LISTENING TO RIVERS:

Sharing river stories from Aotearoa New Zealand in a European context

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ABSTRACT: This article explores cross-cultural approaches to river stories and riverine well-being, centring Indigenous and transdisciplinary perspectives. Originating in Aotearoa New Zealand, the 'Let the River Speak' project interweaves ancestral Māori philosophies, arts, and Earth sciences to engage with rivers as living communities of water, land, plants, animals, and people. The research highlights the Waimatā River in Te Tairāwhiti as a site of cultural and environmental convergence, employing *mātauranga* Māori (ancestral knowledge), ecological insights, and creative practices to transcend nature/culture and theory/practice divides. Presented in Udine, Italy, the project reflected on global connections between waterways and their communities, including the Tagliamento River and Venice's lagoon. Drawing on art, storytelling, and science, the article emphasises the necessity of collective, more-than-human approaches to river stewardship amidst escalating environmental challenges. It argues for the inclusion of diverse knowledge systems to foster adaptive, sustainable relationships with waterways and their ecosystems.

KEYWORDS: river stories, mātauranga Māori, Waimatā River, transdisciplinary research, more-than-human.

[1] All authors made an equal contribution to this article and are listed in the order of appearance at the conference presentation in Udine. Unlike more-than-human deliberations in some parts of Australia, e.g., the Bawaka Country (Country, Wright, Suchet-Pearson et al., 2015); Martuwarra RiverOfLife, Unamen Shipu Romaine River, Poelina, A. et al. (2022), we are not in a position to speak for, or on behalf of, the Waimatā River as lead author. Although we admire such practices, we feel it is inappropriate to replicate such an approach here as we simply do not have the authority to do so. Our article is crafted as an experimental exploration – a work in progress on a voyage of discovery.

Mihi—ceremonial greeting

Ngā mihi o mātou maungatapu ki ō koutou maunga tapu,
Ngā mihi o mātou puna me awa tapu ki ō koutou puna me awa tapu,
Ngā mihi mai mātou moana ki ō koutou moana,
Nā te whakakotahitanga o ō tātou moana i hono ai tātou

Our sacred mountains greet your sacred mountains,
Our sacred springs and rivers greet your sacred springs and rivers,
Our oceans greet your oceans,
by the mingling of our waters we are connected

Introduction

We crossed our connected oceans from Tāmaki Makaurau-Auckland to Udine: four colleagues interweaving disciplines, perspectives and ways of knowing as collaborators on a project entitled 'Let the River Speak' – a shared quest to support the *ora* (wellbeing) of Waimatā, an inland waterscape community in Tairāwhiti on the east coast of Aotearoa New Zealand (Figure 1).

Our project draws upon ancestral Māori philosophies, the arts and contemporary social and earth sciences, weaving ancestral lines together. Such research is described in te reo Māori (the Māori language) as *mahi rangahau* – work (*mahi*) based on weaving *([rā]ranga*) and reciprocity (*hau*). As a metaphor and research approach, weaving creates structure and permeability, encourages exchanges, and preserves the distinctiveness and value of individual threads whilst drawing them together (see Koppes, 2022).

In Māori ways of knowing (*mātauranga*) and learning (*wānanga*), everything springs from a single generative source (Salmond, 2017). The emergence of the cosmos itself is chanted, a *whakapapa* (genealogy) that links all forms of life. From a primeval burst of energy, thought and memory arise, and from thought and memory, the mind-heart and desire. After aeons of nothingness and darkness, the winds of life and growth begin to blow through the world, generating phenomenal reality. In the process of emergence, life itself is recursive, spiralling in and out from the *puna*, or wellspring. At times of rapid transition, or close to the source, the spiral becomes a vortex.

In *toi Māori* (Māori art), the cosmological chants are expressed as *takarangi*, double spirals, song lines carved in wood or etched on the body; while *whakapapa* is woven into the fine mats that feature in the rituals of life and death, intertwining the genealogical lines together. In this 'whole system' philosophy, boundaries (*pae*) are creative spaces in which different forces and life forms come together, ceaselessly generating new life forms. All things are interconnected. Here, rivers are seen as living communities of water, land, plants, animals and people, each with their own histories and dynamics. By working across different ways of knowing and with *iwi* (Māori kin groups, the Indigenous peoples of Aotearoa) and other communities living around and within a river, we trace these histories, seeking to transcend arts/science, culture/nature, subject/object and theory/practice polarities and "sharp intellectual boundaries, unique languages and cultures, and lack of whole-system perspectives" (Costanza 2024, p.5), allowing the different voices of the river – that living community – to speak and be heard.

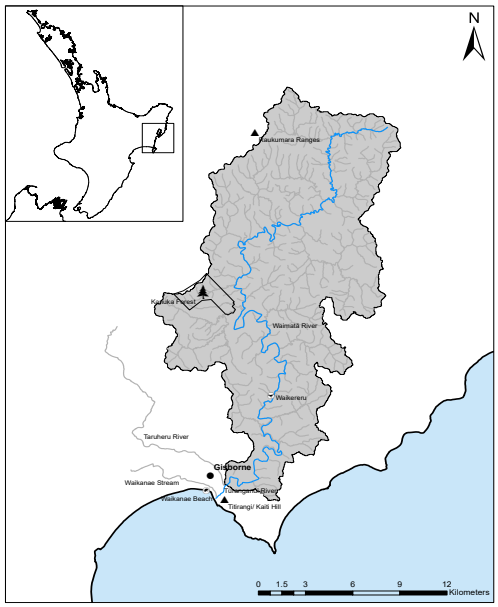

Figure 1 – Waimatā Catchment in Tairāwhiti on the East Coast of Aotearoa New Zealand (adapted by Megan Thomas from Thomas et al. 2025)

While these ways of seeing the world have often been regarded as metaphoric or poetic, old ideas about the 'web of life' are being revitalised in complexity theory and contemporary genetics (e.g., Lent, 2021). In cutting-edge biology, memory – the capacity to store information about past experience – shapes the evolutionary process, from molecules to human societies. Hypotheses about the role of cognition and memory in the origins of life itself, the role of spirals and vortices in information storage, and water as a fundamental element in the emergence of life are being posited.[2]

In Udine, memories and relationships newly made with hosts, colleagues and waterscapes inflected the stories and memories we carried with us. In what follows, we preface written versions of the oral presentations we gave in Udine with reflections on our time there, inspired by shared perspectives, hospitality and reciprocity. We offer personal narratives, sometimes without citations. We tell stories shaped and shared by ancestors, family, colleagues and mentors, and by river communities comprising water-, land- and skyscapes;

[2] "Spiral-helical shapes are witnessed in biological matter to a significant extent, including hair whorls, fingerprints, and DNA shapes… As every life form is composed of cells, elements of consciousness, namely memory and sentience, must be grounded in mechanisms that are integral to unicellular organisms…This work attempts to solve how, at the spark of life, the phenomenon of cellular information processing first appears. [It] posits that the spatially distributed wave energy of the molecules of an incepting cell interacts with space and generates a rotating bioinformation field, forming a vortex. This vortex, the local energy maximum, whose inbound and outbound energy fluxes represent signal reception and dispersal, is a critical step in the spark of life responsible for information storage… Most of the biological matter, including brain is made of 70% or more water, and there is a significant focus on explaining bio-physical events with water." (Thangamani and Arumuganainar, 2024, 1, 2, 4. See also Lyman, Lyman and Kuderer (2024) and Levin and Jablonka (2024).

people, plants, and animals. In a sense, we seek to reinforce and support recent requests to share experiences and reflections in the quest to reconnect and reenvisage traditional (customary) sociocultural relations to rivers in Europe (e.g., Cohen et al., 2023; Linton & Pahl-Wostl, 2024), however contested such relations may be (e.g., Boelens et al., 2024, Thomas et al., 2024).

The article begins by tracing four strands, author-by-author, in the same order that we spoke at the conference, before returning to our *mahi rangahau* – the work of weaving our exchanges together.

Dan Hikuroa (Waikato-Tainui, *earth scientist*)

> *After an exceptional few days during which we explored how we know rivers, sharing practical ways of being and living with waterways and meeting fellow river guardians, I was excited by the prospect of the Marano Lagoon field excursion.*
>
> *Out in the lagoon, when we landed on a islet where several* casoni *(fishermen's huts) stood, Francesco Vallerani asked if I would perform a* haka *(an ancestral war chant). I was in a quandary. In* te ao Māori *(the Māori 'world'), being a 'good visitor' means honouring requests from your host, and our Italian colleagues had been generous. On the other hand,* haka *are an ancient tradition, associated with battle and death, and not to be performed for entertainment.*
>
> *While it would be wrong to refuse a host's request, to accept would mean trampling on* tikanga Māori *(Māori customs). Billie and Anne realised my dilemma, and we exchanged looks of dismay. Just as I was trying to think how to politely refuse, a trumpet sounded from behind a nearby hut. To my amazement, it was playing the 'Last Post.' In New Zealand, this spine-chilling trumpet call is played at sunset in army camps, at military funerals and on Anzac Day, when we honour those who have died in battle. Earlier that week, the 80th anniversary of the battle of Monte Cassino, in which the Māori Battalion fought, had been commemorated; and in that moment I knew it was OK.*
>
> *During World War II, my grandfather had been a prisoner of war in a camp near Udine. As the Last Post soared out over the lagoon, with its association with battles and death, I could feel him nearby. It was a* tohu *(sign) that performing the* haka *would be fitting, in honour of my grandfather and the years he had spent in Italy, near these anciently inhabited waterscapes.*

In *te ao Māori*, waterways emerge early in the cosmological story, when Papatūānuku, the earth mother, and Ranginui, the sky father, are forcibly separated by their offspring, the ancestors of wind, sea, forests, food crops, wild foods, war and people. Originally one being, Rangi and Papa lie locked together in a primeval embrace, their children crushed between them. After an impassioned debate among the brothers, Tāne-mahuta, the ancestor of trees, lies on his back and, pushing up with his feet, forces his parents apart, letting light into the world. In the shock of their separation, as Rangi weeps for his wife, his tears become springs, streams, lakes and rivers, while Papa sends up mists of longing to greet him. As the springs flow into streams, and the streams flow into rivers, their currents intertwine. As the rivers

flow into the ocean, Te Moana-nui-a-Kiwa, these currents surge in and out from Te Parata, a vortex at its heart. This is the throat of the sea ancestor Tangaroa, where the rhythm of his breathing in and out creates the tides.

When people crossed the ocean from the ancestral homeland, Hawaiki, to Aotearoa New Zealand, they settled beside springs, lakes and rivers, where their *whakapapa* or lines of ancestry tangle with the currents, flowing into the ocean. In the case of the Whanganui River, the first in the world to be granted legal identity and rights (Te Awa Tupua, 2017), this existential interlock between people and waterways is expressed in the saying, *Ko au te awa, ko te awa ko au. Kei te mate te awa, kei te mate ahau* (I am the river, and the river is me. If the river is dying, so am I.)

As a Whanganui elder lamented to the Waitangi Tribunal:

> *It was with huge sadness that we observed dead tuna [eels] and trout along the banks of our awa tupua [ancestral river]. The only thing that is in a state of growth is the algae and slime. The great river flows from the gathering of mountains to the sea. I am the river, the river is me. If I am the river and the river is me – then emphatically, I am dying*. (Salmond, 2020, p. 164).

Similarly from the Waikato, my ancestral home and river, in the Waikato River Act 2010, the relationship of Waikato-Tainui with the Waikato River is expressed in this quote by our chief, Robert Te Kotahi Mahuta:

> *Noo taatou te awa. Noo te awa taatou. E kore e taea te wehe te iwi o Waikato me te awa. He taonga tuku iho naa ngaa tuupuna. E whakapono ana maatou ko taa maatou, he tiaki i taua taonga moo ngaa uri whakatupu.* (Iwi and Manatū Taonga, n.d.)
>
> (We are the river. The river is us. The people of Waikato and the river are inseparable. It is a treasured gift of our ancestors. We believe it's our job to protect that heritage for future generations.)

For us as Waikato-Tainui, the Waikato River is a *tupuna* (ancestor) with its own *mana* (prestige), which in turn represents the *mana* and *mauri* (life force) of the tribe. Respect for *te mana o te awa* (the spiritual authority, protective power and prestige of the Waikato River) is at the heart of the relationship between the *iwi* (tribe) and their ancestral river (Muru Lanning, 2016). In this interconnected cosmos, groundwater, aquifers, streams, springs, lakes, wetlands rivers and estuaries, the sea, clouds and rain are linked together in one great, interactive water system. *Wai*, the name of water, is ubiquitous.

In people, the *wairua* or spirit means literally 'two waters,' where the waters of earth and sky intermingle. *Wai ora*, the water of life, animates all living systems. Waterways are the life blood of the land, supporting all other life forms – plants, insects, fish, birds and people. As the *whakapapa* lines (genealogies, relational linkages) and the currents of waterways intertwine, they carry ancestral stories with them.

In our project's key case study, the Waimatā River in Gisborne, we have explored how best to engage across different knowledge traditions to transcend modernist divisions between theory and practice, people and the environment, nature and culture, and to revitalise

overlooked genealogies that link the arts, poetry and theatre, humanities, technology, and the natural and social sciences.

Recently I was in Barcelona for the UN Ocean Decade Conference (April 10-12, 2024) and recall a presentation from Massimiliano de Martin (Councillor for the Environment, Urban Planning and Private Construction for the city of Venice). He believes environmental policies can and should be developed through art and theatre. These are not just scientific problems, they are cultural and artistic problems – and so we need to seek solutions in all of these places (e.g., Cooke et al., 2023; Dixon et al., 2013; Santos and Wainright, 2024).

Anne Salmond (*anthropologist)*

> *Arriving from island Polynesia in Udine to speak about waterways with colleagues from around the world was a voyage in its own right. Every morning, we woke to the sound of cathedral bells, like the* haka*, a call to action. On the afternoon that the conference began, our 'Let the River Speak' team met to finalise our presentation. As we walked through the streets of Udine to the Palazzo Garzolini to register for the conference, it began to pour with rain.*
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> *When we arrived, bedraggled and drenched, in the atrium of the Palazzo, with its arched entrance and marble floor, rain thundered down on the high, glass roof. It seemed an apt way to join a conference on sinking cities and waterways.*
>
> *For me, it evoked the traumatic downpours of cyclones Hale and Gabrielle the previous year in Tairāwhiti, the east coast of New Zealand, on the other side of the world, to be discussed in our presentation. Rain that turned rivers from places to swim, fish and paddle* waka ama *and kayaks into raging torrents that destroyed everything in their paths, harbingers of climate change.*

Our project, 'Let the River Speak,' a transcultural, transdisciplinary research programme, explores the life of rivers through time – from their first emergence as living communities of land, water, plants and animals to the arrival of human beings, and from colonial impacts on island waterways to the present, an era of collapsing ecosystems and climate change.

In Māori ancestral accounts, rivers are recognised as more ancient and powerful than people – apt enough when the continent of Zealandia is perhaps 80 million years old, and the first voyaging ancestors crossed Te Moananui-a-Kiwa, the Pacific Ocean, to Aotearoa only about 800 years ago, the last significant land-mass on earth to be found and settled by people (Anderson, 2016; Gibbs 2006).

Our project draws upon *mātauranga* (ancestral knowledge), geology, geomorphology, ecology, history, social sciences and the arts to illuminate the life of a river as it emerges and evolves through space-time, listening to, recording and sharing as many of its stories as possible.

Whakapapa, the dynamic networks that bind all life forms together, gives form and intelligibility to these narratives. As Nepia Pōhuhu, a 19th century *tohunga* (expert), once said: "All things unfold their nature *(tipu),* live *(ora),* have form *(āhua),* whether trees, rocks, birds, reptiles, fish, animals or human beings." (Salmond, 2014, p. 305).

In the case of the Whanganui River, the interweaving between the lines of its currents and the ancestral lines of people is depicted as a multi-stranded rope, carved into the wall panels of kin-group meeting houses. This was expressed in the Te Awa Tupua, the Whanganui River Claims Settlement Act of 2017, which declared the river to be a "legal person," adding: "Ko au te Awa, ko te Awa ko au: I am the River and the River is me: The iwi and hapū of the Whanganui River have an inalienable connection with, and responsibility to, Te Awa Tupua and its health and well-being."

In the fragmented visions of modernist life, and science, these interweavings and connections are often forgotten. This can lead to ways of living with waterways and the land that are profoundly non-adaptive. During our research, we have seen this for ourselves. Our case study, the Waimatā River, just north of Tūranga-nui-a-Kiwa (Gisborne city), runs through some of the most erodible landscapes on earth. Through the disciplines of geology, geomorphology, hydrology and ecology, our team has been working to understand its dynamic exchanges with land and other life forms through time.

I grew up on the banks of the Waimatā river. With my seven brothers and sisters, I swam and fished in the river, picnicked beside it and rowed on its waters. While living beside the river, I began to learn *te reo*, the Māori language, and was taken under the wing of local elders who introduced me to *te ao Māori* (the Māori world). Much later, in 1990, my husband Jeremy and I established an ecological regeneration project, Waikereru, on 120 hectares further upriver, learning to listen to the land, the forest, the birds and the water.

The Waimatā is a site of historical significance. In exploring its human history, the 'Let the River Speak' team has traced how early voyaging canoes from island Polynesia arrived at the mouth of the river and their crews settled along its banks, mostly living near the coast, but establishing scattered gardens on alluvial soil up-river and harvesting forest foods in the bush-clad hills (Salmond et al., 2022). In ancestral times, the Waimatā was a highway, traversed by canoes that carried travelling parties up-river to gather food or cross over the hills and down other rivers to fight, or to visit settlements on the east coast (Salmond and Phillips, 2018).

In October 1769 when James Cook's *Endeavour* with its party of Royal Society scientists and artists anchored off the mouth of the Waimatā, life ashore changed forever. Cook and his companions, the first Europeans to come ashore in New Zealand, explored the estuary, clashed with local *iwi* and *hapū* (ancestral kin groups) and collected and described *taonga* (treasured objects) and species of plants (Salmond et al., 2022). With local historian Sheridan Gundry, we have studied the subsequent history of the river as European settlers arrived, land was leased or sold through the Native Land Court, inland forests were felled or burned for pasture for sheep farming, a port was established at the river mouth and Gisborne city grew around it (Gundry, 2018). Today, the Waimatā spans many different land uses, running through sheep farms and pine plantations in the hilly hinterland down to lifestyle blocks, suburbs and the heart of Gisborne city, into the port and the harbour (Figure 1). It is also much loved as a space for river sports, including fishing, swimming, rowing, kayaking and *waka ama* paddling for the Tairāwhiti community (Reeve, 2018, Salmond et al., 2022).

During our research, the 'Let the River Speak' team has worked closely with local communities including *iwi* and *hapū*, helping to establish the Waimatā Catchment Group and holding meetings upriver or near the river mouth in Gisborne city to share our findings. As the research progressed, we began to describe the Waimatā as a 'flume' or 'chute,' tightly constrained by its terraces, raising questions about the safety of the plantations of *pinus*

radiata, shallow rooting, highly flammable exotic trees, planted for timber and carbon sequestration on highly erodible land in the upper catchment. Sadly, this proved to be prescient.

On February 23 2023, Cyclone Gabrielle struck the region, bringing high winds and a deluge of rain (Smale, 2024). As the Waimatā began to roar, huge rafts of fallen trees, logs and other waste from the plantations surged down the river, knocking over fences, roads, bridges and trees along its banks and piling up against the piers of the town bridges, where they created a dam, drowning riverside houses before bursting and landing up on the town beaches and in the harbour (Figure 2). At Waikereru, forests beside the river and regenerating shrublands on the hills held the land together, but downstream the road fell into the river. Shipping in the port was disrupted, and in the aftermath of the disaster, a small boy playing on the edge of Waikanae beach was killed by a large pine log that had floated down the river.

Figure 2 – Trees felled by Cyclone Gabrielle (February 2023, author's photo).

The cyclone caused billions of dollars of damage, disrupting local life for months, wrecking farmland, orchards, vineyards, farm buildings, homes, schools and *marae* (ceremonial centres), destroying transport and communication networks, and dissuading tourists from visiting the region (see PHCC, 2023). Our team is now closely engaged in work with the Waimatā catchment group, formed in 2021, and the local Council to work out methods of flood resilience and adaptive land use in this and other catchments in the region, including native afforestation (Cairns et al., 2024).

While the observation "I am the river, and the river is me; and if the river is dying, so am I" may seem poetic, it is highly salient. Extractive forms of capitalism that ignore the existential interlock between people, waterways and other life forms are not just wrong-headed, but non-adaptive. Listening to the river – including rivers that are being flooded, drained or constrained, choked with sediment or poisoned by pollutants – is a means of survival at a time when planetary boundaries are collapsing.

As a living community of land, water, plants, animals and people, a river has many voices, with different disciplines and art forms required to trace its life through time and space. Since human arrival in Tūranganui-a-Kiwa, both *wānanga* (ancestral knowledge) and the sciences have entangled with the waters of the Waimatā. Listening to the river, with its many voices, may show a way to the future, for ourselves as well as our children and grandchildren.

Whakarongo ki te awa!
Let the river speak!

Gary Brierley (river scientist)

> *I arrived in Udine after a few days working with friends in Padova and Venice – ongoing collaborations that reflect a cross-section of my transdisciplinary life in striving to know and learn to live generatively with living rivers – their diversity, dynamics, connectivity, rhythms and emergent traits (Brierley, 2020; 2025).*
>
> *Having grown up in Europe, and developed my career in North America and Australia, my passion for rivers took a new path in collaborations with the 'Let the River Speak' team, relating scientific understandings of rivers to Indigenous knowledges, exploring more-than-human relations and perspectives upon the rights of the river (Brierley et al., 2019; Hikuroa et al., 2019; Salmond et al., 2019, 2022).*
>
> *For a landscape scientist (geomorphologist), everything is situated and contextual. Having grown up in England, like my colleagues on this paper I share ancestral connections to Italy, as my grandfather made his way through the country like so many others after the North African Campaign in the Second World War.*
>
> *Every time I return to Europe I reflect upon humans as migratory species and the layers upon layers of history – disrupted pathways and trajectories in our relationships to each other as humans and to the river systems of which we are a part. My work on river futures with colleagues in Padova entails contemplations on emerging datasets, modelling applications and digital representations of river, at a university that was founded around the same time that the ancestors of Māori first arrived in Aotearoa.*
>
> *Collaborations in Venice reflect upon ways of knowing and making rivers in the Pacific, Europe, the Americas and Asia. The train ride across Friuli stirred emotions of connection with the Tagliamento River, reflecting upon the dedicated efforts of local communities to protect Europe's last predominantly free-flowing river (photo below). As I walked into the Waterscapes conference in Udine with my colleagues (the only one without an umbrella, I was the most drenched), concerns for place and locally grounded knowledges were uppermost in my mind. I contemplated how we learn from each other in sharing understandings of river systems (i.e., translocal relationships). The warmth of the reception and the openness to sharing made the workshop a deeply moving experience …*

Figure 3 - The wondrous Tagliamento River, forever under threat as Europe's last major predominantly free-flowing river (author's photo, 2024).

The East Coast region of Aotearoa New Zealand offers a globally significant case study of source-to-sink sediment transfer in river systems (Fuller et al., 2023). As a result of its geological setting and climatic conditions, the region is subject to profound erosion, and sediments are rapidly conveyed from the mountains to the sea. Anthropogenic disturbance – especially impacts of deforestation – has increased rates of erosion and sedimentation by an order of magnitude in the period since colonisation. While these dynamic landscapes present dream-like opportunities for geomorphic enquiry, they present challenging circumstances for people and ecosystems. How can we learn to live with the distinctive values, dynamics, rhythms and emergent traits of these river systems?

Collaborations as part of the 'Let the River Speak' team seek to rectify recurrent failures in efforts to learn effectively from what's gone before in management of the Waimatā River, applying an eco(river) centric way of being, knowing and doing – the generation and use of knowledges-in-place that underpin the quest for a just sustainability, striving to live generatively with the Waimatā River as a living entity. Rather than continuing to make the

same mistakes, how do we make effective use of local knowledge, and engage meaningfully with framings that 'work with' the river?

The dramatic landscapes of the East Coast of Aotearoa New Zealand are shaped by their geological setting, and the imprint (memory) of their deep history (Fuller et al., 2023). While nearby riverscapes in Australia extend back over one billion years, Aotearoa is geologically young – the valley within which the Waimatā River flows is less than one million years old. Alongside tectonic uplift, erosion rapidly carves through weak rocks, leaving patchy memories of what's gone before. Marked changes in climate and palaeoecology during the Quaternary ice ages altered the flow and sediment regimes in these river systems, creating large terrace systems that line the valley floor (Marden et al., 2008). As a consequence, the Waimatā River operates like a flume, conveying sediments and logs rapidly from the Mountains to the Sea (Fuller et al., 2023).

Despite globally significant environmental histories (e.g., Gundry, 2012) and deep insights into the geologic and geomorphic history of the East Coast region (summarised in Fuller et al., 2023), limited use has been made of these understandings to inform management applications. Unjust and inequitable outcomes have ensued. For example, although devastating consequences of accentuated erosion and sedimentation have been known for well over a century, and legislation to address these issues has been in place since the 1940s, sustainable land use practices are yet to emerge (e.g., Hikuroa et al., 2021).

Sadly, although process-based understandings that could inform catchment specific rehabilitation plans emerged following impacts of Cyclone Bola in 1988, a 'one-size-fits-all' management approach disregards long-standing locally derived knowledge about key differences between river systems in the region (Fuller et al., 2023). Alongside this, in a radical breach of trust with local Māori, forests emplaced to 'protect the land' following Cyclone Bola were cleared several decades later in a transition to pine plantation land management practices. Alarming, unprecedented responses of river systems to cyclones Hale and Gabrielle in 2023 attest to the ineptitude of such practices.

A Masters thesis completed by Elliot Stevens in 2022 as part of the 'Let the Rivers Speak' work provided clear evidence of frustrations of local residents that readily available insights had not been incorporated into management plans:

> *We've had the opportunities; there's no doubt about it. We've had funding through the East Coast forestry project, for example. … there's this conflict between the operating of these funds between government and councils, and there's also a conflict between councils and landowners as to where, or how to invest the money, where best to invest it. And this has led to underspending and poor decisions around where the money has been spent…none of these programmes or projects that are essentially being designed to fix catchment management problems have ever been completed.* (Interviewee cited in Stevens, 2022, p.45-46).

In part, these frustrations reflect selective use of particular knowledges to inform management practices, residents also expressed:

> *…that's a big flaw of the modellers these days. They become geeks behind computers but have very little understanding of how the environment actually works and how things have changed over time. They implicitly believe their*

> *models. They are rarely field checked to see if they're real or not …* (Interviewee cited in Stevens, 2022, p. 51)

Moving forwards, more just and effective programmes incorporate local voices and understandings are seen as necessary:

> *it needs to be from the community upwards … It has to represent the values and objectives of those that are living within the catchment otherwise it's never going to be achieved … you're not going to bring people along the journey, so you're not going to be successful or contribute in a meaningful way.* (Interviewee cited in Stevens, 2022, pp. 46-47)

Prospectively, story-telling and story-listening provides a coherent methodological approach to explore relations and approaches to weaving understandings between recently derived understandings of digital rivers (Big Data and modelling applications) and oral narratives (local and indigenous knowledges) (see Koppes, 2022).

Just as the geological record expresses a selective record of what's gone before (Brierley, 2010), so too do institutional choices on which understandings to use, and what information is pushed aside. All too often, actions on the ground fail to make effective use of the best available understandings, whether from scientific fieldwork and inquiries, or from the insights of those who live with and beside a river. Prospectively, listening to and learning from the river itself provides a platform for coherent engagement and action – ways of living generatively with living rivers (Salmond et al., 2019).

Big Data, artificial intelligence, and numerical modelling applications increasingly present a living database to inform these practices (e.g., Piégay et al., 2020). Failure to learn to live and work with river systems as living, dynamically adjusting and indivisible entities will perpetuate unjust, destructive outcomes (Brierley and Fryirs, 2022). An ecocentric (more-than-human) lens presents an aspirational approach to move beyond this impasse (Hikuroa et al., 2021), building upon the simple but powerful mantra: 'If it harms the river, don't do it.' Such framings echo long-expressed relations expressed elsewhere, exemplified by the following quote from Herman Hesse in *Siddhartha* "The river has taught me to listen; you will learn from it, too" (1951/2015, p. 80). Such generative relations have long been expressed through poetic and artistic endeavours.

Billie Lythberg (transdisciplinary researcher)

> *In Udine I was struck by the osterie (taverns) alongside and bridging the canals fed by the Tagliamento and Ledra rivers. We enjoyed an aperitif above one such canal one evening; interlopers among the locals. Here, the waterway was a literal connector and meeting place, a prelude to our excursions to the Marano Lagoon and Venice later that week. In Marano and Venice we were sung to and we sang, bringing performance to our experiences.*
>
> *I also carry memories from grandfathers who served during WWII. While Grandpa Ron recalled his terror at passing beneath Monte Cassino in a tank, Grandad George regaled me with his missions in Italy as a despatch rider, and, for my 21st birthday, presented a folio of programmes from the opera and music*

performances he'd attended there. I marvelled at his having kept them safe on his army motorbike and, years later, during his migration from the UK to Aotearoa, via Australia. Through a childhood inflected with music and operatic singing blasting from George's stereo, I gleaned how the threads of music, song, poetry and art weave spaces and places together.

Figure 4 – View from an osteria's platform over a minor canal in Udine (May 2024 – author's photo).

In Aotearoa, inland waterscapes were carved out and taken care of by *taniwha*, the ancestral guardians who led people from the ancestral homeland of Hawaiki. Gary plays a recording of the poem 'The River is an Island' to the budding scientists in his classes, written by Hone Tuwhare and given voice by children of Ngāti Whātua Ōrakei, the local people of Auckland city, in English, as Hone wrote it, and in translation into te reo Māori. The recording, activated by scanning a QR code, is part of a civic art installation for Horotiu, the *taniwha* and his waterscape now buried beneath one of the busiest roads in Tamaki Makaurau-Auckland.

The river is an island[3]

You are river. This way and that
and all the way to sea two escorts
shove and pull you. Two escorts
in contention.
Left bank or right bank, how can
you be a river without either?
Thus are U bends made. Thus are
S bends made. Your direction
is assured and sometimes running
perfectly and quite straight.
A low bank on your left holds your
laughing stitches in. On your right
side skips another hushing your
loud protests.
You are river. Joy leaping down
a greenstone stair-way: anger cradled
in a bed of stones.
You're a harbour; a lake; an island
only when your banks lock lathered
arms in battle to confine you: slow-
release you.
Go river, go. To ocean seek your
certain end. Rise again to cloud;
to a mountain – to a mountain
drinking from a tiny cup.
Ah, river
you are ocean: you are island.

Students hear a joyful cascade down a greenstone staircase; a broiling turbulence in a stone-clad bed. They hear the waterscapes of Papa reach the ocean, their "certain end" – but then again – rising, the river returns to Rangi, to cloud, cycling back to the embrace of a mountaintop's "tiny cup." They hear river as language, S and U bends wrought in water, and, as low banks hold "laughing stitches in," they hear the river as a joyful, genealogical thread.

Hone Tuwhare is one artist helping us consider how to listen for and weave river voices, including *taniwha*, in an always-emergent world. His evocation of a generative *whakapapa* waterscape is mirrored in the skyscape by the undulating flight of our endemic honeyeater, the *tūī*, described by Te Arawa scholar Paora Tapsell as "stitching sky to earth, atua to mortals, ancestor to descendant, generation to generation" (Tapsell, 1997, p. 335).

Intertwining and recounting the genealogical threads of *whakapapa*, artists plot and further extend an already interconnected cosmos, weaving local stories and inland waterscapes with considerable conceptual purchase and expansive reach. In Te Tairāwhiti, we're inspired by artists including Tai and Kaaterina Kerekere, whose creative practice embraces multiple formats. For *Be the Taniwha* at Tairāwhiti Museum in 2021-22, they exhibited more than 150 bottles of water collected from tributaries, building the system of connections and relations

[3] First published O'Sullivan (Ed.) (1970, pp. 181-182). Used with permission from the Estate of Hone Tuware.

of inland waterscapes in the area and telling a story of navigation and connection (Figure 5). Each bottle was named and emblazoned with a *taniwha* guardian, understanding water as a being of healing and intelligence.[4]

Figure 5 – *The Age of Water.*
Vinyl on glass bottles. 2021. (Courtesy of Tai and Kaaterina Kerekere.)

Tai and Kaaterina wrote:

> *This series of work is a tribute to our leaders who challenged the status quo to pave pathways of empowerment, breaking barriers by bringing issues to the surface…we are talking about those who walked alongside our communities, encouraged us to challenge, to speak up… [to] create place for voice and movement. And for many of us, maybe it's time to stop 'care-taking' and start 'taking care' of our futures. Challenge. Disrupt. BE THE TANIWHA.* (KE Design, 2021.)

As Anne has described above, the flooding of Te Tairāwhiti that followed makes their work prescient. While each of these waterways, many with guardian *taniwha*, is individually named, all are connected. When the Waimatā roared, it gave voice to many tributaries.

Enactments of collective identities are pertinent to our considerations of riverine systems, of authorship, of voices and more-than-human deliberations. Mataaho Collective are four

[4] The installation followed a scientific water exploration project in 2021 carried out in the Ūawa/Hikuwai catchment by Gisborne District Council with the support of the Te Aitanga a Hauiti Mana Kaitieki Leadership Group, collecting data about water quality, geology and hydrology.

Māori women creating work with a single authorship: a "four-brains and eight-hands" approach.[5] In 2016, they brought a waterscape to documenta14 in Kassel, a layered, woven work called *Kiko Moana*. Made from blue tarpaulins, ubiquitous in Aotearoa as temporary shelters, they envisaged the rippling work as water and also as a protective skin for a *taniwha*. With *kiko* meaning substance, and *moana* meaning sea/water, *"Kiko Moana* is a physical embodiment of water, perhaps a taniwha that both lives in, and is personified by, water" (Te Papa Tongarewa/ Museum of New Zealand, 2019).

Figure 6 - *Kiko Moana* 2016 installation view at Te Papa Tongarewa 2022. Polythene tarpaulin, cotton thread. Collected 2018 by Te Papa Tongarewa. (Courtesy of Mataaho Collective.)

[5] Mataaho comprise: Terri Te Tau (Rangitāne ki Wairarapa), Bridget Reweti (Ngāti Ranginui, Ngāi Te Rangi), Sarah Hudson (Ngāti Awa, Ngāi Tūhoe, Ngāti Pūkeko), and Erena Arapere-Baker (Te Atiawa ki Whakarongotai, Ngāti Toa Rangātira). Maataho website (n.d.).

They collected memories and stories from friends and family to share as *Taniwha Tales* on a dedicated website (www.kikomoana.com), to acknowledge the many ways *taniwha* exist. There are memories, cautionary tales – and laments:

> *The river is so dirty … I wonder if I'll get sick from the swim and I think on some level that I won't because it is my river. I hope the same for our taniwha. I hope she swims out with the tide to the sea so the salt can clean her.*

Figure 7 - *Taniwha Tales*, Mataaho Collective (2016. 24) - Taniwha narratives from friends and family.

With these tales exhibited alongside the work, their question is clear: What might a *taniwha* need to survive in today's inland waterscapes?

Immediately following the conference in Udine, we travelled to see Mataaho's latest work in the Venice Biennale, *Takapau*, where it was awarded a Golden Lion. We had shared this work in Udine but nothing could prepare us for being with it in person. A 200 m^2 suspended weaving made from six kilometres of reflective trucking straps, it's the central portion of a *whariki takapau*, a sleeping mat used to give birth upon.

As Dan has described above, the *wairua* or spirit of people means literally 'two waters'. In *Takapau* we see a mat woven to receive the embodiment of two waters in the spirit of a new-born, while the rainbow refraction of the tape suggests the waters of earth and sky – also the waters of humankind – intermingling. If we listen carefully, we might hear Hone Tuwhare's evocation of river rising to cloud: Rangi's tears suspended; Papa's mists of longing. It should be no surprise then that the language of weaving is also the language of *whakapapa*. Mats are made in sections or *papa*. *Aho* weft threads are also *aho tipuna*, ancestral lines that link *papa* or generational layers of kin relations. To weave a *takapau*, *aho* or main threads extend from one *papa* to another, binding the pattern together. *Takapau* is a cosmic work, shimmering and vast, weaving our places together.

Figure 8 – *Takapau* 2022 - installation view at the Venice Bienale 2024. Polyester hi-vis tie-downs, stainless steel buckles, variable dimensions. Commissioned 2022 by Te Papa Tongarewa. Photo by Ben Stewart. (Courtesy of Mataaho Collective.)

Discussion and implications

1) **Positionality.** Situating ourselves in contemplating what it means to Let the Rivers Speak

Visiting the waterways of the Friuli-Venezia Giulia region presented an intriguing backdrop for our work. Coming from Aotearoa New Zealand to Italy to discuss a river on the other side of the world, the theme of the 2024 Venice Biennale resonated strongly: *Foreigners Everywhere*. We were struck by the profound legacies of socio-cultural connections and relations that are forever 'becoming', caught in the midst of change. It is intriguing to contemplate, for example, how lessons learnt in the creation of domesticated landscapes and ecosystems in the region will influence the future of the Tagliamento River. How can our more-than-human deliberations from the Southern Hemisphere complement other approaches to ways of knowing and looking after rivers?

Our account is situated in time and place. As expressed in Anne's vignette, it reflects immersive watery experiences – being drenched by a storm and its associated soundscape – the drumming on the roof. Perhaps this was poignant, the deluge pointing to the disruptions and perturbations in ways of knowing and relating to rivers – their rhythmicity, range of variability, and inherent uncertainties of emergent evolutionary traits (Jackson et al., 2019).

The Waimatā River has an ancestral presence – indeed, multiple presences. As authors of this article, we cannot speak for these multiple voices – the river is NOT the lead or a co-

author. However, we hope that our conduct in crafting and writing this article reflects on what's gone before and what endures now and into the future.

As outlined in the vignettes, our time in Italy made us reflect upon our own roots, origins and life experiences – our relations to waterways. The four perspectives outlined above reflect upon how being and acting 'in-place' affected our explorations (and experiments) into more-than-human encounters in efforts to explore the life of the Waimatā River in Aotearoa New Zealand. Here we expand upon these individual narratives to develop a collective sense of how our components of the Waimatā's story can come together. In this brief, free-flowing account we make no pretence that this conveys an inclusive and coherent oversight – inevitably this is a selective representation (retelling) of the river's story. Methodological implications in the conduct of a river ethnography emerge from this work.

2) **Components of the Waimatā's story expressed in the article.**

Each river story is inherently place-based and contextual, shaped by boundary conditions and disturbance events. Some memories linger long and persist, others are erased and lost. Inevitably, circumstances and the consequences that ensue change over time. Devastating impacts of destruction following cyclones Gabrielle and Hale in 2022 and 2023 attest to unprecedented damage and despair in the East Coast region of Aotearoa New Zealand. Lessons from Cyclone Bola in 1988 had not been heeded. Rupture and harm are increasingly severe. The prevailing state of *mate* (sickness) is far removed from prospects for collective wellbeing embraced by the concept of *ora* (Salmond et al., 2019). Applications of a more-than-human lens that finds and expresses the voice of the river (that lets the river speak) extend well beyond biophysical aspirations of an era of river repair (Brierley & Fryirs, 2008), underpinning and intertwining these prospects within concerns for socio-cultural wellbeing. Embracing such thoughts, how do we give voice to more than human relations to the river?

Our article presents a series of vignettes that can help us to unpack notions of waterways as living entities, especially as conceived through a Māori-inspired lens. In giving voice to the multiple ways we know rivers (Hikuroa et al., 2021), we have experimented with a writerly approach that tries to weave plural knowledges (Koppes, 2022). Building on this, we see potential for new, novel, and insightful ways of knowing – engaging, embracing and facilitating uptake of a more-than-human approach (Sharp et al., 2022; Thomas, 2015).

Gary's section presented an overview of biophysical components of the Waimata River system – the imprint of geology (tectonics, lithology) – and how this works alongside glacial-interglacial climate change to create terraces that determine the flume-like behaviour of the river (its longitudinal connectivity from the mountains to the sea). As with all landscapes and ecosystems, this is a fragmented history, with selective memory of particular characteristics (Gibbs, 2006). In these highly erosive landscapes, erasure has a more dominant influence than persistence.

The anthropogenic imprint characterised by Dan and Anne highlights profound colonial impacts that disrupted Māori relations to the Waimatā River. Land use change and agricultural/industrial practices engendered significant wealth for some but brought about major environmental damage. The emergent approach to river repair envisages and enacts restoration as a socio-cultural process (Cairns et al., 2024). Working together envisages transformative prospects for collective wellbeing through a region-wide approach to native reafforestation with a sustainable mosaic of productive land use practices – recloaking

Papatūānuku (PureAdvantage, n.d.). Herein lies a possibility of applying process-based understandings and practices that manage at source and at scale (Fuller et al., 2023).

Reflecting upon more inclusive approaches to restorative practices, Billie shows examples of emotive and symbolic artistic representations that reflect upon potentialities of more-than-human relations. Tapestries are woven with meaning – constructed and situated in-place. Herein, messages of caring and hope embrace visionary expressions of prospective futures – something that is difficult if not impossible to express through the constraints of discipline-bound scientific endeavours (however insightful they may be in other ways). Research at the interface of art and science presents opportunities to incorporate expressions of emotional connections that may otherwise be marginalised or suppressed (e.g., Longley et al., 2013; Santos and Wainright, 2024).

3) **Methodological reflections on the conduct of a river ethnography**

What's written on the page is a reflection of the person (or increasingly the machine) that writes it. In contemplating more-than-human relations that reflect upon the Voice of the River, due regard must be given to voices unspoken or unheard … the authority of those who are writing, not speaking on behalf of others, and contemplating what's missing.

Researchers in Aotearoa New Zealand have been at the vanguard in the creation and enactment of decolonising research methodologies (e.g., Tuhiwai-Smith, 1999). More recent endeavours embrace participatory approaches to anticolonial methodologies (O'Connor et al., 2024). Going forward in more-than-human experiments that express the voice of the Waimatā, we envisage a layer upon layer methodological approach that interweaves transdisciplinary and transcultural threads in the conduct of a river ethnography (life as a tapestry; Koppes, 2022).

Emerging approaches to storytelling and storylistening provide considerable encouragement in scoping ways to hear divergent voices that express relations to river systems (e.g., Doehring et al., 2023; Kitson et al., 2023). Alternative forms of expression warrant further attention, such as reflections upon soundscapes and musical interventions. The cadence of the Whanganui River in Aotearoa New Zealand finds expression in the *mita* of language by local *iwi* (Neilson, 2020). Alternatively, advances in remote sensing technologies and analysis are creating intriguing expressions of the voice of the river (Lantto Klein et al., 2024). How will such encounters and interventions change relations to rivers and realities on the ground? How do these threads come together in expressions of rivers as indivisible entities? What and how will lessons be learnt from past experiences? Which voices will be expressed and heard? In unpacking histories that unravel how and why rhythms of the river are recurrently perturbed and disrupted, which ancestral and colonial memories will be cherished or pushed aside?

In recent years, the academy's inquiry into more-than-human relationships increasingly draws upon the indigenous and customary understandings that precede them, supporting efforts that seek to allow each river to express its own voice (e.g., Brierley, 2020; Salmond et al., 2019; cf. Rosiek et al., 2020). Further work is required on the geoethics of such more-than-human deliberations (Sharp et al., 2022). This entails giving due regard to inclusivity, recognising voices heard and unheard in the crafting and work of river co-learning arenas (de Sousa et al., 2024). As highlighted by Gregory et al. (2011), the spaces of engagement that support creative and generative encounters will likely be inherently place-based and situational, with prospect that efforts can learn meaningfully from each other. While

enormous generative potential is evident, we urge application of a cautious and respectful approach in European efforts to learn and build upon Indigenous experiences elsewhere in the world (e.g., Cohen et al., 20234; Linton & Pahl-Wostl, 2024), giving due regard to approaches to sharing and listening in the creation and maintenance of networks and communities of practice wherein individuals and groups learn from each other.

We began this article with a *mihi* or ceremonial greeting, acknowledging that by the mingling of our waters we are connected. We end with a call to further share and weave our perspectives, disciplinary and ancestral knowledge systems together:

Whakarongo!Whakarongo!Whakarongo!	*Listen! Listen! Listen!*
Ki te tangi a te manu e karanga nei	*To the cry of the bird calling*
Tui, tui, tuituiaa!	*Bind, join, be one!*
Tuia i runga, tuia i raro,	*Bind above, bind below*
Tuia i roto, tuia i waho,	*Bind within, bind without*
Tuia i te here tangata	*Tie the knot of humankind*
Ka rongo te pō, ka rongo te pō	*The night hears, the night hears*
Tuia i te kāwai tangata i heke mai	*Bind the lines of people coming down*
I Hawaiki nui, I Hawaiki roa,	*From great Hawaiki, from long Hawaiki*
I Hawaiki pāmamao	*From Hawaiki far away*
I hono ki te wairua, ki te whai ao	*Bind to the spirit, to the day light*
Ki te Ao Mārama!	*To the World of Light!*

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