



## Seen but unheard: navigating turbulent waters as Māori and Pacific postgraduate students in STEM

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RESEARCH ARTICLE



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## ABSTRACT

The experiences of Māori and Pacific postgraduate students in STEM (Science, Technology, Engineering and Mathematics) offer insights into how universities, particularly science faculties, currently underserve Māori and Pacific people. This article shares the experiences of 43 current or past postgraduate students at New Zealand universities. Collectively, our stories offer insight into how representation, the white imprint, space invaders/stranger making, and institutional habits, specifically operate to exclude and devalue Māori and Pacific postgraduates in STEM. We provide new understandings of the white imprint (rewarding and incentivising white behaviour), where Māori and Pacific postgraduates were prevented from being their authentic selves. Importantly, this research documents how Māori and Pacific postgraduates experience excess labour because of institutional habits. This research also provides insight into how the science funding system results in superficial and unethical inclusion of Māori and Pacific postgraduates. Our stories provide persuasive evidence that the under-representation of Māori and Pacific in STEM will not be addressed by simply bolstering university enrolments. Instead, our stories highlight the urgent requirement for universities to change the STEM learning environment which continues to be violent and culturally unsafe for Māori and Pacific postgraduates.

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## Introduction

Indigenous people are under-represented in universities globally (Behrendt et al. 2012; Frawley et al. 2017; Asmar and Page 2018; Mohamed and Beagan 2019). In New

Zealand Māori and Pacific<sup>1</sup> academics make up less than 4% and 1% respectively, of professors and 5% and 1.7% of academics (McAllister et al. 2019; Naepi 2019). A review of New Zealand's Performance Based Research Fund found that, for our system to be equitable, we need 750 more Māori academics and 450 more Pacific academics employed in permanent full-time positions across our eight universities (PBRF Review Panel 2020). Māori and Pacific scientists are under-represented and under-valued in both crown research institutes (CRIs) and universities (McKinley 2002; McAllister et al. 2020). For example, in 2018 the percentage of Māori academics in science faculties varied from 0–6.4% and 0–4.3% for Pacific academics (McAllister, Naepi, et al. 2020). Naepi et al. (2021) showed that there are very low numbers of Māori and Pacific enrolments in the Natural and Physical Sciences at undergraduate levels and that retention into postgraduate degrees beyond honours level is extremely low. Previous research has highlighted that under-representation of Māori and Pacific people in universities is a result of systemic exclusion and failure to serve, rather than a lack of ability (Curtis et al. 2012; Curtis et al. 2015; Theodore et al. 2017; Theodore et al. 2017). This paper contributes to the ongoing mapping of the science sector (McAllister et al. 2020; Naepi et al. 2021) by providing qualitative data with rich insights into why the numbers of Māori and Pacific people in STEM are so low.

This paper also contributes to the ongoing discussions about the many ways in which Māori and Pacific are excluded and under-served by universities. This includes Haar and Martin's (2021) cultural double-shift whereby Māori essentially have two full-time workloads and are expected to fulfil roles associated with both being a scientist and being Māori. Despite national and institutional policies that require New Zealand universities to include Indigenous knowledge, such as *mātauranga Māori* and Pacific knowledge systems, science faculties have been slow and reluctant to value knowledge (re)produced outside of colonial norms (Mutu 2014; Waiari et al. 2021). There is increasing evidence that, as individuals, Māori and Pacific people experience marginalisation, racism, and exclusion in universities (Kidman and Chu 2017; Kidman 2020; Haar and Martin 2021; Ruru and Nikora 2021). This can lead to them being compelled to exit the sector. Considering high-profile, public debates on *mātauranga Māori* and colonialism within the sciences (Waitoki 2022), and sector-wide reviews of New Zealand's research system (Ministry of Business, Innovation and Employment 2021), the need to capture the experience of Māori and Pacific postgraduate students in science, technology, engineering, and mathematics (STEM) is great. We highlight the experiences of those who are often seen but not heard and tell our stories to invoke change. We offer this paper as a talking back moment (hooks 1994), where we share our stories in an effort to cause a little trouble (Naepi 2021a) with the expectation that universities in New Zealand will hear and listen to how we, as Māori and Pacific people, experience postgraduate education in STEM and will enact the much needed change.

We first contextualise our work within domestic and international scholarship into the ways that Indigenous people experience universities, including: the 'white imprint' in the academy; space invaders; stranger making; and institutional habit. We share our method and methodology, explore our findings, and finally, show how these findings expand our understanding of Māori and Pacific experiences of postgraduate studies in STEM.

## Context

Māori and Pacific people are often excluded from the academy through the white imprint. Naepi (2019) defines the white imprint as the rewarding and normalisation of behaviour that is white and masculine, in the context of Pacific women working in universities. Meanwhile, behaviours that are not assigned as masculine or white are, at best, ignored, and, at worst, punished. Kidman et al. (2015) highlighted that both Māori and Pacific experience the white imprint through exclusion that is observed through institutional, departmental, and academic (dis)engagement, which can ultimately pose long-term challenges to our advancement and promotion. We see evidence of the white imprint in how most Māori and Pacific academics are employed at lower levels of academic seniority (McAllister et al. 2019; Naepi 2019) and experience pay and promotion inequity (McAllister et al. 2020).

The white imprint results in Māori and Pacific people either changing to conform or being made to feel out of place. Puwar's (2004) notion of space invaders provides us with the necessary language to explore how racialised bodies, in this case Indigenous bodies, are made to feel that they do not belong in universities; they become 'space invaders' through three mechanisms. The first is disorientation; the bodies around them do a double take when they enter a room: they are noticeable. The second is infantilisation; Indigenous people are not expected to be capable of authority, or are treated as children. The third is hyper-surveillance; when Indigenous bodies are 'given' authority, the institution (and the people within) are unforgiving of even small mistakes.

The politics of stranger-making speaks to how some, and not others, become strangers, how emotions of fear and hatred stick to certain bodies, how certain bodies become understood as the rightful occupants of certain spaces (Ahenakew and Naepi 2015). Desirable diversity, such as 'window dressing', is one such way that stranger-making acts upon Indigenous academics; institutions declare what aspects of diversity are desirable and reject others (Ahenakew and Naepi 2015). Naepi (2021b) built on this by noting that desirable diversity within New Zealand universities is also fuelled by racial capital (Leong 2012, 2013); they aim to collect Indigenous bodies (specimen collecting; Musser 2015) because they receive both social and financial capital for their inclusion. Desirable diversity also demands that diversity be intelligible through the lens of the institution (Ahenakew and Naepi 2015), whereby Māori and Pacific ideas must 'make sense' and align with the institution and utilise the institution's language in order to be deemed valid.

Institutional habit describes how processes have become embedded and normalised in institutions (Ahmed 2007). These habits are institutional walls to diverse people accessing universities, slowing the progress for anyone other than those for whom the university was originally designed, white men from westernised countries (Grosfoguel 2013, p. 87). These walls become (more) apparent as institutional practices that impede diverse people who are forced to undertake excess labour to deconstruct those walls. Pacific women face a range of institutional habits that slow their progression in New Zealand's universities (Naepi 2021b) and Māori scientists experience a 'cultural double-shift' (Haar and Martin 2021).

## Method/Methodology

This project invited past and present Māori and Pacific postgraduate STEM students to complete an online survey comprising 23 questions, including demographic, open-



ended, Likert scale, and rating scale, to explore their experiences. The survey was built and delivered using Alchemer, representing half of a research project funded by Te Pūnaha Matatini into 'Alternative Visions of Science'. It is one of the first studies to specifically examine Māori and Pacific experiences in postgraduate STEM education in New Zealand universities. The purpose of this study was to explore and identify the nature and origin of key challenges for Māori and Pacific people in STEM, and to review the success of initiatives to support these students.

The survey ran from 28 October to 18 December 2020. There were 43 collaborators recruited through existing networks, word of mouth, and Twitter. All collaborators were Māori and/or Pacific people and undertook postgraduate research in STEM subjects at a New Zealand university in the past 16 years. While data coding was undertaken by a smaller group (see below), collaborators were invited to both complete the survey, and contribute to the writing and editing of this paper to ensure their agency over their stories. These collaborations were built through online hui and emails, with collaborators receiving regular updates and invitations to review and edit online documents. The present paper focuses on responses to one open-ended question within the survey: 'Can you describe a specific situation or series of events that made you feel uncomfortable as a Māori and Pacific postgraduate researcher?' Collaborators created responses to this question that varied between 21 words to 668 words with a total of 5850 words written.

Our research is guided by Kaupapa Māori research approaches (see Tuhiwai-Smith 2021 for further detail), chief of which is that this work is co-created by a collective of collaborators rather than a small team conducting research upon passive 'participants'. By creating space within which all collaborators are encouraged to contribute, we ensure that this work is created by and for Māori and Pacific researchers.

This approach also aligns with Pacific research methodologies (Anae et al. 2001; Health Research Council 2014; Naepi 2020), which centre relationality as a key part of any knowledge making endeavour. We centre our relationships to each other by co-creating meaning in our collective experiences. As such it is important for our readers to recognise that this article is one of many; this first article describes the necessity of an intervention in STEM in New Zealand, while our next one will explore promising practices for intervening in our current system. As a collective this is the approach we have agreed is necessary; to name the problem and ensure it is not lost in a celebration of actions that have contributed to our current system. While this may read as a list of transgressions that centres our collective as victims, we assure you that we are not – we simply do not have the space to show the many ways that our collective and those who came before us have pulled the current system away from its colonial roots and routes. As a collective, we see the opportunity to come together and write together as a reclamation of our narratives, and a means to highlight and push back against the ways in which colonial violence frames us via victim narratives. We stand together and do not whisper; but instead provide the evidence needed (by institutions) to collectively shout the many ways in which the institution enables racism.

We have chosen to use the term Indigenous when referring to Māori and Pacific students. Many others have unpacked the nuances in the relationship between Māori and Pacific peoples (Smith and Wolfgramm-Foliaki 2022; Te Punga Somerville 2012, 2022). In so doing, our Pacific co-authors do not lay claim to being Indigenous of this whenua but we create space to recognise our shared connection to Te Moana Nui a

Kiwa knowledge systems. Within this complexity we recognise that Māori, as tangata whenua, encounter a specific type of settler racism that is not directed at Pacific peoples. We wish to acknowledge this tension and recognise that, for some, the use of the term 'Indigenous' in reference to Pacific peoples will cause a double take and, for others, it may prompt a nod; we suggest sitting with and unpacking those feelings.

With this in mind, we do not present a breakdown of ethnicity and or of gender even though we recruited collaborators of a range of demographics. As it is beyond the scope of this work to further analyse how gender intersects with ethnicity, we avoid doing the work of further disaggregating data about our collaborators who already exist in ones and twos in their places of work. However, most of our collaborators (28/43) were associated with a New Zealand University at the time of the survey. The remainder represented a mixture of independent researchers and staff at other domestic and international tertiary institutions, and private and Crown research institutes.

Thematic analysis, following Braun and Clarke's (2006) analytical phases, was used to identify themes within the data that attended to the experiences of Māori and Pacific postgraduates in STEM subjects in New Zealand universities. McAllister undertook initial coding, which was then discussed with Naepi and Walker and recurrent themes were identified from coding sessions among researchers (TM, SN, LW, AG). Four major themes were identified: Representation; White imprint; Space invaders/stranger making; and Institutional habits.

When engaging with the themes we have chosen to centre the voices of those whose stories we share. Therefore, while colonial publication methods require that we remove words to meet publisher guidelines, we will not cut the words of our collective. Instead, we invite readers to engage in sense-sensing as opposed to sense-making (Ahenakew 2016). Sense-sensing recognises that some of this paper's audience have lived experiences of what is being discussed and will recognise additional nuances and layers within our analysis, reflecting what many of us already know, that modernity's grammar is incapable of and not sufficient to explain our experiences (Mika et al. 2020). Our discussion section does some of this labour for the reader but we are intentional (and somewhat forced) in our invitation to encourage sense-sensing.

## Findings

### *Representation*

Consistent with previous work highlighting the importance of Indigenous mentorship, the presence of Māori and Pacific colleagues and mentors heavily influenced the success of Māori and Pacific postgraduates (Kidman et al. 2015; Barber and Naepi 2020; Gillon 2020; Naepi 2021b; Baice et al. 2021). When institutions failed to provide Māori and Pacific mentors within their discipline, discomfort and isolation was the result.

One collaborator discussed some of the consequences of this lack of representation:

The lack of Māori and Pacific postgraduate researchers made life for me as a Pacific researcher difficult. Having come from a different background, with a different perspective and different skills to bring to the table I found it hard to make any real connections with my fellow researchers. This at that time felt isolating and was exacerbated by the fact that there were no Māori and Pacific staff members in my areas of expertise.



In addition to experiencing a sense of distance from non-Māori and Pacific colleagues, others described how this isolation would expose them to expectations to provide cultural guidance that they did not feel well-positioned to give:

One example is being asked by a very senior member of my institution for some clarity around the meaning of Māori words. Given my basic understanding of te reo, I wasn't quite sure why I was called up, until I realised that I was the only Māori on the floor with my PI [Principal Investigator] overseas.

As sometimes the only Māori or Pacific researcher, this was a common experience and we expand upon why the expectation senior staff have of students to teach te reo Māori and tikanga is problematic in the section on space invaders and stranger making. Consistent with Puwar (2004), isolation and exposure led to hyper-surveillance:

It is constantly being pointed out to me that I am the only Māori and Pasifika PhD student in my department. It is a lot of pressure to succeed and do well to be a good role model.

Irrespective of these increased pressures and discomforts, collaborators also noted that their research itself suffered from the lack of Māori and Pacific mentors and colleagues.

Part of kaupapa Māori methodologies is kanohi ki te kanohi - so how are we supposed to learn how to research when we don't have access to kanohi ki te kanohi ourselves?

Here we use scholarship on the under-representation of Māori and Pacific scientists or, alternatively, the over-representation of Pākehā, to demonstrate its consequences (McAllister et al. 2020). The isolation and discomfort caused by lack of representation in STEM stops Māori and Pacific postgraduates from feeling included and from accessing the necessary mentorship to develop their research. We show that the cultural double-shift of senior scientists (Haar and Martin 2021; Ruru and Nikora 2021) is also experienced at the postgraduate level and that hyper-surveillance is a frequent consequence of isolation.

### **White imprint**

The white imprint describes how white structures and (coded) habits are rewarded and sustained within the university, which disadvantages and isolates Māori and Pacific students in STEM. The enduring effects of this included the erasure of Māori and Pacific identities and lived experiences and an accepted level of cultural incompetence within postgraduate programmes.

For many of us, postgraduate environments were not culturally safe spaces where we could be our authentic selves; our identities were erased when they did not align with the white imprint. One collaborator poignantly captured this paralysing feeling:

For instance, some days I felt like I couldn't talk, I would have to whisper. Or in some spaces complete silence. The whole environment made me feel I couldn't be my Pacific self.

Non-Māori and non-Pacific academics and students often questioned our cultural identities. This is a violent form of marginalisation and erasure, which often has lasting effects on how we perceive ourselves as Māori and/Pacific people. Non-Māori and non-Pacific academics and students actively questioned our presence and identity: 'I hate it when I tell my classmates I'm Māori and they ask me "how much?"' Another

collaborator experienced the violent erasure of their Māoritanga: ‘I was also told by some peers that I must consider myself “white” because I don’t “act Māori.”’ Collaborators described the requirement to divorce their cultural identity to succeed in science: ‘I was taught how to be an excellent Pākehā scientist, not an excellent Māori scientist’, and another commented that ‘there was always a sense of separation, that I was expected to check being Māori at the door, before entering the lab’.

Māori and Pacific postgraduate students in STEM were often made to feel uncomfortable when our lived experiences and understanding of our own culture were dismissed and erased by non-Māori and non-Pacific academics. One collaborator commented: ‘I have had many experiences of being made to feel invisible where academics have talked around me, rather than to me, on issues that I am better placed to speak on than them’. Another described an interaction they had with a Pākehā professor who said that their research was a waste of an opportunity because it did not, in their view, capitalise on having a ‘cultural connection’:

The Professor told me I was wrong, that maybe I need to learn more about my field. Not only did he make assumptions about a subject he knows nothing about, but he made assumptions about a culture he knows nothing about. His dismissal of my research and refusal for me to speak about my research without some ‘cultural connection’ came from a place of privilege, arrogance and cultural ignorance. What he wanted was for me to advertise my research and myself in a way that suited his Pālangi view of Pacific peoples and where they should sit in STEM.

Māori and Pacific postgraduates frequently observed a distinct lack of basic cultural competency and cultural safety in academics and peers. This included sitting on tables, showing images of tūpāpaku in lectures without warning, as one collaborator noted, ‘breaking tikanga, not being aware of kawa, asking offensive and ignorant questions to the hau kāinga’ in marae settings, making no attempt to correctly pronounce Māori words and being blatantly racist. One collaborator remarked that a lecturer described te reo Māori as a dying language. The persistent racism, lack of cultural competency and safety, and lack of regard for basic tikanga within universities is a constant reminder that our worldviews are not respected or valued.

This ignorance extends to the well-documented inequities of the university itself: one collaborator described the response of a Pākehā to being challenged about changes to a degree programme, which could disadvantage the already tiny Māori and Pacific cohort.

The response from one Pālangi man lecturer was: “race and any other reason claimed as a barrier is not a barrier in 2020 ... gender or cultural biases form discrimination and if they exist in our country should be reported to the police, government or judge but not to the committee who tries to improve the quality of studies” and that I myself was being offensive by bringing up these concerns. Nobody in my department stood up to his arrogant and racist attack on my views. This kind of behaviour is endemic within New Zealand society and within our universities. It exists within the student body, within the academic body, and perhaps most influentially, within the senior leadership. We tell those with power what needs to change to improve Māori and Pacific peoples engagement and success at university. But they don’t listen. They create their own plans, based on Pālangi views, and as an afterthought, forward their ideas to us with no real intention of listening to, let alone implementing, our feedback. God forbid they give us the power to make change for our people on *our* terms.

The silence from peers and colleagues suggests that others agree with the Pālangi lecturer and reinforces that the inaccurate assertion that racism does not exist. One collaborator aptly situated these problems within the wider science sector itself, stating that: ‘Their obvious lack of understanding of te ao Māori and mātauranga Māori means that they disregard the value of Māori in their work and by extension, the value that Māori people bring to the science and research sector’.

These stories characterise how the white imprint operates within the academy and its direct impacts on Māori, Pacific, and Pākehā people. The identities and lived experiences of Māori and Pacific students are erased as universities fail to acknowledge things that occur outside of white understandings of the world. These experiences articulate how, despite numerous national and institutional commitments to inclusivity, the white imprint enables and rewards racism and cultural incompetence in relation to Māori and Pacific cultural practices.

### ***Space invader and stranger making***

Space invaders and stranger making captures the experiences of being visibly different and how this impacts the lived realities of Māori and Pacific postgraduates in STEM. This theme discusses experiences of feeling out of place and practices that contribute to that (Mercier 2014). This theme also acknowledges that ‘desirable diversity’ means that Māori and Pacific people are often included in very specific ways that are determined by the institution, rather than us.

Collaborators experienced infantilisation, where Māori and Pacific people are not expected to be experts or capable of authority and intelligence. One collaborator said:

Every class I walked into, every presentation on my research I gave there was always some level of surprise that I was actually good at what I did. I feel like I was (and am) not only trying to manage my own imposter syndrome but also managing others’ expectation of what a Pasifika scholar is. It’s pretty uncomfortable to realise that people are surprised that you’re succeeding.

Our positioning within the academy, as Māori and Pacific postgraduates, is often questioned; this resulted in discomfort, embarrassment and in extreme cases changing supervisors. Mercier (2014) describes the disorientation associated with being a ‘brown body’ invading space reserved for white men in physics, which manifested in racist assumptions of her intelligence by others. Similarly, one collaborator described how their former PhD supervisor ‘questioned my ability to do a PhD, because I had a wife and a young child, they thought I was not capable of it and this was something they had told others’. The former supervisor then went on to question what would happen if the collaborator had another baby. Another collaborator commented that ‘Pākehā supervisors and lab members treat you like you are insignificant and know nothing. Speaking to you as if you are not good enough. And sometimes, when people make comments that we are only where we are because we are Pacific people’.

Māori and Pacific postgraduates were often further alienated by racist assumptions from both non-Māori and non-Pacific academics and students that we have lower entry requirements for postgraduate studies, a free education, and easy access to funding and scholarships because of our Indigeneity. For example, one collaborator said that:

I was asked on multiple occasions about my entry into postgraduate studies as well the funding streams (i.e. - whether they were Māori/PI [Pacific Islander] or “Normal” entry/scholarships). It was implied or outright stated on some occasions that these had a lower bar to entry and that this was not ‘selecting for the best and brightest.’

Another commented that a senior academic said: ‘I must get all the scholarships because I am Māori and a woman’. The reality of who receives scholarships has been highlighted in the media in recent years (Johnston 2018; Meech 2019). For example, Meech (2019) found that students living in the most wealthy 10% of neighbourhoods received over \$1 million in scholarships whereas the poorest 10% received approximately \$250,000 in 2018. This expectation that we are undeserving to be postgraduate students was a significant source of discomfort for Māori and Pacific postgraduates and sometimes resulted in internalised racism and lateral violence. For example, one collaborator described discomfort in receiving scholarships targeted specifically for Māori. McKinley (2008) further describes incidences of internalised racism and lateral violence as experienced by Māori women scientists. She describes erasure of identities through highlighting the tension between being both Māori and Pākehā in science and expectations of assimilation in being an ‘honorary white’.

These assumptions by non-Māori and non-Pacific people were sometimes in stark contrast to our lived realities as postgraduate students in STEM, as highlighted by one collaborator:

I worked an average of 5 jobs at any one point over the past two years of my postgraduate study to be able to support myself and my 9 year old son. Yet in all my classes, my peers would wax lyrical about how they had quit their jobs so they would have time to study – those peers still sought extensions for assignments and would come to class hungover. The inability of my peers to acknowledge or even notice their privilege became so incredibly draining that I avoided my Pākehā peers for the rest of my studies.

Māori and Pacific postgraduates often experienced discomfort and exclusion when we did not fulfil the stereotypes and expectations of expertise as defined by the institution. In this process of stranger making, we were designated as trespassers in the academy (Ahmed 2012).

The ‘cultural double-shift’ (Haar and Martin 2021) was clearly illustrated in non-Māori and non-Pacific peoples’ expectations of what Māori and Pacific postgraduate students should know. One collaborator stated that ‘I was instantly deemed an expert on kaupapa Māori yet had only begun my journey of exploring this. We were often put on the spot and expected to explain tikanga, te reo Māori, mātauranga Māori to others, while simultaneously being experts in non-Indigenous science’.

The expectation of expertise is commonly felt throughout academia (Mercier 2014; Haar and Martin 2021). For example, Mercier (2014) describes the expectation to be an ‘Instant Expert’ on all things Māori, including Māori culture, knowledge and history, despite having a PhD in physics. Some collaborators alluded to the impact of not fulfilling these expectations, one stated that:

In the rare instances where te ao Māori is mentioned, I feel nervous about an expectation that I should speak on our behalf, considering we’re not a monolith, and I still feel whakamā about not being ‘Māori enough’ which I know is stupid but still can’t quite get over it.

Another highlighted feeling hurt and disorientation in response to these expectations:

I specifically remember one lecturer who singled me out in class and said “oh [name] your iwi is from [location] so you should know all about the seals in [location]?” and of course I didn’t, I have never lived there and her expectation that I knew hurt.

As well as expectations of being experts in their own culture, several Pacific collaborators described discomfort at being expected to also speak for Māori. One described a situation where ‘a senior and quite famous Pākehā scholar asked about my research and then said ‘but what’s the point since that’s basically the same as Māori” and others commented that their ethnicity of Cook Islands Māori was assumed to be the same as Māori on multiple occasions.

It is not new to suggest that Indigenous academics are being made disoriented and marginalised through stranger making. But this research illustrates the interplay of externally imposed expectations and false understandings of Māori and of Pacific postgraduate experiences. These examples demonstrate how non-Māori and non-Pacific people are unsettled by our presence within universities, and how persistent assumptions of cultural expertise yet, simultaneously, academic incompetence and undeserved ‘privilege’, create discomfort and further alienate an already isolated group within the sciences.

## **Institutional habits**

The walls that Māori and Pacific students encounter in their lived realities of postgraduate study are understood as institutional habits. Institutional habits are the actions and responses that are ingrained into our university systems that are not endemic but have become ‘naturalised’ over time and hence made invisible. These institutional habits generate excess labour for Indigenous people and enforce exclusion of Indigenous knowledge in universities (Ruwhiu 2014; Acton et al. 2017). Importantly, our collaborators also articulated how institutional habits drive behaviours around research funding.

Collaborators described many forms of excess labour and the significant discomfort they caused. For some this labour was embodied in dealing with racism, expectations of cultural expertise, performing cultural protocols (i.e. karakia, mihi whakatau) and fulfilling performative diversity roles.

At times, this involved engaging with the university bureaucracy to address racism:

I have had to write three formal complaints just this year alone. Each experience is taxing physically and emotionally and each has made me seriously reconsider my education choices’, and others spoke of the frustration when those complaints were not taken seriously, ‘I was sent screenshots from an online forum where one of my colleagues had been posting anti-Indigenous rhetoric under their real name. Within our curriculum, we teach about colonisation and Māori [discipline]. As such, I thought it inappropriate that they continue teaching Indigenous content. I took it to our bosses who tried to take it higher, and nothing ever came of it.’

Another common source of discomfort for Māori and Pacific postgraduates was constant requests for unpaid labour in the interest of universities’ attempts to perform diversity. Collaborators were asked to give ‘token’ guest lectures, feature in university marketing, ‘... to speak at events aimed to recruit more Māori science students, being tasked to mihi whakatau rangatira without senior Māori/cultural advisor support’.

Māori postgraduates were expected to facilitate relationship-building with Māori communities. One collaborator ‘felt pressure to be the liaison between my iwi and the other researchers in my research group. I felt I was always consulted on things concerning Māoritanga and tikanga, rather than what I’m there to do, which is my PhD’.

The active exclusion of Indigenous knowledge within universities was a source of discomfort for many collaborators. Some were actively discouraged from including mātauranga in their research. One collaborator was asked to transfer out of their science department and enrol in Māori studies because they were using a kaupapa Māori approach. Another described both mātauranga and iwi participation being actively discouraged when deciding on a thesis topic:

I discussed with my future supervisor about doing research with my iwi or conducting research that involved elements of mātauranga Māori. I was told they did not have any connections with any people who could help with my research interests. I was then told a range of topics that could be catered to me which did not align with any of the research interests associated with my cultural values.

Collaborators described themselves and others being penalised in their theses and assignments for including Indigenous knowledge and working in their own communities. One collaborator commented that:

This semester, my classes were marked by Pākehā tutors who marked my students down for drawing on mātauranga beyond the scope of the course, including whakataukī, and using “informal language.” These teina had all had wānanga with me to ensure they were on the right track and could use diverse mātauranga without being penalised. I had to re-mark 60 assignments the night before students were due to have their marks returned.

Another commented that the way their thesis was marked did not adequately acknowledge the depth of their research:

I spent many nights away with my iwi learning about data sovereignty and gaining trust to access data – it took 18 months to gain access, during a 12-month thesis. And this was not factored into my mark at all, in fact I was marked low as my thesis was deemed ‘not technical enough.’ I ran out of time to make it more technical, but the time spent with my iwi was more valuable to me now than anything else.

Some collaborators further highlighted the divergence between western research methods and Māori values as a source of conflict when working in Māori communities:

I would often feel uncomfortable handling the tikanga around killing species that were also kaimoana as part of the study associated with climate change. Although the research was valuable to Māori communities the discussions around the use of animals for this purpose that could also be food was very challenging. I received very little support around this and when questioned on the marae would often struggle with the justification of the situation.

Māori and Pacific postgraduates were used in unethical, ‘box-ticking’ ways on funding applications that were caused by (un)acceptable institutional habits. Alarming, collaborators’ names and positions as Māori and Pacific researchers were often used on funding applications that they did not agree to be involved in. One collaborator said: ‘My name (my mana and reputation) was used against my will to secure funding for a project that I refused multiple times to be part of’.



Another went on to say:

If my ethnicity is going to be used in that way, then I, as the Māori researcher, want to be able to take on the responsibility of fulfilling that role ‘properly’, but didn’t get the amount of hands-on mentorship that I felt like I needed in order to actually know what that meant or looked like.

Others described being named as Māori investigators on funding applications when they were Pacific people. Meanwhile, collaborators described non-Māori and non-Pacific academics receiving funding for projects which supposedly incorporated mātauranga Māori while the academics did not include Māori or carry out that research in a way that benefited Māori.

This paper details for the first time, how the funding system results in unethical and superficial ‘inclusion’ of Māori and Pacific postgraduate students. We build on previous research (Hall 2013; Haar and Martin 2021; Naepi 2021b) and show the breadth of excess labour we are required to do and provide insights into how Indigenous knowledge, particularly mātauranga Māori, is actively excluded within the sciences.

## Discussion

There is a long history of exclusion of Māori and Pacific people and knowledge within the academy, and this research reveals that this exclusion continues (Ngata and Buck 1986; Hau’ofa 1994; Kidman et al. 2015). Our narratives reveal the previously undescribed, negative impacts of institutional habits and the white imprint on Māori and Pacific postgraduates in STEM. Our stories and experiences are not unique but offer specificity as to how representation, the white imprint, space invaders/stranger making, and institutional habits, exclude and devalue Māori and Pacific postgraduates in STEM.

Inadequate Māori and Pacific representation were a widespread source of discomfort and isolation, reflecting both quantitative studies documenting severe under-representation of Māori and Pacific staff and students (Ruckstuhl et al. 2019; Naepi et al. 2021) and qualitative studies (e.g. Kidman and Chu 2017), which found that Māori faculty were more likely to experience isolation intellectually, socially, and professionally, in departments where there were few or no other Māori staff. Similarly, Boon-Nanai et al. (2017) highlighted that Pacific students needed Pacific staff and that the lack of representation made students question their sense of belonging.

By contrast, the visibility of Pacific scientists as role models increased students’ interest in pursuing science (Sika-Paotonu 2020) and many studies (Kidman et al. 2015; Theodore et al. 2017), including the present study, show that the presence of Māori and Pacific academics positively affects the academic success of Māori and Pacific students. Māori and Pacific academics influence Māori and Pacific student success by creating safe spaces through mentorship and nurturing relationships and providing culturally appropriate supervision and teaching activities (Airini et al. 2009; Curtis et al. 2012; Gillon 2020; Mayeda et al. 2014). Gillon (2020) also notes that Māori and Pacific students and early career researchers thrive when having the opportunities to build relationships with Māori and Pacific peoples in academia, increasing our sense of belonging, support, and our own mātauranga.

The white imprint creates an environment that forces Māori and Pacific postgraduates to self-censor and restricts them from being their authentic selves to fit in (Naepi 2019).

In this way, whiteness erases the identities and lived experiences of Māori and Pacific postgraduates while enabling a lack of cultural safety and excusing the cultural incompetence of non-Māori and non-Pacific academics. It reinforces the colonial notion that white academics will always know us better than we know ourselves (Rakuraku 2019). There is an urgent need to shift the culture with STEM rather than simply adding more Māori and Pacific people to it. What would STEM look like in Aotearoa if Māori and Pacific could safely bring their authentic selves?

Our experiences of institutional habit further emphasise the gulf between those of the western academy and Māori and Pacific values. Many authors have explored how Māori and Pacific academics experience excess labour (i.e. Haar and Martin 2021; Naepi 2021b) but for the first time we can show that it is experienced at the postgraduate level, most likely leading to long-ranging implications including retention after postgraduate studies (i.e. Naepi et al. 2021). What we see here, is exactly how universities will continue to fail us, particularly within postgraduate education, by being unable to create safe and supportive environments that retain Māori and Pacific people in universities. All the while, *mātauranga Māori* continues to be excluded from the sciences (i.e. Broughton et al. 2015; Stewart 2021).

Our research shows how the science funding system breeds unethical and superficial ‘inclusion’ of Māori and Pacific postgraduates. Our bodies, names, and *whakapapa* are misappropriated to fulfil tokenistic roles in funding applications, to bolster the careers of non-Māori and non-Pacific academics. Without structural intervention in this process, the working environment will continue to be unsafe, precarious, and violent for Māori and Pacific students, resulting in us being unlikely to remain in STEM careers (Simpson et al. 2021). Māori and Pacific academics are underpaid (McAllister et al. 2020) and expected to do more for less.

Furthermore, the everyday experiences of marginalisation, racism and exclusion can lead to a state of physiological hyperarousal and chronic activation of the stress response systems (Perry 2006). The ongoing activation of stress systems in response to micro and macro situations of racism, marginalisation, and exclusion creates uncomfortable learning and research environments. These environments, therefore, force Māori and Pacific people to be in a hypervigilant state of alert to protect our minds, bodies, and *mātauranga*. Existing in this state of mind to survive these environments disrupts optimal learning and memory processes including processes of exploration and curiosity. Therefore, the everyday experiences of racism, marginalisation, and exclusion are one of the many potential reasons why retention from undergraduate to postgraduate is hampered, and access to permanent academic positions from postgraduate is restricted.

## Conclusion

Our stories grow the existing evidence that Māori and Pacific people are excluded from New Zealand universities. In sharing our experiences as postgraduate students in STEM, we detail the challenges of simply existing in science faculties. Our individual experiences are varied but, when held together, the patterns of exclusion and disempowerment are clear.

Together, our stories speak to our strength and resilience, and advance our understandings of how universities continue to privilege some and fail to serve others

(Grosfoguel 2013). We hope that our stories show other Māori and Pacific students that they are not alone and that we continue to challenge universities to do more and to do better today; not in a promised yet non-existent future. We call for universities to move beyond tokenistic attempts at ‘inclusion’ and diversity, to instead deconstruct their institutional habits which continue to marginalise. The problem lies with the institutions themselves that are designed for white men, not us (Grosfoguel 2013), and our stories challenge and invert the common, deficit-framed narrative that we are the problem. Our stories show that the under-representation of Māori and Pacific in STEM will not be addressed by simply bolstering university enrolments and plugging more students into a fundamentally pakaru pipeline. Instead, our stories highlight the urgent need for universities to change the environment that continues to be violent and culturally unsafe for Māori and Pacific postgraduates.

## Note

1. Here we use the term “Māori” to refer to the Indigenous people, who are tangata whenua of Aotearoa. We use the term “Pacific” to describe Pacific peoples in Aotearoa New Zealand from the Pacific region (inclusive of Polynesia, Melanesia and Micronesia).

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