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Standing upright here: critical disaster studies viewed from the Antipodes

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ABSTRACT

This article seeks to reinvigorate disaster scholarship, given the disastrous times we find ourselves in. In order to do so, we extend the spatial and temporal horizons of disasters, and consider them as normal processes as well as aberrant events. Knowledge need not exclusively emanate from the metropolitan centres of the Global North. We begin by examining the field's 'threshold concepts', subjecting them to an urgent Indigenous evaluation. Second, as cities are the Anthropocene's primary terrain, we illustrate the numerous ways in which the recovery from the Canterbury Earthquake Sequence offers global lessons. Third, leveraging understandings from the preceding sections, we orient towards a more hopeful intellectual frontier – a decolonised disaster studies as seen from the perspective of Aotearoa New Zealand. Since much disaster scholarship emphasises failure and loss, here we consider what will be gained through a fuller appreciation of mātauranga Māori.

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To conclude ...

The Secretary General of the United Nations, António Guterres, has called code red for humanity. Cascading disasters, unprecedented wealth disparities and the climate emergency have created existential threats (Guterres 2021a). Humanity has reached a potentially terminal stage of development. Major transformations are required to offset this. Guterres (2021b) urges us to renew the social contract; build hope, trust and social cohesion; and create a Futures Lab to secure life in common. On our intensively urbanising planet the question of how to live sustainably and equitably in cityscapes therefore assumes world-historical significance. Indeed, all evidence shows that disasters are increasing in frequency, size, cost and severity (Matthewman 2015, p. 4). Serious social science insights are needed now more than ever. For while each age announces the apocalypse, we have entered the contentiously labelled Anthropocene and must confront the prospect of mass extinction, meaning ours may be the very last generation to ever do so (Matthewman 2017).

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Historically financed by the US military, overly focused on specific case studies, influenced by a few key figures, and still adhering to a handful of metropolitan intellectual centres, disaster studies suffer from a lack of theoretical progress. These critiques are not just coming from those on the periphery. The very same charges are made by those leading these studies (Tierney 2007; Alexander 2013). So, how might a critical survey of the field from the margins inform the centre? Can it help make disaster studies more suited to our times? Our response to these questions is structured into three sections. First, we take issue with the field's 'threshold concepts', subjecting them to an urgent Indigenous turn. Knowledge need not exclusively emanate from the metropolitan centres of the Global North. Second, since cities are the landscapes of the Anthropocene, we demonstrate the numerous ways in which the recovery process from the Canterbury Earthquake Sequence offers global insights. Here it would be remiss not to note Indigenous criticisms of the term 'Anthropocene', with preferred alternatives including the Capitalocene, the Colonialocene and the Plantationocene. Indigenous scholars are inclined to see the period from the onset of colonialism to today's environmental crisis as a single continual disaster. Sometimes an additional point is also made, that settler anxieties about climate change reveal their true fears – that their futures will mirror Indigenous presents (Whyte 2020, p. 226). Third, building on the critical insights from the previous sections, we point the way towards a more useful intellectual horizon, a decolonised disaster studies as viewed from the vantage point of Aotearoa New Zealand. Since so much disaster scholarship emphasises failure and lack, here we consider what will be gained through a fuller appreciation of mātauranga Māori.

Disaster studies: three threshold concepts

Every disciplinary domain has its threshold concepts (Cousin 2006), ideas that are fundamental to a subject's comprehension. Akin to the Kuhnian notion of the paradigm, they inform thought and guide action, shaping what can be known and studied. Mastery in the field, then, is predicated upon mastery of certain threshold concepts. Once achieved, the world never appears the same again. Given their transformative potential, threshold concepts are also often likened to portals (Meyer and Land 2005, p. 373).

Conceptual innovation is key to progress in the social sciences (Outhwaite 1983). But how far do disaster studies' threshold concepts get us? Given broad concerns about the poverty of theory here (Matthewman and Uekusa 2021, p. 965), the honest answer must be 'not very far at all'. We substantiate this claim with reference to three of the field's most important threshold concepts: disaster, vulnerability, and resilience.

Let us begin with the first threshold concept. The standard definition of disaster has scarcely changed in over half a century (compare Fritz 1961 and UNISDR 2009), being typically viewed as a spectacular rupture that is concentrated in time and space. More recent updates to official terminology inaugurated by the United Nations Office for Disaster Risk Reduction (UNDRR) (2017) show promise as they extend the temporal and spatial dimensions of disaster: disruptions may or may not be concentrated in time and space, but disasters are still conceptualised as *aberrant events* (while we argue below that, from the perspective of the social system, some are actually 'normal' *processes*).

There are good reasons for broadening the spatial horizons of disaster. As Guterres' (2021a) recent proclamation makes clear, disasters define the times. When it comes to

such things as the climate emergency, we are all already in it. For example, in 2021 around one in three Americans directly experienced an extreme weather event in the summer season alone (Kaplan and Ba Tran 2021). Environmental problems like air pollution are ubiquitous. The World Health Organisation (WHO) (2021) estimates that 99 per cent of the planet's population breathes unsafe air and that each year seven million die because of it. And then there is COVID-19 ... The effects of the pandemic are experienced at every level, from the microscopic to the global. It appears to touch all aspects of life, from personal interactions (such as whether we should kiss, shake hands, or hongi) to worldwide trade (including unparalleled disruptions). While there have been other pandemics, this one has brought about something never seen before. Being the first truly global illness, it has led to a whole 'new understanding of the vulnerability of the human species qua species' (Arias-Maldonado 2020).

Vulnerability is our second threshold concept. To be human is to be dependent. We must all rely upon a host of others to get by in the world. Each of us therefore exists in connection to things beyond us. Viewed in this way, the body is more of a dynamic network of relationships rather than a standalone entity; its existence and actions are inseparably linked to the infrastructural and environmental conditions in which it lives (Butler 2015, p. 65). Yet dependence appears to be inversely related to vulnerability. For, paradoxically, the richest are the most dependent of all, relying, as they do, on more humans than the rest of us to secure their wealth and comfort (The Care Collective 2020, p. 22). But the rich can insulate themselves from disasters or flee them entirely. And their hypermobility is a significant source of today's carbon emissions (Malm 2021, p. 90). So, to take the ubiquitous disasters we have just discussed, we can see the wealthy use a number of 'insurance' strategies, including billionaire apocalypse boltholes in Aotearoa (O'Connell 2018), clean air holidays beyond the smog (International Business Times 2017) and concierge medical services that are offered well beyond the reach of the *hoi polloi* (Sullivan 2020).

While some disasters appear ubiquitous, there is no social science data indicating that we all experience suffering equally; instead, adversity is socially inflected, with those who are isolated, young and old, women, ethnic minorities, and poor being consistently more impacted (Matthewman 2015, p. 20). As a result, disasters have a disproportionate impact on the less powerful. Moreover, these effects are amplified by unequal and exploitative relationships between groups. For instance, the vulnerability of Indigenous People is a direct consequence of the resilience of settler colonial, capitalist, and neoliberal societies.

Initially, the study of vulnerability was appreciated for its ability to pinpoint the fundamental causes of disaster exposure and to situate them within societal structures. It not only highlighted structural elements but also broadened the spatial and temporal scope of disaster research, taking into account factors like the enduring effects of colonisation (Oliver-Smith 1999), which is crucial in the local setting. However, over time, the discourse on vulnerability has been increasingly criticised by scholars for its tendency to oversimplify, disempower, and stigmatise communities. As a result, it is now at risk of being reduced to a term that merely describes a fixed set of conditions (Oliver-Smith 2023, p. 36). (The second referee of our article offered interesting insight here, noting an occasion when they were working with a large group of Pacific Island Nations disaster managers. They asked those in attendance what the word for vulnerability was in their

respective languages. All said there was not one and that the concept had little relevance from a traditional perspective.)

Studies on vulnerability have been increasingly supplanted by research on resilience, our last threshold concept. Resilience was initially conceived as the counterpoint and remedy to vulnerability, seemingly restoring autonomy to disaster victims, encouraging contemplation of how disasters affect various individuals and how they react and recover. However, it has encountered numerous issues. Originating from diverse fields such as ecology and engineering (and arguably less suited to the social domains to which it was transferred), resilience is a vague concept that has been challenging to define and implement. Furthermore, while studies on vulnerability may have overlooked individual agency, resilience research often neglects structural considerations. This is particularly true in neoliberal policy areas where the emphasis is on individual adaptation rather than systemic change (Evans and Reid 2014, p. 42, 63). Consequently, resilience can become another narrative that turns public problems into personal issues, and like the discourse on vulnerability, it can result in blaming the victims.

One sign of the diminishing academic value of resilience is that Taylor & Francis stopped publishing its namesake journal in 2019. Jonathan Pugh (2021, p. 226) writes that the main criticism of resilience is that it tends to divert attention from those causing environmental instability towards its victims. The same critique can be applied to the concept of vulnerability. Even the broader field of disaster studies can fall into this trap. As Jacob Remes and Andy Horowitz (2021, p. 5, emphasis added) have noted, 'seeing a problem as a disaster can make structural conditions appear contingent, widespread conditions appear local, and chronic conditions appear acute. In short, *the disaster idea often obscures enduring social circumstances*'. Disasters are usually seen as isolated events in time and space, with a stable and safe society assumed to exist before and after them (Hewitt 1983). But the extent to which we can ever view a world marked by increasing complexity, deep contradictions and cascading crises through the optic of 'normality' must be sharply questioned (Sardar 2010). For Sardar our ontological securities are well and truly shaken, such that we now live in *post-normal* times.

The experiences of Indigenous Peoples provide the most egregious examples of disaster risk creation. Moreover, when it comes to their suffering, the system is not broken, it is merely functioning as intended (Razack 2015). Returning to Remes and Horowitz, colonisation is the enduring social circumstance that is obscured by current framings of disaster, and a prime contender for a new threshold concept. It therefore makes sense to align with critical disaster scholars who urge that 'disasters are not pathological deviations from 'normal' so much as they are the most salient manifestations of the ways that the normal is in fact pathological' (Elliott and Hagen 2021). Colonisation can be seen as a catastrophe with a definite start but an indefinite conclusion, aimed primarily at dispossessing, disarming, and, if necessary, destroying Indigenous Peoples. Indigenous communities have had their sovereignty, including the ability to identify and manage their own disasters, systematically and brutally stripped away. Even so, hope remains. When Māori mobilise on their own terms, enacting culturally appropriate disaster responses, the results are remarkable. Covid-19 provides a case in point, with a variety of actions including iwi checkpoints and the formation (or refocusing) of distributive networks leading to positive outcomes. As Sacha McMeeking and Catherine Savage

(2020, p. 36) write: 'Māori infection rates from Covid-19 are perhaps the only example in Aotearoa New Zealand's contemporary history where Māori have achieved better social outcomes than non-Māori'.

Given the profound and continuous effects of colonisation, Indigenous territories are perpetually in a post-disaster state. Framing resilience as a commendable adaptation in the collective existence of Indigenous Peoples, developed over generations of subjugation, risks solidifying the existing order. It also shifts focus away from a crucial element of genuine disaster resilience, which is *sovereignty* (Lambert 2023a; 2023b).

Indigenous Peoples, when their sovereignty is recognised, are better equipped to mitigate the risks they face, prepare for potential adversities, and in the event of further disasters, respond more efficiently and recover more rapidly and effectively. For instance, the implementation of Indigenous culture and logistics, and the wider empowerment of Ngāi Tahu following the Canterbury earthquake founded on a basis of persistent resistance, community resilience, Treaty rights (reaffirmed in the UN Declaration of the Rights of Indigenous Peoples), and progressively through legal authority.

We now turn our attention to the aftermath of the Canterbury Earthquake Sequence (2010, 2011) to see what might be learned from an analysis of our own conditions as well as what more distant others may gain from this.

From Christchurch to Ōtautahi: learning from a global laboratory

As one of the most urbanised (Department of Internal Affairs 2021), unequal (Rashbrooke 2013, p. 30; Rashbrooke 2021) and disaster-prone countries in the world (Lloyd's 2018; Global Facility for Disaster Reduction and Recovery 2021), material conditions in Aotearoa New Zealand manifest Guterres' concerns. Indeed, the world has often looked to this country as a practical social science laboratory, from its pioneering social democratic legislation (Phillips 2012) to its embrace of neoliberalism (Kelsey 2015), to its current COVID-19 pandemic response (McClure 2021). Ōtautahi-Christchurch is exemplary here: an 'extreme city' (Dawson 2017) in terms of both its inequalities (NZDep 2018) and its hazards. The city has had to grapple with a series of overlapping disasters: numerous earthquakes; recurrent floods; wildfires at the wildland-urban interface in the Port Hills; the 2019 terrorist mass shootings at local mosques; the global COVID-19 pandemic; an emerging mental health crisis; pollution of rivers and groundwater; and a perilous regional future due to sea-level rise (Uekusa et al. 2023).

The 2010 earthquake subjected eastern Christchurch, the city's less affluent side, to the equivalent of half a century's worth of sea-level rise in a single hit (White and Haughton 2017, p. 415). It has already undergone what much of the world is yet to face: managed retreat (Carey 2020). Megan Woods (2018), the former Minister for Greater Christchurch Regeneration, regards this as 'one of the hardest public policy knots of the twenty-first century' (Interview: Author). Consequently, it is under scrutiny as a region compelled to confront the future in distinct and pressing ways (Pickles 2016, p. 6).

The recovery efforts following the Canterbury Earthquake Sequence provide a significant learning opportunity. Often seen as a textbook example of crisis-driven urbanism, it was heavily influenced by market forces, lacked democratic input, and was widely unpopular, making it a case study in how not to effectively rebuild post-disaster (Matthewman and Byrd 2023). The top-down, command-and-control disaster governance model

adopted by the National government was criticised as an instance of global worst practice (Ahlers cited in Macfie 2016). The Canterbury Earthquake Response and Recovery Act 2010 and the Canterbury Earthquake Recovery Act 2011 were quickly passed to hasten the rebuilding process, bypassing usual consultative procedures. The lack of meaningful public involvement and the unchecked legislative power granted to the executive were major concerns. A prominent legal expert noted that this approach disregarded three centuries of constitutional convention (Geddis cited in Vance 2010).

Conversely, the City Council's initiative to gather local aspirations for the reconstruction was globally acclaimed. Prominent activist John Minto called its Share an Idea programme 'the most important and biggest and most effective exercise in democracy that has ever happened in New Zealand' (Quoted in Matthews 2016, para. 5). The temporary urbanism projects that emerged after the earthquakes also received worldwide recognition. The responses of local Māori were seen as instances of best practice recovery (Kenney and Phibbs 2015). Ngāi Tahu made history after the earthquakes. In a world first for an Indigenous group, they became an official partner to recovery and regeneration after the disaster (Keene 2013, para. 2). As a city often designated 'the most staid, most conservative, most *settled* of settlements' (Prentice 2013, p. 55, emphasis in original), the earthquakes produced 'a chance to build, more or less from scratch, a post-colonial city, inclusive of everyone; and with a strong recognition of the mana whenua of local hapū Ngāi Tūāhuriri' (Kake 2018, n.p.). The reconstruction process thus offers valuable insights for settler societies globally.

The quakes created a generative moment, literally and metaphorically making spaces for new ways of being (Ballard et al. 2015, p. 42). The Residential Red Zone (RRZ) is one such beacon of hope, transforming a suburban area into a potential democratic commons as it cannot be privately owned. Post-earthquakes, about 8,000 households (or 20,000 individuals) were moved, resulting in the creation of 602 hectares of land along the Avon Ōtākaro River Corridor (AORC). This is considered one of the largest voluntary managed retreat programmes in a democratic nation (Noy 2020, p. 18). The plans for the RRZ by Regenerate Christchurch (2019) envision it as a hub for connecting with each other, nature, and new opportunities. A green belt will extend from the city to the sea, traditional food gathering practices will be carried out, and a living lab will be set up for studying climate change adaptation. The RRZ has been praised as 'Christchurch's field of dreams' (The Press 2017). A previous Mayor referred to it as a 'global petri dish' (Moore 2021), while a prominent local planner views it as a breeding ground for new lifestyles, housing solutions, food production methods, and biodiversity creation (Lunday 2021). Despite being known as an 'extreme' and 'crisis' city, it also has the potential to evolve into a 'city of permanent experiments' (Karvonen 2018). As another former Mayor stated, the city is small enough to serve as an experimental ground where risks can be taken, yet large enough to scale up successful innovations for broader benefits (Dalziel 2020).

Ōtautahi-Christchurch, then, is an exemplary urban laboratory. Indeed, on a visit to the city, Australian artist and academic Troy Innocent (2023) told Gap Filler he felt like he was 'visiting a city from the future', adding that 'regeneration and change following crisis is the defining feature of our cities in this millennium, and Ōtautahi is responding to these both new and old with radical hope'. While large cities have dominated public and political discourse, the majority of our planet's urban growth will

take place in areas similar to it: smaller towns and cities that have limited resources to tackle the magnitude and complexity of the challenges (UN DESA 2018). The political ecologies of this century will be most prominently displayed in coastal areas where cities like Ōtautahi-Christchurch are situated (Hight and Robinson 2010, p. 79). As a result, there are numerous lessons, both positive and negative, that the rest of the world can learn from here.

Disaster studies decolonised

Kia whakatōmuri te haere whakamua.

I walk backwards into the future with my eyes fixed on my past.

Where should one look to the future? In multiple profound ways, the future has already unfolded for Māori, giving substance to the above-mentioned whakataukī. Consider the key debates on shaping the future in post-quakes Ōtautahi-Christchurch, which include handling the residential red zone, eradicating the city's 'territorial stigma' (Bourdieu 1999) following the 15 March 2019 terrorist attacks, and implementing intergenerational justice on climate change. Environment Canterbury was the first council in the country to declare a climate emergency, and Christchurch will be the urban centre most affected nationally by sea-level rise. As Te Oti Jardine expressed it: 'My tūpuna, my ancestors, we were the first ones to be red zoned. When the settlers came we had to move, and now they came and they built in the place where, our old people said why are they building here?' (Quoted in Kake 2018, n.p.). Māori are no strangers to terror – Parihaka, the persecution of Rua Kēnana, Rangiaowhia, the Tūhoe raids (McLachlan 2019) – and Ngāi Tahu's settlement with the Crown marked the end of a seven-generation fight for justice (O'Regan 1998). Like other Indigenous Peoples, colonisation is the primary disaster from which numerous other disasters originate and conjoin.

Māori understandings of time specifically recognise the 'mimetic reciprocal relationship between humans, nature, and the living legacy of the ancestors' (Awatere 1984, p. 61). Donna Awatere (1984, p. 93, emphasis in original) encapsulates the contrast between Māori and Pākehā as follows: Pākehā prioritise the present, sidelining nature and genealogy and compressing time into space, while for Māori – whose existence is anchored in whakapapa – '*Time, not space, is the defining element of life*'. In Te Ao Māori worldview, individuals are 'perceived as journeying backwards in time towards the future, with the present unfolding ahead as a continuum into the past' (Walker 1996, p. 14). The past is ahead of us, and the future is behind us, which is a reversal of European usage (Salmond 1978, p. 10).

It is intriguing to consider the links between the shortcomings of the Christchurch reconstruction and its ties to European future-oriented thinking. A Māori temporal orientation might have yielded better results. After all, the 'Pākehā Plan' outlined a clear vision, a blueprint focused on the immediate future. The Christchurch Central Recovery Plan resulted in a paradox: looking towards the future leads to conservatism. Critics argue that instead of constructing the first city of this century, what was actually built resembled the last city of the twentieth century, characterised by single-use districts, uniform large-scale developments, suburban and ex-urban sprawl, and a deep-rooted dependence on private motor vehicles (Dann 2021).

Perhaps acknowledging that the future is more opaque in terms of its contingencies could have allowed for a more innovative approach. The participation of Ngāi Tahu in the reconstruction is noteworthy and historic. However, it could be argued that this partnership was not as thoroughly integrated into the planning process as it could have been. A deeper comprehension of extended timeframes, both past and future, as well as relationships with – and obligations to – tūpuna and mokopuna would have necessitated a rebuild that was not already outdated at its inception. As Simon Lambert (n.d.) has said of Indigenous development, ‘we have ancient beginnings and an endless future, and so the temporal context in which we make our decisions is different’. We would hypothesise that fidelity to a Māori temporal orientation (and the values it incorporates) could have positively influenced the Christchurch rebuild in several ways: (i) a more holistic approach to recovery (incorporating spiritual as well as physical dimensions), (ii) a greater respect for the past and future, while also considering the longer-term future impacts of the rebuild, (iii) enhanced community involvement given the emphasis placed on community and collective decision-making, and (iv) a stronger commitment to sustainability through the concept of kaitiakitanga.

The resilience of Indigenous People is rooted in their cultural systems that act as intermediaries between their physical environments and the changing needs and aspirations of their communities through inclusive, relationship-oriented processes (Durie 2005). The rationale for incorporating Indigenous Knowledge in disaster management is that, despite enduring many generations of marginalisation and brutal suppression, Indigenous communities continue to preserve knowledge and practices that facilitate their survival amidst destructive, traumatic, and recurrent events.

Mātauranga Māori is the Indigenous Knowledge of Aotearoa New Zealand. There are numerous senses in which it has an important bearing on disasters: (1) insight into, and experiences of risks, hazards and vulnerabilities, (2) local resources, strengths and community intelligence to respond to these challenges, (3) culturally safe approaches to research, knowledge use, dissemination and ownership, (4) a framework for learning and adaptation, and (5) the means to reassert sovereignty over the data by the very people who produced it (Lambert and Mark-Shadbolt 2021). It is also likely to differ from mainstream notions of disaster, risk perception, vulnerability and resilience. A useful *te ao Māori* (Māori worldview) disaster risk reduction (DRR) framework has been produced for non-Māori decision-makers by Matthew Rout, Shaun Awatere, John Reid, Emily Campbell, Annie Huang and Tui Warmenhoven (2024).

When viewed through an Indigenous Knowledge lens, kin-based relationships with the natural world combined with powerful situated knowledge based on numerous generations of observations and lived experience of the region’s hazardous phenomena are foregrounded (Lauer 2012; Hikuroa et al. 2019). As such, an integrated, holistic view of the environment is offered (Harmsworth and Awatere 2013). Embedded within many Indigenous notions of resilience is the assertion that sovereignty is a necessary component (Lambert 2023b), while other Indigenous scholars note the individualising and potentially victim-blaming aspects of resilience, preferring to use the term resistance instead (Penehira et al. 2014).

Moreover, mātauranga Māori has insights on risk that conventional narratives are unable to capture because they entail localised knowledge in the form of oral histories, cultural practices and legends. The recovery practices that Indigenous Knowledge

demands are also far more likely to be ‘flax root’ collaborations rather than top-down directives. This is in line with emerging best practices in policymaking, which have moved away from top-down technocratic approaches towards more inclusive and collaborative methods of co-creation with the communities involved. Indeed, to give full expression to Te Tiriti o Waitangi, it is incumbent that disaster risk reduction (DRR) practices empower communities to set the horizons of their own mitigation and restoration.

There are also unique Indigenous institutional responses to disaster. The marae, for example, is an important element of mātauranga. This community infrastructure frequently plays an important role in disaster response and recovery, such as occurred in the Canterbury Earthquake Sequence (2010, 2011) the Kaikoura earthquakes (2016) and the Edgecumbe floods (2017) (Hikuroa et al. 2019; and see Kenney and Phibbs 2015).

For all of the reasons outlined, mātauranga Māori is an important resource for DRR in Aotearoa New Zealand. Here it should also be noted that it is a mistake to view IK as the antithesis of science, as some have recently suggested (Dunlop 2021). This would be a racist reading of IK, one which ignores that IK draws upon a deep well of experience and observations of place, and that it is tested and transformed across time. The term ‘he awa whiria’, referring to the distinct braided rivers of part of Aotearoa, has been used to describe the collaboration possible between Māori and non-Māori scholars (Macfarlane 2009; Cram et al. 2018). We see the braided river as a powerful metaphor for the contributions and collaborations of IK and Western science called for in the Sendai Framework for Disaster Risk Reduction (UNDRR 2015).

This having been said, we question the value of continuing to collect accounts of Indigenous resilience and the use of IK. The embedded nature of IK – and the siloed nature of much Indigenous research literature – means that the insights are lost in the macro-scale confusion of forces and theories. The irony of the paucity of Indigenous voices in disaster studies is the constant presence of disasters, vulnerability, and resilience in all Indigenous scholarship. How can the ‘lessons learned’ by Indigenous Peoples resonate through the enduring institutions of power that implemented colonisation? The challenge for researchers is to maintain the foundations of empirical community-based/engaged studies while contributing to wider political economic disputes and shouting up to power. Non-Indigenous scholars must abandon their safe havens of allyship and enlist in Indigenous empowerment as accomplices.

In summary

Disasters trigger a unique social dynamism, leading to a surge of pro-social behaviour and spontaneous mutual aid, stemming from the collective impact of such significant events. This phenomenon, often referred to as *communitas*, has been observed for as long as disaster sociology has existed (Matthewman and Uekusa 2021). Relatedly, disasters can also create transformative moments, opening up opportunities for new modes of existence (Cretney 2017, p. 179). As stated by Cloke et al. (2023, p. 8), the collective outcome of a geo-event, such as those in and around Christchurch, can be to disrupt the usual patterns of the world, fostering new perceptions of life and place, as well as stirring longings to return to the status quo. In Ōtautahi dormant networks were activated, and new ones emerged. Cloke *et al*’s book extensively discusses the ‘creative alterity’

(*ibid.*, p. 141) sparked by the geo-event: heightened artistic expression, innovative forms of collective organisation, and new forms of active citizenship. These developments were generally more collaborative and experimental than what existed pre-disaster: guerilla gardening, urban greening, community gardens, transitional urbanism projects, various voluntary organisations. Many of these – Gap Filler, Greening the Rubble, Life in Vacant Spaces, the Student Volunteer Army – have become global models for community-driven recovery.

Often, these social organisations providing mutual aid lack official support. For instance, both NZ Civil Defence and the NZ Police actively dissuaded the Student Volunteer Army, who effectively mobilised to assist fellow Cantabrians in the clean-up following the earthquakes. As one of their founders stated: ‘If we listened to the rules after the earthquakes SVA would never have existed’ (Johnson 2020). The students wisely disregarded the authorities. The SVA emerged as one of the true success stories of the disaster. Uncommon for a volunteer group, they have evolved into a ‘recurring emergent’ emergency response organisation (Carlton and Mills 2017), also providing assistance after the Kaikōura earthquake (2016), the 2021 Canterbury flood, and during the ongoing COVID-19 pandemic. They now offer programmes for students at primary, secondary, and tertiary levels nationwide, thereby serving as an inspiring model for youth leadership. Therefore, a key lesson from the Canterbury Earthquake Sequence is that any disaster recovery effort that fails to incorporate *communitas* and community intelligence will not fully achieve its objectives. In terms of how best-practice recovery should proceed, it should ideally be localised, small scale, inclusive, collaborative and open-ended, liable to revision in light of subsequent developments. As Andy Stirling and Ian Scoones (2020, p. 29) recently wrote:

What is needed now is more: humility (not hubris) about what is known; hope (not fear) about what is possible; diversity (not singularity) in what is held to count; mutualism (not hierarchy) as ways to organise; equality (not superiority) as driving values; precaution (not calculation) to protect the vulnerable; flourishing (not growth) as guiding aims; and care (not control) as the means by which so many kinds of better – but preciously unknown and uncontrollable – worlds may yet be realised.

To this we must add an important point: In settler societies all cities exist on unceded Indigenous lands (Porter et al. 2022, p. 221). This fact should be the foundation of our discussions and the guiding principle for subsequent actions. Therefore, recovery efforts must involve those who hold traditional authority over the land. Appropriately, Ngāi Tahu were officially involved in the earthquake recovery. Their influence is being written into the city, aiding in the transformation of this quintessentially English colonial settlement into a truly post-colonial place. In fact, due to their efforts, central Christchurch is now a more recognisably Māori city than central Auckland, which considers itself the capital of Polynesia. The then Kaiwhakahaere [Chair] of Ngāi Tahu stated: ‘The earthquakes gave us a unique opportunity to design a cityscape that acknowledges our shared past with our colonisers, our shared experiences and our common future, which certainly wasn’t there beforehand’ (Solomon in Cloke et al. 2023, p. 115).

Recovery efforts typically prioritise physical ‘lifeline’ infrastructures, those robust technological systems that support life, such as communication, energy, and transportation systems, over social infrastructure. This was the case in Christchurch. However,

research indicates that social infrastructure, rather than physical infrastructure, is the key driver of recovery and resilience (Klinenberg 2018). As per Snelson and Collis (2021, p. 11), social infrastructure encompasses spatial, organisational, and associational elements: (i) physical locations facilitate interaction and gathering among various individuals and communities, (ii) diverse organisations (including volunteer groups and social enterprises) bolster these activities, and (iii) people establish a sense of connection with each other through physical and virtual means (e.g. community transport and online platforms). Thus, social infrastructure refers to the facilities, spaces, and services that enhance quality of life and community well-being and promote the social integration of diverse populations. They can also be considered the foundation upon which social capital is built.

The most popular post-quake builds have been those which are open to everyone, free of charge, and where no one needs to justify their presence. (Consider, for instance, the spaces in a contemporary city where the homeless are welcomed.) Such places include Tūranga, the central city library, the Margaret Mahy Family Playground, and The Avon River Precinct – Te Papa Ōtākaro. These are all prime examples of social infrastructure, and they were all brought to life after extensive consultation with key groups: mana whenua, children, and the general public. Their design reflects the values, stories, and aspirations of Ngāi Tūāhuriri (Brankin 2016), making them unique to this specific location. These preferred constructions point towards more successful disaster recoveries: radically local endeavours that adhere to principles of co-governance and collaboration, while harnessing *communitas*.

Indigenous Peoples possess an accumulated knowledge of the environment – ancient, localised insights into their worlds – that provide a longitudinal database of environmental hazards fundamental to understanding how the contemporary occupation of particular land/waterscapes can or should take place. These Indigenous Knowledges play a crucial role in recognising, evaluating, and coping with environmental risks and the resulting disasters. Despite enduring discrimination and marginalisation for many generations, Indigenous communities maintain knowledge and methods that foster resilience in the face of traumatic and repeated disaster events. These practices also contribute to the resilience of non-Indigenous communities. Identifying, interpreting, collating and making productive use of this knowledge – effecting real world changes and advances – is challenging but in the absence of comparable data it remains the most efficient approach to constructing datasets with inordinate longitudinal scope.

Bratton (2021) gives a stark overview of the politics of a post-pandemic world, arguing that politics is shifting from law to biology. We see this governance shift expanding to disaster management where geotechnology and geopolitics will ultimately be indistinguishable from one another as environmental sensing and risk modelling become integral to care of people and places, from the individual's biology to societal activities, up to the scale of the planet. Indigenous Peoples are demanding a role in framing approaches to DRR at key scales within their traditional territories, and adjacent landscapes. As a joint UNESCO and UN report states, 'Indigenous societies have elaborated coping strategies to deal with unstable environments, and in some cases, are already actively adapting to early climate change impacts. While the transformations due to climate change are expected to be unprecedented, Indigenous Knowledge and coping strategies provide a crucial foundation for community-based adaptation measures'

(Nakashima et al. 2012, p. 6). Given its framing of non-humans as persons in governance discussions (Clark et al. 2019), its multiple generation thinking (Burgess et al. 2021, p. 61), and its commitment to environmental stewardship (Jamieson 2010), we see Indigenous Knowledge not as ‘a remnant of the past’ but rather as ‘a figuration of the future’ (Danowski and Viveiros de Castro 2017, p. 123).

The process of recovery, whether it is swift, slow, or seemingly endless, reveals the power dynamics within any society, with too few examples of Indigenous Peoples reclaiming this power. Repeatedly, when we delve into Indigenous disaster experiences, we observe deteriorations in well-being, displacements from ancestral lands, loss of resources, exclusion from decision-making, and an increase, rather than a decrease, in vulnerabilities due to the creation of disaster risks. Calls for ‘building back better’ seldom encompass a radical shift in power and control, but rather focus on improved planning and more harmonious, ‘pleasant’ urban development (Gunder and Hillier 2009). The intellectual foundation of IK and DRR will remain ethical, participatory, co-designed community-engaged case studies. However, in addition to the role of knowledge in securing a future, the key sociological component of Indigenous resilience to disasters remains sovereignty. Sociology and Indigenous Studies have never shied away from wider political economic debates; can disaster researchers affiliated to either discipline?

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