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Design to Thrive



Living with Nature: *Tiaki Taiao / Tiaki Tangata*. The case of Zealandia

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Abstract: The overpopulating growth attendant with high-density urban living has stressed natural landscapes in most major urban centres, devastating their rich indigenous ecologies. In the case of New Zealand, the mid-19th century colonisation saw the introduction of predators and aggressive plant species, significantly scarring and reshaping the landscape. This also devastated New Zealand's endemic ecologies, resulting in the extinction of species and loss of biodiversity. In the last 800 years, 32% of all indigenous flora and fauna have been lost. In an attempt to protect those last remaining and threatened species, a fenced sanctuary was developed in the capital city, Wellington, taking advantage of an unutilised water reservoir system that had been established inadvertently on a major earthquake fault-line. Twenty years from its inception, the unbroken predator-free ecosystem nestled amongst Wellington's suburbs and scrublands has become a world-first to restore indigenous natural habitat, illustrating our past native natural heritage. This paper examines the phenomenon of Zealandia, where green and blue infrastructures foster the existing ecologies while accommodating visitor services, which improve the social, cultural, economic and environmental health of the city. It finds that the benefits have far exceeded the original goals of the project and offer new prospects for health and wellbeing as its influence extends to network adjacent green and blue infrastructure.

Keywords: indigenous knowledge, bi-culturalism, eco-sanctuary, Zealandia, health and wellbeing

Introduction

*'Whakarongo ake au ki te tangi a te manu nei, a te Mātūi, tūi, tūi, tūitūia!
Tūia i runga, tūia i raro, tūia i roto, tūia i waho, tūia te here tāngata, ka rongo te pō, ka rongo te aō. Tūia i te muka tāngata, i takea mai i Hawaiki-nui, i Hawaiki-roa,
i Hawaikii-pamamao, te hono a wairua, whakaputa ki te Whaiao ki Te Aō Marama, Tihei Mauri Ora!'*

'I listen to the cry of the bird, the Mātūi, calling tūi, tūi, tūitūia!

That it be woven from above, as it is from below, woven from without as it is woven from within, the interwoven threads of humanity, felt from the innocence, and the consciousness. Interwoven with the threads of human-kind, from the Great Hawaiki, from the Far Hawaiki, from the long distant Hawaiki, with the merging of spirits from the World of Light, life, knowledge and illumination, inhale the life-force of all living things!'

The Western understanding of land and landscapes is based on a positivistic, scientific and utilitarian approach between people and land (Peet et al, 1996). Knowledge is seen as rational and goal-oriented and the world is understood as a single layered construct of universal principles where humans are superior to any sort of living creatures, pursuing material assets (Jang, 2004). However, Aotearoa/New Zealand as a bi-cultural country where

only one culture is Western. Recent directions by government are seeking to address this imbalance. The indigenous Maori, like many other indigenous peoples from around the world, have been suppressed by Western constructs which have influenced the way they relate to landscape. For Maori, human beings live in unison with nature, following a more holistic, experiential and belief-based approach which emphasises the unique rather than the transcendental (Menzies et al, 2015).

Maori relate to earth and sky, the elements and the seasons which underpin the stories that explain the origins of their community. These myths are adapted to the lands Maori have occupied since ancient times and provide the foundations of their oral culture. In this context, living with nature implies the guardianship of both land and people and places are seen as sacred. They may be considered seats of power or guardianship, related to journeys associated with spiritual beings, or inhabited by entities that must be appeased. For Maori, the preservation of their intergenerational structure is crucial to the passing of knowledge and with it the passing of ideas of sustenance and stewardship towards the landscape. The combination of social, cultural, economic and ecological factors aim to benefit and support both land and its people.

This exploration focuses on the collision of two different cultures and their respective values in the development of a natural sanctuary which seeks to restore the landscape to its pre-occupation condition. It presents the history of the development of Zealandia, a world-first fenced wildlife sanctuary, the solutions and strategies faced and the pathways going forward. Zealandia's central location within Wellington, New Zealand's capital city, leads with ideas of how nature might be integrated into our urban environments. It posits that a native urban ecosystem in a bi-cultural country can lead to new ways of thinking about landscape that expand beyond one dimensional commercial models to a rich multi-faceted exploration of man and nature as a union.

The history of Zealandia eco-sanctuary

Prior to the arrival of humans Aotearoa/New Zealand was a "bird land", isolated and unique. Without any mammalian predators, an ecosystem of remarkable flora and fauna had evolved, a paradise that was almost destroyed by the human and mammals they introduced with them.

Wellington once thrived in vast swamp marshlands and dense podocarp forests making sustainable food-hubs for early Maori settlements. The endemic ecology supported and benefited the Maori both physically and spiritually. Forests made up 60% of New Zealand's natural landscape and while Maori revered the landscape, they were responsible for introduction of the *kiore* (Polynesian rat) and the extinction of the moa, as well as the clearing of small pockets of forest for cultivation (Jones, 1986).

With the arrival of European settlers around 1840, a comprehensive programme of forest, swamp and wetland clearing for logging, grazing and farming ensued. Within Wellington, the Karori valley system was a highly prized area as it contained gold and other lucrative minerals, it offered fertile land for grazing and agriculture, and it had abundant supplies of water and native flora and fauna. The valley became an important water supply for the area and accommodated two man-made reservoir systems. As the geology of the valley became better understood, a major earthquake fault line was identified running directly under the new reservoirs necessitating their replacement. Shortly thereafter, the introduction of rats/mice, pests, stoats, possums and diseases devastated the remaining ecologies and became a liability for all surrounding lands. Overtime the amenity of the Karori

valley was depleted and became obsolete due to urbanisation, turning into a wild scrub wasteland.

Early in 1990s, in an effort to 'bring back the birds to Wellington', local residents developed a strategic plan to 'preserve and enhance the natural treasures of Wellington City'. Establishing a non-profit charitable trust allowed the community to participate in the development of a sanctuary. Working with a group of conservation managers, scientists and engineers, the decision was made to design a predator exclusion fence surrounding the 225 hectare site, the construction of which was commenced in April 1999. The fence was built 2.2 meters high and 8.6 km long, with a 3 meter-wide clear track adjacent to the fence to stop animals jumping across. The fence itself is made of tight wire weave mesh with a minimum gap of 6x50 mm to exclude mice. At the base, a woven mesh skirt extends outwards below the ground for 400 mm, to create an effective barrier to all burrowing animals. Public entrance to the sanctuary valley is a heavily monitored double-gate entrance. To address the possibility of mechanical failure, breaches of the fences or subsidence allowing re-invasion, strategies to detect and control re-invasions have been implemented and ongoing monitoring of the fence, ground and vegetation is an important part of the management plan. Following the construction of the perimeter fence, the world's first eradication plan targeting 13 species at once was commenced (Burns et al, 2012).

Today Zealandia is the world's first fully-fenced urban eco-sanctuary (Star, 2014). The ultimate restoration goal is to create self-sustaining forest and freshwater ecosystems, representative of the pre-human state that existed in New Zealand approximately 1000 years ago and restoring the indigenous character of the valley. The restoration of native forest will provide habitat for the re-establishment of wildlife species that have disappeared. Forest giants like *rātā*, *rimu* and *miro* which are rare or missing have been planted to replace exotic trees such as pine and restore soil composition. This is a mutually beneficial relationship as several of the most important tree species (such as *tawa* and *miro*) rely almost entirely on birds for transport of their seed and others rely on birds and lizards for pollination.

To date, Zealandia has reintroduced 18 species of native wildlife, six of which were previously absent from mainland New Zealand for over 100 years (Starbridge, 2010). These were tui (*Prosthemadera novaseelandiae*), kiwi (*Apteryx owenii*), stitch bird (*Notiomystis cincta*), saddleback (*Philesturnus rufusater*), *takahe* (*Porphyrio hochstetteri* and *Porphyrio mantelli*) (Empson et al, 2013).

It is estimated to be the most biodiversity-rich square mile of mainland New Zealand in terms of the species living wild there. Over forty different species of native birds have been recorded in the sanctuary valley, twenty-four of them endemic. Dozens of reptile species, hundreds of plant species and thousands of kinds of invertebrates have made Zealandia their home, many of which are highly endangered and some are practically extinct in unprotected areas. To maintain ongoing public access, the sanctuary provides 32 km of inclusive tracks, ranging from wheelchair to rugged tramping grade; an interpretative research centre and volunteer facilities.

Methodology

This study adopts a cultural correlational approach. Within the general framework of correlational research, it adopts the relationship subtype rather than causal-comparative. "While all correlational studies seek to describe relationships among key variables, relationship studies focus more specifically on the nature and predictive power" (Groat et al, 2002, p. 212).

This study considers the success of Zealandia through two different cultural lenses, that of the European and that of the Maori, it then compares them with respect to their contribution to landscape. We first review the overall objectives for the development of the Zealandia eco-sanctuary. We then examine the cultural frameworks which establish the relationship between landscape and people. And finally we draw some conclusions which provide direction for a new and inclusive bi-cultural landscape.

Two alternative perspectives on landscape

When settlers established the area in 1842, the valley system was divided into twenty-five 100 acre blocks for future farming, clearing large portions of the Karori basin. The land quickly obtained a reputation as being the best dairy land in Wellington. In addition, the soil structure on the eastern valley had highly drained soils making it easy to use for agriculture (Burch, 1997). The dense forest and bush with large tracts of *kahikatea*, *miro*, *matai* (black pine), *totara* and *rimu* were cut, milled and exported to the United States, Australia and used for local construction. Cattle and sheep grazing across the valley rapidly increased where most of the original native species were lost (Clout, 2001).

Gold was discovered in 1869 within the Kaiwharawhara stream, resulting in stream diversion and removal of native bush cover. When the alluvial gold was depleted, quartz mining took its place. With population growth, the demands for fresh water increased. The Kaiwharawhara stream elevation and its nearby location allowed water flow by gravity to the central town (Cooke, 2006). Ongoing growth and demand for water led to the construction of the Lower Karori Dam, which changed the natural water structure along the valley floor. As demand for water continued to outpace the supply, a second dam was constructed and chemical treatment of the water commenced (Astwood et al, 2012).

With advances in engineering and a greater understanding of seismology in the Wellington region, engineers realised the dam was positioned precariously above the Wellington fault-line. Major concerns with the water quality and overall public safety, led to decommissioning of dams in 1991 and 1997 (Cooke, 2006). Following the decommissioning of the dams, the land became neglected and overrun with exotic weeds and mammals pests.

The Karori valley divides Wellington city from its affluent outer suburbs. With the successful establishment of Wellington's business district and central government as well as the increased wealth of its adjacent suburbs, the local communities sought greater levels of natural amenity. The ensuing scheme 'Natural Wellington' looked at 37 possible locations for a nature sanctuary, one of which was the Karori valley. This area was considered a high-priority site for protection as it had suffered heavy modification to the valley and the eradication of the once lush environment (Campbell-Hunt, 2002). This scheme eventuated in the development of the Karori eco-sanctuary in 1991. Unwilling to fund the development solely from taxpayer rates, a business case was developed for the commercialisation of the eco-sanctuary. It was branded as 'Zealandia' in a NZ\$25,000 rebranding exercise and commenced a marketing programme which included a new NZ\$16.6 million visitors' centre, entry charges and the subtitle of – The Karori Sanctuary Experience.

From a non-Maori perspective, the Karori valley has been a highly successful asset from the beginnings of settlement to current day. The natural environment has sustained urban growth and facilitated economic growth consistently. From a Maori perspective however, the history of the Karori valley can be seen as a metaphor for colonisation, life-giving landscapes have been seriously tampered with for commerce and economic consumption (Davis, 2011).

Local Maori today, make up 7% of Wellington's population, where *mana whenua* (tribal land) makes up 7% of the 7% (Stuart, 2016). With respect to landscape, historically Maori looked to it as a medium for physical, emotional, mental and spiritual health and well-being. Maori philosophy considers an inclusive "whole of landscape" approach known as "*ki uta ki tai*" (from the mountains to the sea). It is a philosophy that reflects on a system of environmental and resource management which celebrates guardianship and reflects the relationship of environmental heritage (Stuart et al, 2010). As such, it encapsulates the need to recognise and manage the interconnectedness of the whole environment and to celebrate culture and identity.

Landscapes are thereby a representation of identity and values for Maori, grounding people through the interconnectedness of cultural and intergenerational ideals and perceptions with the land. The traditional Maori idea that people are born from the earth sets a foundation for the kinship between man and nature. From this understanding practices evolved that establish a tangible connection to the land and allow people to reflect on their own identity and belonging in the world. For example, many Maori still practice ancient birthing rituals such as *tohi* which is similar to a baptism. This involves sprinkling water from a sacred stream onto a new born child and dedicating the child to an *atua* (gods). This is followed by the burial of the placenta in the ancestral lands of the *iwi* (tribe), often at the base of a marker tree, thereby linking the child to the tribal lands. Another example is that for Maori a sense of identity is not established by what a person does for a living, where they work or where they live. Identity is established through *whakapapa* (lineage) which is connected by *mauri* (life force) to the mountains, bodies of water and ancestral lands, which is conveyed regularly at community gatherings. By embracing these indigenous values and cultural ideas, Maori preserve *mana* (prestige/power) and *whenua* (land) of people and places.

Currently 88% of the Maori population live in dense urban centres (Statistics NZ), where the need to connect with landscape is higher and with ongoing urban sprawl, individuals suffer from progressively limited access to nature and decreased quality of life. Some of problems currently faced are: the lack of green spaces within the urban fabric, due to the high demand and reliance in built infrastructure; the loss of endemic habitats and species of fauna and flora within the urban environment due to the destruction of past native ecosystems; the disregard and loss of past cultural influences, knowledge and practices; and the growth in population within urban centres stressing the natural landscape to its limit.

Zealandia offers a unique platform for the exploration and development of a truly bi-cultural landscape. It fosters the "whole of landscape" approach known as "*ki uta ki tai*", by weaving throughout the landscape to the sea via the Kaiwharawhara stream (Jones, 2007). The eco-sanctuary aims to restore the ancient ecological past – a plan of 500 years (Zealandia, 2017). Part of this ecological restoration includes economic as well as social and cultural sustainability.

Discussion

Restoration of natural systems can be driven by periodic fashions and have shifted massively over the last decades. Prior to 1960s, restoration was mainly understood as 'nature for itself', prioritising natural habits and wilderness areas without people, following traditional concepts related to ecology and natural history. With the rapid development of society and urban sprawl, and with that depletion of natural resources and ecosystems, attention was given to conservation of protected areas and protection of species as well as the emergence of 'nature

despite people', trying to reverse back the actions that devastated most of our ecosystems (Mace, 2014). By the late 1990s, a new understanding appeared, accepting the benefits that nature and ecosystems can provide to the society, corroborated by the fact that former practices had failed in reducing habitat and biodiversity losses. These influences can be seen in the development of Zealandia. The shifts have allowed movement from a utilitarian perspective to something that is more holistic and recognises the relationships between people and nature. This new thinking of 'people and nature' takes into account the importance of cultural values in the development of sustainable and resilient interactions between human societies and the surrounding environment (Mace, 2014). It also opens the door for an exploration of what it means to develop landscape in a bi-cultural context and the potential for multi-faceted understanding of man and nature as a union.

In this way, Zealandia offers a unique opportunity for the re-introduction and preservation of *mātauranga* (indigenous knowledge) Maori, elaborating on values and traditions. Embracing traditional indigenous practices opens up a pathway to knowledge and appreciation of the landscape as a physical, mental, spiritual and communal entity. Developing Zealandia with a view through each of New Zealand's cultural lenses, can play an active role in transforming the way we think at a local, national and international levels (Zealandia, 2016). Zealandia's vision statement connects the cultural, social, ecological and economic prospects of the country through treasuring the existing bio-diversities and building upon peoples drive to transform. It seeks to engage with creative and intuitive instincts informing strong partnerships locally, nationally and internationally; learning to embrace the unique cultural knowledge framework of Mātauranga Maori (Maori knowledge). From this foundation, it also provides an intergenerational hub cloaked in values and understanding with the ability to empower people with the necessary passion for action and formidable change.

Conclusion

Zealandia is successful in a number of firsts where the objective of eradication allowed for full recovery and restoration of an endemic self-sustaining ecosystem (Karori Wildlife Sanctuary, 2003). Re-establishing flora and habitats representative of the Wellington area's historic coastal lowlands and freshwater ecosystems can ensure that key natural processes function in the enclosed sanctuary (Cochran et al, 2012). The lessons learned and the tested methodologies can be applied elsewhere in similar national recovery programmes (Campbell-Hunt et al, 2013). Questions of how, what and why became the foundations of the visions for the sanctuary through the consideration of the cultural, social, economic and ecological benefits. The sanctuary has become a place for people to learn and engage with the valley ecosystem and its geological and human history, recent past and the shifts over time (Campbell Hunt, 2002).

The benefits have far exceeded the community expectations and the concept plan has enabled native fauna and flora to return and thrive in close proximity to the city centre, rectifying the city fringe as a haven of ecological importance. The idea of nature perceived as conservation has helped restore the natural processes; creating a catalyst for involvement; an internationally-recognised developed sanctuary as an ecotourism attraction; while restoring the natural *taonga* (treasures) of *tangata whenua* (indigenous people); facilitating learning about our natural heritage and advancing knowledge and techniques for conservation of ecological systems (Campbell-Hunt et al, 2013).

These experiences entice strong partnerships with the common goal of learning to embrace *Mātauranga* Maori (Maori knowledge) as a way of bringing the community and the landscape together and simultaneously generating a hub in which to share and understand the beauty of the indigenous culture and its connection to nature. The idea of connectedness is an important underlying value that relates people to the environment, therefore enhancing the sense of guardianship of the land and encouraging different ways of thinking to flourish in mutual respect. If the landscape is healthy, the people are healthy.

The case-study of Zealandia elaborates strategies and unique ways to acquire and sustain our natural environment. This rich connection also equips people with experiences and skills that inspire change and develop a passion for action when preserving our endemic natural heritage (Zealandia, 2016). If cities are to move forward, an appreciation for the importance of the natural environment must be acknowledged as essential for health and well-being. Weaving traditional ways of knowing with modern ways of thinking allows for people and nature to thrive.

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