These are Indigenous innovations guided by the enduring practice and pursuit of tino rangatiratanga (self-determination). This is a form of innovation within-and-against the status quo and whether or not this results in a move beyond is in progress as we write. Moving beyond depends on the innovative capacities of Ngāi Tahu people, groups and supporters in imagining and self-determining what comes next.

Beyond: Aviva Farms

Aviva Farms is an Indigenous Fijian business embedded in Natalau village, Nadi, Fiji. The farm's approach is fundamentally about reconnecting Indigenous Fijians with their customary land, and the range of benefits to material and spiritual wellbeing that this provides. In addition, the farm provides unique experiences that global communities can connect with. This involves various activities, some 'for profit' but many beyond profit guided by Indigenous innovation towards regenerative agricultural practices. During conventional (colonial) development, the land was 'developed' towards commercial sugarcane production – monocropping. Sugarcane has been the dominant cash crop in Fiji since 1880, but this relies heavily on chemical herbicides, pesticides, and NPK fertilisers. Monocropping practices were surfacing many issues, including long-term income flow, sugarcane was not resilient to climate disruption, and the revenue from the production could never compensate for the environmental and bio-diversity damages. Although the farm achieved substantial production levels (40,000–50,000 tonne p/a), the development trajectory was moving towards a level of mechanisation that was alienating customary landholders from their relations with land because of the removal of labour and the rupture in seasonal rhythms of production with associated cultural relations.

We use huge amounts of chemicals annually, our mechanism ripped us off from our motherland, all in the name of profit. We need a healing and climate-resilient farming system, to do that we need to innovate and follow the ways of our ancestors to heal our land. (Livai Tora – Aviva Farms founder and manager)

In response, Aviva Farms decided to diverge from this development trajectory to explore and reconnect with customary practices. They developed a diversified organic farming and business model based on existing knowledge and practices to capture the range of activities in the surrounding village. This required shifts in what was grown, how it was grown, who was growing it and where it was consumed. Today, Aviva Farms employs more than 30 youth across 6 land-based business units. As a result, Aviva Farms is committed to organic farming for local markets and export (papaya, breadfruits, kumara and yams), agri-based and cultural tourism, a native tree nursery, and a landscaping, hosting and catering events, and a consulting company. Although the conventional development trajectory towards cash crop

monocultures, drawing from external expertise pushes technological fixes, specialisation, and division of labour, this was not serving the social or environmental needs of the community.

The transition *back to* Indigenous agricultural practices was not easy. It required re-growing 20 species of native trees for fruit, medicinal purposes, and to protect topsoil, climate-resistant crops like kumala (kumara), uvi (tropical yam), taro, and giant taro were planted. Transforming the farm to have diverse traditional and exotic crops and trees grown together also supported carbon sequestration and decarbonisation, with intercropping having greater capacity to reduce emissions than monocropping (Peichl et al. 2006). Although it was not the primary reason for reverting to customary practices, this transformation also enabled Aviva Farm to get organic certification from the Pacific Organic and Ethical Trade Community. This was part of healing the land. Existing technology for farming sugar cane was not fit for these new processes, so additional manual labour was required. This had the co-benefits of providing more meaningful work for the community, storing and transmitting knowledge and practices, providing an economic return for the business, and giving the community a greater sense of fulfilment and ownership of the land beyond their customary rights. While the land was being healed, the community was being healed.

Aviva farm also conducts agricultural and nursery training for native trees as part of disseminating Indigenous knowledge systems, and for food security purposes like breadfruits and chestnuts. Later, the farm started to sell native trees, and the business now contracts out landscaping work in resorts. These are alternative revenue streams for the organisation. There are satellite nurseries on higher grounds and tree investments with other nurseries as a climate resilience mechanism - to be accessed when needed. Founder and manager, Livai Tora is also working as a private consultant with Kokosiga Consultants and markets through Natures Ways Cooperatives. These groups work with Indigenous landowners to develop land use innovation systems based on Indigenous agricultural knowledge. Retention of customary land is his priority as a consultant. These activities contribute to community development as well as the continuity of the farm. For example, in 2016, the papaya crop was destroyed during Cyclone Winston, but the other activities kept Aviva Farms afloat, which illustrates the resilience of the diversified activities.

The business also supports the community in numerous ways. It employs 20–40 youths during peak periods, it partially funded Natalau village housing, and assisted in refurbishing the local early childhood centre and primary school. Aviva farms also provide free planting materials for local farmers, support the women's group through farm land and planting materials, support socio-cultural activities for the extended family financially, and host community cultural events by providing food. Contribution to the community is not seen as charity or an expense but an investment in a reciprocal partnership with people towards collective wellbeing.

The transformation of Aviva Farms in response to the limitations of the conventional development model represents an innovation beyond the status quo. This transformation required the typical innovation characteristics of an entrepreneurial spirit, leadership and risk taking, but was informed by Indigenous knowledge and embedded within a wider set of obligations to people and place. This is Indigenous innovation in pursuit of *solesolevaki* (communal reciprocal living) (Steven and Vunibola 2022).

Collective struggle as innovation: within-and-against, and beyond

Our aim in this essay is to bring the margins of innovation to the centre (Pecis and Berglund 2021) so as to value what is not valued in capitalist production and conceptions of innovation. Such marginalised innovations often enable us to live lives that we value and have reasons to value (reproduction) rather than profit (production). We explored collective innovation for the collective good as a key attribute and aspiration of Indigenous innovation to push this innovation from the margins to the centre. Indigenous Peoples have always and will always innovate to enhance their lives. Indigeneity is not fixed in a pre-colonial past, but rather subject to constant refining based on contemporary wants and needs, within a world-historic context.

The Indigenous context has implications for both working within-and-against the status quo, and beyond it. For Indigenous Peoples operating in a colonial context, constrained by structural conditions, innovation is required to push within-and-against those constraints. Ngāi Tahu's constant struggle for rangatiratanga demonstrates this. Quantification of loss and relativity mechanisms might not be considered 'Indigenous' but are developed and wielded collectively by Indigenous Peoples within-and-against the system towards collective self-determination. Rather than rangatiratanga driving innovation, Aviva Farms were guided by *solesolevaki*. Although the farm was initially locked into neo-colonial development policies, they had the autonomy to reject these and rediscover their Indigenous practices. In some ways, this was back to the future to illustrate that Indigenous innovation can be deployed to reconnect people with land by reconnecting with customary knowledge and practices. This was a project of collective Indigenous innovation towards collective Indigenous well-being beyond the status-quo.

Together, the two cases reconceptualise Indigenous innovation from the margins to the centre. Instead of isolated islands of Indigeneity, we see Indigenous innovation as islands within a vast geographical, historical and metaphorical ocean driven by the requirements within-and-against, and beyond contemporary wants and needs. These islands are connected by Indigenous innovation, not separated by colonial or other structural barriers. This essay contributes to ongoing discussions in both innovation and Indigenous studies and, practically, to ongoing debates within Aotearoa New Zealand about the importance of Indigenous knowledge and practices for research, teaching, learning and practice. As much as Indigenous innovation is about learning, it is also about unlearning the colonially derived boundaries around how Indigenous Peoples are imagined and re-imagined. Indigenous innovation is a nexus through which interactions occur within, against, and beyond colonial-capitalism and is thus a stronghold for collective wellbeing, autonomy, and protection of sovereignty for Indigenous groups globally.

This essay is by no means definitive or exhaustive, we have merely built on the work of Pecis and Berglund (2021) as a provocation relevant for Indigenous scholarship, policy and practice. There are limitless other examples of Indigenous innovation, but we draw from the contexts that we know best, as both members of and researchers with the communities explored. Indigenous Peoples were always, and will always be innovators. There are ample opportunities for future research to refine our provocation, push the limits of our analysis further, and continue to open up space for Indigenous and other innovation in the margins. Urgent considerations include critically engaging

with intellectual and other forms of property rights, innovation/research funding arrangements, and sharing Indigenous innovation across time and space. In a nation addressing its colonial moulding guided by a state seeking to deal with the knowledge demands and educational curricula necessary to make a better nation, deep thought about the forms, values and possibilities of Indigenous innovation might be a constructive place to start. Addressing these continues in the long tradition of reclaiming past Indigenous innovation, reconsidering present strategies and pursuing future imaginaries. Just like the ancestors did.

Acknowledgements

'We would like to acknowledge Anna Sturman, Tyron Love and Martin Fisher for reading and commenting on versions of this paper'. We would also like to thank the anonymous reviewers for their constructive feedback that helped improve the paper, and the special issue editors for the opportunity and support. We want to acknowledge funding from the Marsden fund 'The Land has Eyes and Teeth' at Massey University that supported Suliasi's PhD, and Distinguished Professor Steven Ratuva and the Pacific Ocean and Climate Crisis Assessment (POCCA) project, Macmillan Brown Centre for Pacific Studies, University of Canterbury.

Disclosure statement

No potential conflict of interest was reported by the author(s).

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