

TE ĀHEINGA PŪ RERETAHI

A foundational Māori perspective of the wairoro

*Benjamin Hanara**
Anne-Marie Jackson†
Hauiti Hakopa‡

Abstract

Wairoro is a te reo Māori term for the brain, and it is a concept grounded in Māori origins (Hīroa, n.d.). This paper is based on the lead author's master's research, in which he created Te Āheinga Pū Reretahi—a model developed to provide a structural and functional foundation of understanding the wairoro. Māori life expectancy is increasing (Ministry of Health, 2019), and Māori are now also experiencing the complications of wairoro illnesses that are associated with an ageing population (Dudley et al., 2014, 2019). This research builds upon Dr Margaret Dudley et al.'s (2014, 2019) and Dr Hinemoa Elder's (2015, 2017) research pertaining to literature that focuses on Māori perspectives of wairoro. The aim of this paper is to identify and introduce Te Āheinga Pū Reretahi as a Māori health model to symbolise an Indigenous understanding of the wairoro. Kaupapa Māori theory and atuātanga were the methodological approaches. The main contribution of this paper is the introduction of Te Āheinga Pū Reretahi, and this will provide additional understandings of Māori perspectives of wairoro.

Keywords

Tangaroa, wairoro, Te Pū Reretahi, hauora, atua, Māori, brain, health model

He mihi nā Benjamin Hanara | Introduction by Benjamin Hanara

Chuck Haven Taiaroa is my papa. In the year 2020, mere months after the completion of my master's thesis, he passed away from complications stemming from Alzheimer's, dementia and cancer. For the lifetime I was fortunate enough to spend beneath his wing, he epitomised the absolute

meaning of what I now understand is hauora—a Māori term conceptualising flourishing wellbeing. He abstained from drinking and smoking, and lived a life based around enjoying every second he had with his mokopuna. It is from knowing him as the righteous man who fell to the feet of wairoro illness that my research led me towards the wairoro. I knew the progression of Alzheimer's

* Ngāti Kahungunu, Ngāti Rangī. PhD Candidate, Te Koronga, Centre of Indigenous Science, University of Otago, Dunedin, New Zealand. Email: benjamindimitrius@gmail.com

† Ngāti Whātua, Ngāti Kahu o Whangaroa, Ngā Puhi, Te Roroa, Ngāti Wai. Associate Professor, Māori Physical Education and Health, Te Koronga Co-founder, Head of Department Centre of Indigenous Science, Co-Director Coastal People: Southern Skies, University of Otago, Dunedin, New Zealand.

‡ Ngāti Tūwharetoa. Te Koronga Co-founder, New Zealand.

would eventually lead to dementia and that there was no return. Seeing him slowly lose a grasp on the reality we were all existing in was a painfully slow process that took its toll on my whānau. Therefore, I decided I wanted to learn more, not so much about the Western-derived backgrounds nor the physiological process of illness, but about the wairoro—a Māori conceptualisation of the brain. I wanted to bring to light Māori perspectives in order to enhance the clarity of the whakapapa behind this extremely unique organ. Wairoro is a translation of “brain”, and it represents a concept grounded in Māori origins. Therefore, my master’s journey led to the development of Te Āheinga Pū Reretahi—a foundational Māori perspective of the wairoro.

Introduction

Te Āheinga Pū Reretahi illustrates a basic foundation of the wairoro established upon Māori concepts, language, knowledge and understandings (Hanara, 2020). The word wairoro was first highlighted and used as a translation of “brain” by Te Rangi Hīroa (n.d.) in his notes on Māori anatomy. For Māori research and education, the wairoro is a topic with a growing demand for attention (Hanara, 2020). Because of the rapid increase of Māori life expectancy within Aotearoa New Zealand, Māori have begun to enter the phases of wairoro illnesses that align with older age, such as Alzheimer’s and dementia (Hanara, 2020; Ministry of Health, 2019; Pool, 2019). The ability of Māori to comprehend the wairoro is barriered partly because of the dominating non-Māori content that advances the field of brain research (Dudley et al., 2014).

The term wairoro has various interpretations, whether it be broken down through translation (wai-ro-ro) or is merely a basic anatomical description of the brain as an organ. As previously mentioned, Te Rangi Hīroa provided an extensive manuscript of human anatomy translated into te reo Māori. Within this manuscript, he translates the human brain broadly with the three following terms: roro, wairoro and waitakataka. First, the word “roro” refers to various bodily structures; these are spongy matter and marrow (Moorfield, 2011). Second, wairoro clarifies this by indicating that for the specific organ that is the brain, the word “wai” is descriptive of the structural abundance of water (Hīroa, n.d.). Third, while we do not specifically cite waitakataka in the research, the term “takataka” is referred to as the head in the whakatauki “Tāne rou kakahi” (“He Whakatauki Maori”, 1875, p. 159; Moorfield, 2011). Thus,

suggestions can be made that waitakataka metaphorically implies the wet component within our head; this is the wairoro. Acknowledging the background of roro, wairoro and waitakataka is important because it highlights how the language of Māori culture comprises metaphors, symbolism and narratives (Henare, 2001). Te reo Māori is often used to tell metaphorical narratives of the most complex to the most basic elements of the Māori worldview. Furthermore, to champion Māori language, this research from here on will continue to refer to the brain as wairoro (unless stated otherwise in literature).

Te Āheinga Pū Reretahi, therefore, is an expression of the wairoro developed and supported by pedagogies familiar to the Māori worldview (Hanara, 2020). The Māori worldview is a dynamic network of relationships rooted within cosmic origins that forms a system for Māori to use to understand, behave in and interpret the universe around us (Henare, 2000; Marsden, 2003; Phillips et al., 2016). Marsden (2003) outlines:

The worldview lies at the very heart of the culture, touching, interacting with, and strongly influencing every aspect of the culture. In terms of Māori culture, the myths and legends form the central system, on which their holistic view of the universe is based. (p. 56)

A detailing and necessary component of the Māori worldview is creation narratives (Jackson et al., 2018; Marsden, 2003). Creation narratives are essential for conveying historical stories that form the Māori worldview (Ka’ai & Higgins, 2004). The specifics of various narratives differ among various iwi; many of these are influenced by the surrounding environments that iwi accredit to their respective identities (Hakopa, 2011). Despite iwi diversity, one constant that often aligns is the separation of two primal atua, Ranginui and Papatūānuku, to commence Te Ao Mārama (Jackson et al., 2018; Marsden, 2003). Te Ao Mārama is the current period in which we exist, and it is not the beginning, and we are not at the end of a genealogical strand known as whakapapa (Ngata, 2019). Roberts (2013) states:

Whakapapa as a philosophical construct implies that all things have an origin (in the form of a primal ancestor from which they are descended), and that ontologically things come into being through the process of descent from an ancestor or ancestors. (p. 93)

Whakapapa for Māori means that all things are connected because of our existence stemming from Ranginui, Papatūānuku and their 70 offspring (atua of respective environments) (Jackson et al., 2018; Roberts, 2013; Whatahoro, 2011). Among these offspring, various were involved in the creation of the first human, Hineahuone, and the narrative often pedestalled Tāne Māhuta as he presented the breath of life (Royal, 2005; Whatahoro, 2011). Tāne Māhuta is an important atua to acknowledge in relation to understanding Māori health, and another atua that perhaps deserves commendation in this narrative and with regard to this research is Tangaroa. There are limited accounts that document the origins of the human form, such as through the gifting of various body parts by various atua (Hanara, 2020; Sullivan & Hakopa, 2017). However, this particular narrative of Hineahuone in human creation directly distinguishes the link between humankind and atua (Sullivan & Hakopa, 2017). Thus, various details of narratives pertaining to Tangaroa can be used to articulate how the great ocean deity quite possibly played a role in delivering the anatomical and physiological elements of the brain (Hanara, 2020). Following is a brief outline of three specific articulations:

- As a marine atua and the physical manifestation of Earth's salt water, Tangaroa connects to the brain through the substance of saline (salt water in the brain) much like the marine salt water in the ocean (Best, 2005; Royal, 2006).
- Tangaroa is denoted as grandfather or great ancestor of carving. Carving originated in Hui-te-ana-nui and it continues to signify cultural memory (Aranga, 2009; Graham, 2014).
- Ngā Kura Huna o Rua are an ancestral collection of personified knowledge forms with a direct descendancy to Tangaroa. This specific whānau manifests the power of knowledge and knowing (Aranga, 2009; Royal, 2006; Whatahoro, 2011).

Māori health is rooted within the Māori worldview (Jackson et al., 2018). To concisely define Māori health, Jackson et al. (2018) summarise that it is “a holistic conceptualization of wellbeing” (p. 324). This means that Māori health is a multifaceted concept that relies on the fulfilment of all elements. Durie (1982) provides perhaps the most effective and renowned model to visualise this holistic conceptualisation of Māori wellbeing. Te Whare Tapa Whā symbolises a whareniui whose four walls are essential for a strong structure, much

like the four pillars of health (physical, spiritual, mental/emotional and social) are essential for Māori wellbeing (Rochford, 2004). As previously mentioned, Tāne Māhuta delivered the breath of life to Hineahuone. The term hauora is at the intersection of this narrative and holistic wellbeing. When the two syllables are separated, hau and ora translate to breath and life. Therefore, hauora is an effective term to signify the breath of life or to be alive, which is the very essence of flourishing holistic wellbeing.

Te Āheinga Pū Reretahi is a Māori health model that conceptualises in its most basic form the wairoro. Therefore, Māori brain health will be henceforth referred to as hauora wairoro. While there is strong literature input from non-Māori research, its form first and foremost caters to Māori philosophy. Elder (2013) argues that for Māori to be in these spaces, it creates a safe atmosphere for the invitation of more Māori. Locating Te Āheinga Pū Reretahi within the Māori worldview provides this safe place. Elder (2013) further mentions:

By locating the intervention framework [Te Waka Oranga—An indigenous intervention for working with Māori children and adolescents with traumatic brain injury] within a Māori world view, this attempts to provide a safe space for Māori to invite non-Māori world views, people and activities that can benefit the whanau outcomes. These non-Māori features can be thought of as guests in Te Ao Māori. Thus, as guests, the roles, reciprocal connections and responsibilities are outlined in order to paddle as one. (p. 417)

The aim of this paper is to identify and introduce Te Āheinga Pū Reretahi as a Māori health model to symbolise an Indigenous understanding of the wairoro. This model enlightens the current discourse on wairoro research, in which there is an absence of the Māori worldview. This paper attempts to provide a platform through which both Māori and non-Māori can interpret the wairoro cloaked in the Māori worldview.

Kaupapa Māori theory provides the foundation for this research. Kaupapa Māori has roots for the use and uptake of Māori beliefs, values and knowledge systems; thus, it creates space for Māori to be Māori within the research academy (Phillips et al., 2016; Smith, 2003). In addition, atuātanga (Rangiawai, 2018) was employed to identify the role atua have in Māori research—specifically, Tangaroa within the wairoro. Pā Henare Tate (2010) argues that atua, tangata and whenua

are “dynamically related” (p. 38) and often allow us to understand who we are (Rangiwai, 2018). Atuatanga provides the space to examine a foundation of the wairoro based upon the dynamic relationship among humankind, deities and nature.

Methodological approach: Kaupapa Māori theory

Kaupapa Māori theory is often appointed as “a new theory of change” (Smith, 1995, p. 13). As a theory of change, it asserts the role that empowers Māori values and knowledge systems within the academy (Mahuika, 2019). Smith (1995) further asserts that Kaupapa Māori theory does not reject non-Māori knowledge systems, but it provides the authority to control knowledge sources to provide better outcomes for Māori. Specifically, the principles of tino rangatiratanga and taonga tuku iho were employed to develop Te Āheinga Pū Reretahi, a model concerned with approaching hauora wairoro in a cloak sewn from the Māori worldview.

Tino rangatiratanga: Emergence of autonomy

Tino rangatiratanga is the principle of self-determination and cultural autonomy (Smith, 2003). Rangatiratanga translates to the right to exercise authority (Moorfield, 2011). Tino rangatiratanga emphasises the complete right of self-determination and sovereignty (Smith, 2003). Thus, not only is Māori engagement in wairoro research in high demand, but it must also be Māori led. This creates a space where Māori are in control of the knowledge and resources that are required for Māori enlightenment within the academy. Te Āheinga Pū Reretahi provides an introduction for Māori to begin the pursuit of culturally rooted knowledge pertaining to the wairoro.

Taonga tuku iho: Emergence of centrality

Taonga tuku iho is the principle of Kaupapa Māori theory that asserts Māori legitimacy and centrality (Smith, 2003). Taonga tuku iho loosely translates to cultural property, referring to ancestral treasures handed down. Therefore, to enhance cultural legitimacy and centrality, we must carry these cultural treasures, such as language, knowledge and practices, in our pursuit (Smith, 2003). Te Āheinga Pū Reretahi embodies the Māori worldview to express a cultural representation of the wairoro. Rooted in the Māori worldview, this model champions seeing, thinking, interacting and understanding the wairoro as Māori.

Methodological approach: Atuatanga

Bryan Rangiwai (2018) defines atuatanga simply as “all things atua” related (p. 179). Rangiwai explains that atuatanga is a framework developed as a methodology for researching Māori theology. Pā Henare Tate (2010) states that Māori theology

is rooted in the faith-filled contemporary experience and culture of the Māori people [and it considers] their own analysis of their culture, language, symbol systems, stories, myths, and values that were a part of their culture in the past and that continue to have significance in the presence. (p. 21)

Atuatanga examines the dynamic trio of atua, whenua and tangata. Implementing an atuatanga approach for methodological navigation allows for the exploration, conceptualisation and researching of Māori understandings built upon the triangular relationship between humankind, nature and spiritual entities (Rangiwai, 2018). Te Āheinga Pū Reretahi was precisely motivated from the narratives of the triangular relationship. Ranginui and Papatūānuku represent the emergence, Hineahuone represents human creation and Tangaroa represents the gift of the wairoro.

Rangi and Papa: The emergence

The separation of Ranginui and Papatūānuku symbolises the emergence of light that brought forth Te Ao Mārama (Jackson et al., 2018; Marsden, 2003). While many narratives recall versions in which the fateful love of this primal couple tightly embraced six sons (Tāwhirimātea, Tāne Māhuta, Tangaroa, Tūmataunga, Rongomātane and Haumiatiketike), *The Lore of Whare Wānanga* (Whatahoro, 2011) recalls 70 sons. Whatahoro (2011) argues the following:

Because Rangi-nui overlaid and completely covered Papa-tua-nuku, the growth of all things could not mature, nor could anything bear fruit [or increase]; they were in an unstable condition, floating about the Ao-pouri [the world of darkness], and this was their appearance. (p. 119)

Therefore, the appeal and desire for a stable condition rest in the potential to explore beyond the reputable embrace of Rangi and Papa—a new reality. While many atua disputed separating their parents, the eldest son Urutengangana had been persuaded to do so; thus, the matter was settled (Whatahoro, 2011). Te Āheinga Pū Reretahi represents seeking a stable step and exposure to better outcomes for Māori.

Hineahuone: The creation

Hineahuone symbolises creation. Hineahuone translates to woman created of Earth, and she was created for a purpose. Whatahoro (2011) explains that the atua were in search of descendants but of a different kind (not of a divine nature); thus, Urutengangana suggested “Rather let us take of the Earth, that it may be said they are the descendants of Earth” (p. 141). It was the job of the eldest brothers to create her physical form from the earth at Kurawaka (Whatahoro, 2011). Following this, the muscles, blood and fat were cultivated and with consideration, we can infer that the wairoro was also associated with this phase of creation. From here on, Tāne Māhuta was entrusted to deliver the breath of life:

On the completion of these parts, the breath of life was assigned to Tāne-Matua [Tāne-Māhuta], to place it in the nostrils, the mouth, and the ears—that was done. And then for the first time the breath of man came forth, the eyelids opened, the pupils saw, and the hot breath of the mouth burst forth, the nose sneezed. (Whatahoro, 2011, p. 141)

With the breath of life, Hineahuone was given all complexities that are considered human. It is within this frame of mind that we gather the creation of Māori human health and wellbeing. Prior to this, all beings inhabiting the world were of a divine nature. Therefore, Hineahuone symbolises not only the creation of humankind but also the creation of the aligning complexities. Additionally, this narrative expresses the importance of new creation to enhance purpose, such as that of inheritance as suggested by Urutengangana. Te Āheinga Pū Reretahi was created to propose a better understanding of the wairoro while offering the potential of future capacities for Māori research surrounding the wairoro.

Tangaroa: The gift

Tangaroa is widely renowned as the atua of the sea. Various titles, such as Tangaroa-whakamautai (Tangaroa possessor of tides), Tangaroa-a-timu (Tangaroa the ebbing tides) and Tangaroa-a-mua (Tangaroa the coming of tides), to name a few (Best, 2005; Whatahoro, 2011), denote his manifestation as the ocean deity. Although Māori culture runs scarce with documented literature pertaining to the origins of the wairoro, various non-Māori studies strongly highlight that the origins of the brain trace back to the ancient oceans (Gee, 1999; Robson, 2011). For instance, Henry Gee (1999) argues that “the evolutionary origins

of the human brain might be traceable to simple bundles of nerves in sea creatures called salps, and beyond that, to baby starfish” (para. 1). Similarly, David Robson (2011) argues:

The story of the brain begins in the ancient oceans, long before the first animals appeared. The single-celled organisms that swam or crawled in them may not have had brains, but they did have sophisticated ways of sensing and responding to their environment. (p. 45)

The purpose of recognising these statements is that they supplement the various Māori narratives (aforementioned) in which the wairoro is shown to originate in the realm of Tangaroa. The wairoro is an extremely complex and arguably the most unique organ that truly separates individuals (Hanara, 2020). It ultimately controls, coordinates and monitors the experience that is life. Therefore, the wairoro truly represents a gift that not only separates humankind from the divine but creates diversity in the human community. Te Āheinga Pū Reretahi represents a philosophy that is unique because it uses Indigenous Māori philosophies to pierce a world dominated by Western research. It creates diversity and champions the Māori worldview in terms of understanding the wairoro.

Discourse of hauora wairoro: Developing Te Āheinga Pū Reretahi

Te Āheinga Pū Reretahi was developed through the lead author’s master’s thesis entitled *Tangaroa Wai Noa, Tangaroa Wai Tapu, Tangaroa Wairoro*. As mentioned in the lead author’s mihi in this paper, it was highly motivated by his relationship with his papa, who passed away in 2020 from complications of Alzheimer’s and dementia. The name Te Āheinga Pū Reretahi continues the Māori language tradition of metaphors and symbolism. It symbolises the three primary functions of the brain. Āheinga translates to either functions or competency. This aligns with the structure of the wairoro known as the roro hiringa, which is responsible for processing higher functions such as knowledge, speech, memory and language. Pū translates to both root and to be precise, aligning with the structure known as the pūroro. The pūroro coordinates vital and precise functions that occur autonomically such as breathing, heart rate, blood flow and swallowing. Reretahi then translates to either to coordinate or harmony, thus promoting the primary functions of what is the third main structure of the wairoro, the roro tuarongo. The roro tuarongo is at the helm

of coordinating our physical experiences. For example, concepts such as flexibility, hand–eye coordination, basic comprehension and conscious wellbeing.

The development of Te Āheinga Pū Reretahi was an innovative approach towards understanding and applying the Māori worldview to an area in which the demand for a Māori approach has significantly increased. While Māori currently comprise a small portion of people living with illness pertaining to the wairoro (i.e., Alzheimer’s and dementia), it is predicted that Māori rates for dementia are expected to increase from 5.1% to 8% over the next 20 years (Ministry of Health, 2019). Dementia is the gradual loss of brain functions, primarily due to structural changes within the wairoro. Furthermore, Alzheimer’s is the most common cause of dementia, and within Aotearoa, Māori have a higher rate of increase for dementia than non-Māori (Ministry of Health, 2019). According to Stats NZ (2018), the population of Māori living over the age of 60 has increased by 16,800 over the past 20 years. While this is positive, it also increases the risk of health issues related to an ageing population (Ministry of Health, 2019).

Very few studies focus on wairoro health from a Māori perspective (Dudley et al., 2019; Elder, 2013, 2015). For example, Dr Hinemoa Elder (2013, 2015) examines traumatic brain injury (TBI) from a Māori perspective by providing a fresh outlook regarding wairoro health through her two models: Te Waka Oranga (2013) and Te Waka Kuaka (2015). These models are Māori-specific assessment tools for TBI recovery and healing. Dudley et al. (2019) have also established work entitled “Mate Wareware: Understanding ‘Dementia’ from a Māori Perspective”. This particular study investigated “Māori understandings of dementia, its cause and ways to manage whānau members with dementia” (Dudley et al., 2019, p. 77). Dr Elder and Dr Dudley both provide excellent examinations of very precise accounts of wairoro illness. This research provides a foundational and simplified outlook on the anatomical and physiological whakapapa of the wairoro. Therefore, while a cure for such illnesses does not yet exist, an ideal solution is that we provide this template that invites the Māori worldview into the discussion.

The development of Te Āheinga Pū Reretahi is important to the introduction of Māori philosophy into the discussion that is hauora wairoro. Furthermore, it provides autonomy for Māori to explore ancestral knowledge in order to uncover pedagogies that are, foremost, by Māori for Māori.

Manifesting a Māori philosophy: Illustrating Te Āheinga Pū Reretahi

Te Āheinga Pū Reretahi is symbolised by the wairoro itself. In its development, it went through various illustrative changes in order to express all elements of the triangular relationship of atu-atanga (Rangiwai, 2018). The first is a simple sketch of the brain drawn by the lead author to gather the basic structure (see Figure 1).



FIGURE 1 Original sketch of the wairoro depicting the three main structures: roro hiringa, roro tuarongo and pūroro.

From this sketch, the lead author was able to distinctively separate the three major components that are further reflected in the model: roro hiringa, roro tuarongo and pūroro. The second interpretation is a clarified image of the sketch with the added component of a side profile of the human jawline adorned with a moko kauae (see Figure 2).



FIGURE 2 Side profile with moko kauae added representing humankind and Māori knowledge (sketch digitalised).

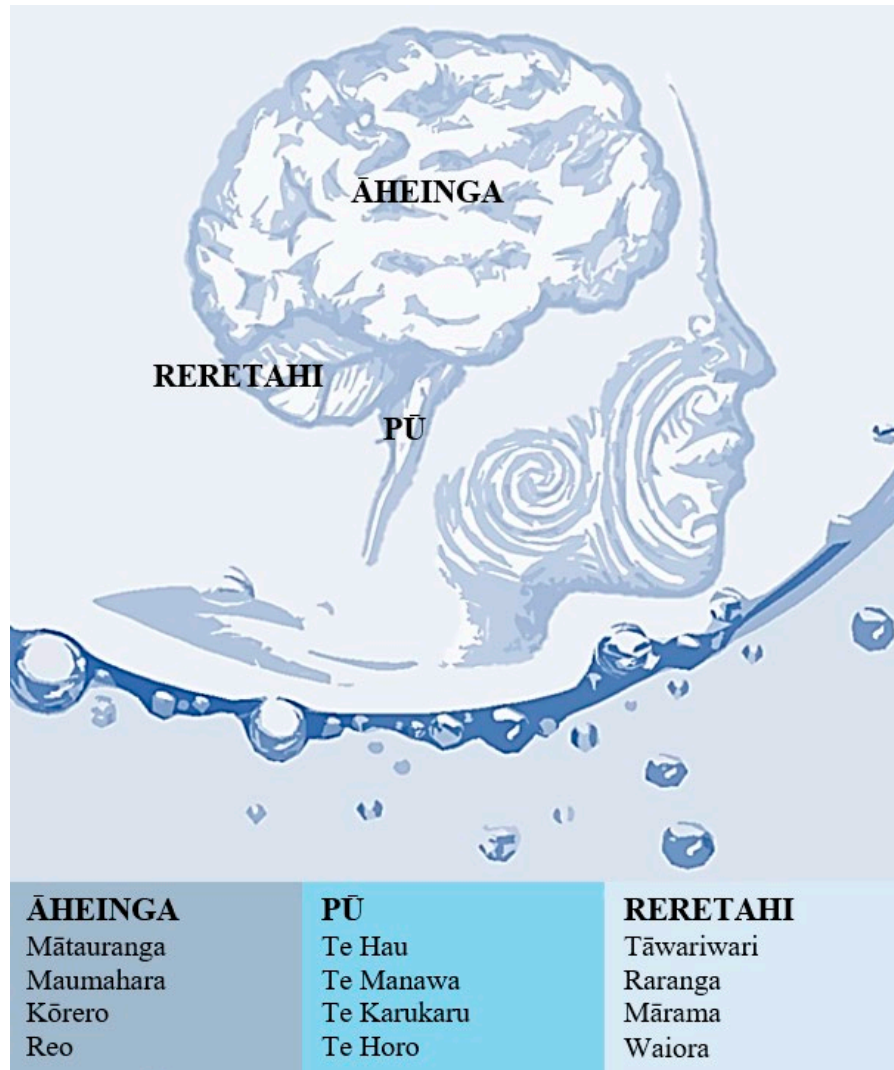


FIGURE 3 Te Āheinga Pū Reretahi in its final form (te reo Māori).

This particular addition draws forth the symbolisation that this model is, first and foremost, of the Māori worldview. The kauae represents what is called te kauae runga and te kauae raro, and these two elements within the Māori worldview detail two knowledge systems: celestial knowledge and terrestrial knowledge. The adorned moko further reiterates the importance that this model has roots embedded into these two knowledge systems. The final element that decorates this model is a swell of water (see Figure 3 and Figure 4). This element symbolises the possessor of tides: Tangaroa-whakamau-tai as well as his suggested role in human creation. It further echoes the essence of water and its importance within the wairoro.

Exhibiting a Māori philosophy: Detailing Te Āheinga Pū Reretahi

Te Āheinga Pū Reretahi details a simplified approach towards recognising an Indigenous Māori understanding of the structural and functional components of the wairoro. The model itself draws certain knowledge from a non-Māori worldview and, in doing so, strengthens and complements the Māori knowledge that it is deeply grounded in. It privileges Māori knowledge and language, has clear points for understandings, and is fundamental for understanding basic functions and structures of the wairoro. The elements of Te Āheinga Pū Reretahi are further detailed.

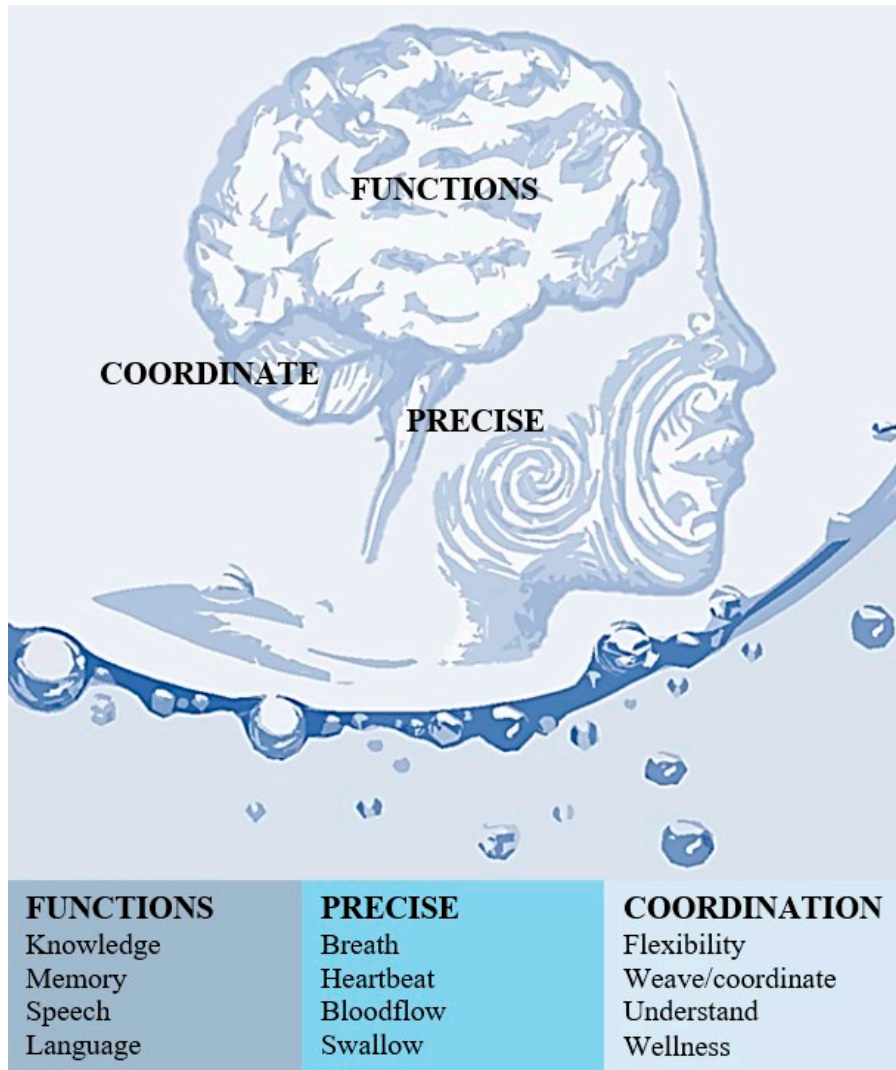


FIGURE 4 Te Āheinga Pū Reretahi translated version.

Āheinga

Āheinga signifies the role played by the roro hiringa. Hiringa translates to various terms, but what is presumably most aligning to the wairoro is its meaning of vitality and energy (Moorfield, 2011). Additionally, the translation of āheinga when the word (āhei-nga) is separated is to have abilities or to have within one’s power. Therefore, it is the largest component of the wairoro and is responsible for significant human abilities such as knowledge, memory, speech and language.

Pū

Pū is quite literal as a definition of its aligning structure that is the pūroro. When the two components of its name (pū-roro) are considered separately, they translate to root, stem or duct to the brain. Pū also acts as an intensifier in Māori language to mean precise or exact (Moorfield,

2011). In alliance, the pūroro is responsible for all the precise and autonomic functions such as breathing, heartbeat, blood flow and swallowing.

Reretahi

Reretahi signifies the role played by the roro tuarongo. When the two components of reretahi (rere-tahi) are separated, it translates to flow as one. Furthermore, the roro tuarongo itself is located at the posterior of the brain, similar to the back wall in a whareniui called the tuarongo; often this reminds us of the flowing together of energies that gather in the whareniui (tangata whenua, manuhiri, tapu and noa) (Hanara, 2020). Therefore, reretahi represents elements of coordination, flexibility, body awareness and understanding, and wellbeing.

Tangaroa

Tangaroa-whakamau-tai is the possessor of tides, the eighth son of Ranginui and Papatūānuku, and the atua of the sea and all things that it inhabits (Whatahoro, 2011). Te Āheinga Pū Reretahi was strongly influenced by the lead author's adoration of Tangaroa and the environment he personifies. Māori culture has a history that revolves around connection to Tangaroa, and this research further extends this connection to hauora wairoro. The wave that surges beneath the wairoro in Te Āheinga Pū Reretahi represents the tidal flow. The tides not only symbolise the rise and fall of energies that Tangaroa has influence over but further represent the component of salt water, the abundance of which composes the wairoro. The incline of the swell represents creating space for Māori comprehension of the wairoro through adopting culturally preferred pedagogies. The final component is the bubble formation rising from the depths. This symbolises the rise of the Māori worldview and thus the rise of hauora wairoro.

Conclusion

Evidence proves that Māori are now living longer than previously. However, while bound with positives and potential for Māori culture, it introduces Māori to wairoro illnesses that align with the elderly. With no reversal or cure in sight, wairoro illnesses have begun to affect Māori more now than ever. Te Āheinga Pū Reretahi holds the key to creating space for Māori within the discussion of hauora wairoro. It is a Māori-based approach to establishing a basic foundation of the brain's structural and functional capabilities via a Māori worldview. Te Āheinga Pū Reretahi follows Māori metaphors, symbolism (translated to define wairoro functions) and narrative nature. Additionally, Te Āheinga Pū Reretahi was developed through the analogy of Tangaroa being a powerful being involved with the creation, development and gifting of the wairoro through the period of human creation. Therefore, Te Āheinga Pū Reretahi as a Māori perspective of the brain inhabits a space that has over time gained the demand for Māori participation and research. Thus, in conjunction with a Māori perspective and increased capacities for the Māori worldview, hauora wairoro has the potential to flourish for Māori by Māori.

Acknowledgments

First of all, to my whānau: the ones who have not only seen but also experienced the struggle and successions that come alongside my journey of the academic pursuit of knowledge; this research

would not be possible without your continuous love and support. To my supervisors, Anne-Marie and Hauiti, thank you for your guidance, wisdom and exceptional leadership you show as successful Māori leading us into a future crafted by Māori for Māori. To my whānau of Te Koronga, those who chase the same dream of pursuing and practising mātauranga Māori, thank you. To the University of Otago, Brain Research New Zealand and Dr Hinemoa Elder for your enduring support and leadership in this kaupapa. I thank you for providing me with the opportunity and funding to complete this research. Finally, to my nana and papa. This research was for you. Aroha nui, Aroha roa, Aroha mutunga kore.

Glossary

āheinga	abilities within one's power
atua	deity
atuatanga	all things atua related
Haumiatiketike	atua of uncultivated food
hauora	breath of life; holistic wellbeing
Hineahuone	first female formed from earth
Kaupapa Māori	Māori-based topic/event/enterprise run by Māori for Māori
Kurawaka	place name of where the first woman was formed
manuhiri	visitors
mihi	speech of greeting
moko kauae	Māori chin tattoo
noa	unrestricted, free of tapu
Papatūānuku	Mother Earth
pū	precise, exact
pūroro	brainstem
Ranginui	Sky Father
reretahi	coordinate, harmony
Rongomātane	atua of kūmara, cultivated food
roro	brain
roro hiringa	cerebrum
roro tuarongo	cerebellum
Tangaroa	deity of the ocean, and marine
Tangaroa-a-mua	Tangaroa the coming of tides
Tangaroa-a-timu	Tangaroa the ebbing tides
Tangaroa-whakamau-tai	Tangaroa possessor of tides

tangata	people
tangata whenua	people of the land, hosts
taonga	treasures
taonga tuku iho	cultural property, ancestral treasures handed down
tapu	sacred
Tāwhirimātea	deity of the winds and weather
Te Ao Māori	Māori worldview
Te Ao Mārama	world of light
te kauae raro	lower jawbone; terrestrial knowledge
te kauae runga	upper jawbone; celestial knowledge
te reo Māori	Māori language
tino rangatiratanga	self-determination
Tūmatauenga	deity of war and people
wai	water
wairoro	brain
waitakataka	wet component within our head, this being the wairoro
whakapapa	genealogy, lineage
whakatauki	proverb
whānau	family
whareniui	meeting house
whenua	land, placenta

References

- Aranga, M. H. (2009). The hidden school of Rua: Te kura huna a Rua. *International Journal of the Humanities*, 6(9), 118–124. <https://doi.org/jx8v>
- Best, E. (2005). *Māori religion and mythology: Being an account of the cosmogony, anthropogony, religious beliefs and rites, magic and folk lore of the Māori folk of New Zealand*. Te Papa Press.
- Dudley, M., Menzies, O., Elder, H., Nathan, L., Garrett, N., & Wilson, D. (2019). Mate wareware: Understanding “dementia” from a Māori perspective. *The New Zealand Medical Journal*, 132(1503), 66–74.
- Dudley, M., Wilson, D., & Barker-Collo, S. (2014). Cultural invisibility: Māori people with traumatic brain injury and their experiences of neuropsychological assessments. *New Zealand Journal of Psychology*, 43(3), 14–21.
- Durie, M. (1982, March 10). *Te Whare Tapa Whā model* [Paper presentation]. Hui Taumata and shared as part of training to the New Zealand Psychologists Conference Palmerston North, New Zealand.
- Elder, H. (2013). Te Waka Oranga: An indigenous intervention for working with Māori children and adolescents with traumatic brain injury. *Brain Impairment*, 14(3), 415–424. <https://doi.org/ct84>
- Elder, H. (2015). Te Waka Oranga, bringing indigenous knowledge forward. In K. McPherson, B. E. Gibson, & A. Leplege (Eds.), *Rethinking rehabilitation: Theory and practice* (pp. 227–247). CRC Press.
- Elder, H. (2017). Te Waka Kuaka and Te Waka Oranga. Working with whānau to improve outcomes. *Australian and New Zealand Journal of Family Therapy*, 38(1), 27–42. <https://doi.org/c5r9>
- Gee, H. (1999, January 21). The origins of the brain. *Nature*. <https://doi.org/ddfjm6>
- Graham, B. (2014). Whakairo—Māori carving—Legendary origins of carving. In *Te Ara: The encyclopedia of New Zealand*. <https://teara.govt.nz/en/whakairo-maori-carving/page-1>
- Hakopa, H. (2011). *The paepae: Spatial information technologies and the geography of narratives* [PhD thesis, University of Otago]. <http://hdl.handle.net/10523/1801>
- Hanara, B. (2020). *Tangaroa wai noa, Tangaroa wai tapu, Tangaroa wairoro* [Master’s thesis, University of Otago]. <http://hdl.handle.net/10523/10188>
- Henare, M. (2001). Tapu, mana, mauri, hau, wairua: A Māori philosophy of vitalism and cosmos. In J. Grimm (Ed.), *Indigenous traditions and ecology: The interbeing of cosmology and community* (pp. 197–221). Harvard University Press.
- He whakatauki Maori. (1875). *Waka Maori*, 11(13), 159. <https://paperspast.natlib.govt.nz/newspapers/WAKAM18750706.2.15>
- Hīroa, T. (n.d.). *Māori names for parts of the body* (Manuscript no. MSSC Buck, Box 6.01). Bishop Museum Archives, Honolulu, HI.
- Jackson, A.-M., Baxter, J., & Hakopa, H. (2018). Hauora Māori—He timatanga: Māori health—An introduction. In M. Reilly, S. Duncan, G. Leoni, L. Paterson, L. Carter, M. Rātima, & P. Rewi (Eds.), *Te Kōparaparā: An introduction to the Māori world* (pp. 324–342). Auckland University Press.
- Ka’ai, T., & Higgins, R. (2004). Te ao Māori—Māori worldview. In T. M. Ka’ai, J. C. Moorfield, M. P. J. Reilly, & S. Mosley (Eds.), *Ki te whaiao: An introduction to Māori culture and society* (pp. 13–25). Pearson Education.
- Mahuika, N. (2019). A brief history of whakapapa: Māori approaches to genealogy. *Genealogy*, 3(2), Article 32. <https://doi.org/gnkqsvw>
- Marsden, M. (2003). Kaitiakitanga. A definitive introduction to the holistic worldview of the Māori. In T. Royal (Ed.), *The woven universe: Selected writings of Rev. Māori Marsden* (pp. 54–72). Estate of Rev. Māori Marsden.
- Ministry of Health. (2019). *Wai 2575 Māori health trends report*. <https://www.health.govt.nz/publication/wai-2575-maori-health-trends-report>
- Moorfield, J. (2011). *Te aka: Maori-English, English-Maori dictionary and index*. Pearson.
- Ngata, A. (2019). The terminology of whakapapa. *The Journal of the Polynesian Society*, 128(1), 19–411. <https://doi.org/fm9p>
- Phillips, C., Jackson, A.-M., & Hakopa, H. (2016). Creation narratives of mahinga kai: Māori customary food gathering sites and practices. *MAI Journal*, 5(1), 63–75. <https://doi.org/fcvx>
- Pool, I. (2019). Death rates and life expectancy. In

- Te Ara: The encyclopedia of New Zealand*. <https://teara.govt.nz/en/death-rates-and-life-expectancy>
- Rangiwai, B. (2018). The Atuatanga model: A methodology for researching Māori theology. *Te Kaharoa*, 11(1), 181–194. <https://doi.org/jx8w>
- Roberts, M. (2013). Ways of seeing: Whakapapa. *Sites: A Journal of Social Anthropology and Cultural Studies*, 10(1), 93–120. <https://sites.otago.ac.nz/Sites/article/view/236>
- Robson, D. (2011, September 21). A brief history of the brain. *New Scientist*, 2011(2831), 40–45. <https://doi.org/dvw49q>
- Rochford, T. (2004). Whare Tapa Whā: A Māori model of a unified theory of health. *Journal of Primary Prevention*, 25(1), 41–57. <https://doi.org/fgxbhq>
- Royal, T. (2005). Māori creation traditions. In *Te Ara: The encyclopedia of New Zealand*. <https://teara.govt.nz/en/maori-creation-traditions/>
- Royal, T. (2006). Tangaroa: The sea. In *Te Ara: The encyclopedia of New Zealand*. <https://teara.govt.nz/en/tangaroa-the-sea>
- Smith, G. H. (1995). Whakaoho whānau: New formations of whānau as an intervention into Māori cultural and educational crises. *He Pukenga Korero*, 1(1), 18–36.
- Smith, G. H. (2003, December). *Kaupapa Maori theory: Theorizing indigenous transformation of education and schooling* [Paper presentation]. NZARE/AARE Joint Conference, Hyatt Hotel, Auckland, New Zealand.
- Stats NZ. (2018). *Māori Population estimates: At 30 June 2018*. <https://www.stats.govt.nz/information-releases/maori-population-estimates-at-30-june-2018>
- Sullivan, C., & Hakopa, H. (2017). *Mahunga, pakihiwi, puku, hope, waewae: The importance of the human body to indigenous Māori knowledge*. Ngā Pae o te Māramatanga Internship Report. University of Otago, Te Koronga. <https://www.maramatanga.co.nz/sites/default/files/projectreports/Sullivan%20Courtney%20-%2017INT02%20-%202017%20-%20PDF%20Report.pdf>
- Tate, H. A. (2010). *Towards some foundations of a systematic Māori theology* [PhD thesis, Melbourne College of Divinity]. University of Divinity Repository. <https://hdl.handle.net/20.500.13057/1679>
- Whatahoro, H. T. (2011). *The lore of the Wharewānanga: Or teachings of the Maori College on religion, cosmogony, and history* (Vol. 3). Cambridge University Press. <https://doi.org/jx8>



This paper is from the Master of Science of the lead author, Benjamin Hanara, with support from his supervisors, Associate Professor Anne-Marie Jackson, Dr Hauiti Hakopa and Dr Chanel Phillips, along with support from fellow Te Koronga student Chelsea Cunningham. Benjamin completed his master's in 2020. This paper is a dissemination of some of the key findings from that research. Benjamin is currently in his final year of writing his PhD thesis, titled *Rukuhia te Hauora o Te-Moana-Nui-a-Kiwa: Exploring the Reciprocal Relationship between Ruku Kai and Hauora Māori*.