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WHEN A TRIG STATION BECOMES A HOME

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Jude Hanson Stevens

When A Trig Station Becomes a Home (2024) was a BVA Honours project undertaken at Dunedin School of Art, focusing on the 16 four-legged trig structures sited on volcanic cones, sand dunes, clay mounds and harbour walls of Muaūpoko (Otago Peninsula). Sculptures representing these trig stations created an installation representing an abstracted topography, using a 1:100 scale from the elevation of the stations above sea level. The sculptures range from 3 centimetres tall, representing 3 metres of elevation, to 4080 centimetres, representing 408 metres of elevation, and stood in equivalent positions to where they stand within the landscape.

The material for these structures was collected colonial waste in the form of native timber – upcycling remnants of houses, such as doors, skirting boards, framing, beams and cladding, derived from trees that would have once thrived in the large podocarp broadleaved forest covering the pre-colonial peninsula and Aotearoa. The sculptures show the histories of the forests and the houses, through layers of chipped paint, brass hardware, screw holes and the beautiful wood grain of rimu, kauri and kahikatea. Each sculpture is different; some were more thoroughly worked into, with turned legs, while others are true to the original form, holding obvious machinery marks and stains from nail oxidation.



Within the installation, directly across from the ‘peninsula’s’ wooden topography, was a seventeenth wooden structure, this one with three legs, representing a tripod. It holds a book of photographic documentation. I took four photographs, pointing the camera north, east, south and west, from each trig station on Muaūpoko that I could access, widening the point of the compass to the width of the camera’s lens. The images are square, like the gridding of the land during colonial settlement. The panorama is incomplete, purposely broken; jarring lines run through the landscape to imply the colonial infrastructure of roads, fences, power lines and the planting of introduced trees. I surveyed the land through documentation, fragmenting Muaūpoko like my early counterparts did. The criss-crossing of timber makes its own abstract grid within the made landscape.

The physical body of work took form through the detailed research into the trig stations erected by colonial surveyors. Intrigued by their alien-like form and the role they’ve played in the gridding of the landscape, I investigated the connection between the act of surveying and the act of image-taking – their similarities in process and consequence – and considered the endurance of these colonial monuments, reminders of an intrusive past and the proud marking of land seized from whenua Māori.

Muaūpoko is a small finger of land on the South Island's east coast, pointing into the Pacific Ocean, branching off from the city of Dunedin and made up of a volcanic field of small dormant cones separating the rugged white sand coast and the calm shores of the harbour. With its large varieties of seabirds and marine mammals, it is claimed to be the wildlife capital of Aotearoa.¹ Abundance of these animals was even greater before human settlement. Thousands of seabirds are thought to have gathered, taking up kilometres of the ocean's surface. Moa roamed and bays leading to rocky headlands were rich with kai moana. A unique geography and proximity to the continental shelf create these ideal habitats. Through stories from Muaūpoko's tangata whenua, first Māori interaction with the Peninsula can be estimated between the thirteenth and fourteenth centuries.² This is extremely early in the timeline of Aotearoa's indigenous settlements and due to the copious amount of food, the protected side of the harbour and the resources from the covering forests made it an ideal place to not only live but thrive.

The first substantial European settlement on Muaūpoko was through whalers and sealers in the 1820s. Long established Kāi Tahu hapū of Muaūpoko traded goods with them for small portions of their land located in Ōtākou.³ But it wasn't until 1844 that the second wave of European interest in Muaūpoko began. The focus changed from access to seafood to total ownership of land for pastoral farming and more settlement. In charge of this change was Edward Gibbon Wakefield and his New Zealand Company. Negotiations for the 'Otago Block' were important to his systematic plan for colonisation. The deal went ahead and whenua Māori were left with 2700 hectares in the northern corner of the original 9700.⁴ The hills turned from native forest to large farms. By 1860, the Peninsula was home to an estimated 12,000 people. George Malcolm Thomson, a leading natural scientist of the period, observed the change in landscape over the decade from his arrival in 1870, concluding that "the whole face of nature had been altered."⁵ Trees and ferns gave way to grass. At this point, there was very little of the native biota left at all.

Trig or triangulation stations were built at visible points in the land, typically hilltops with an open view. Surveyors used a theodolite, a telescope-like mechanism, pointing it from station to station to measure bearings, with angles established either clockwise, or anticlockwise off a reference direction of either north, south, east or west.⁶ Once all three bearings were found, triangulation was used to establish accurate measurement between the stations to assist precise geographic mapping.

Among the great surveyor-engineers, John Rochfort (1832–1893), was a key individual responsible for mapping, exploring and facilitating European settlement in New Zealand. Rochfort embarked on his journey to New Zealand in 1852 with Government Surveyors, N.Z. In 1853 Rochfort wrote and published *Adventures of a Surveyor in New Zealand and the Australian Gold Diggings*, which captures the early pre-settlement landscape of New Zealand and the difficulties of traipsing through native bush to reach a particular elevation: "We started early but had not proceeded far before we lost the track, and walked about twenty miles, through long grass, fern and tei toi [toe toe], taking it in turns to be leader; the first man had to lie down every few steps to force a passage through the tangled mass."⁷ Carrying around pre-manufactured trig stations was at times not possible. Instead, four-legged markers were constructed on site out of the materials they had at hand – generally the smaller trunks or larger branches from surrounding native trees. To make an accurate survey from the tops of the hills or points reached, they needed these structures to be visible above shrubbery and other trees from sometimes 50 to 100 kilometres away.⁸ A structurally sound four-legged structure could be built simply and up to four metres tall. The point from which they surveyed would be directly under the structure; the four legs would enable the theodolite to have a clear viewpoint in every direction. A white or pale-coloured piece of fabric was placed on top to make them easier to spot from distance and hold the four legs together (as seen on the cover of the 2023 edition of *The Measure of the Man: The Life of Archie Bogle CBE, FNZIS, Surveyor of the Century*). The original rustic bivouac-shaped structures were eventually replaced with the more rigid structural station with which we are familiar.

The form of the trig station and the colonial act of surveying has been critically examined by artist Bridget Rewiti (Ngāti Ranginui, Ngāi Te Rangi) in lens-based and moving image work. The lens is generally filtered through historical Māori narratives and lived experiences of colonisation, while surveying and trig structures often feature



FIGURE 1. Jude Stevens, What a Trig Station Sees, A24Q.



FIGURE 2. Jude Stevens, What a Trig Station Sees, A23K.



FIGURE 3. Jude Stevens, What a Trig Station Sees, A2258.



FIGURE 4. Jude Stevens, What a Trig Station Sees, A23n.

prominently. *Can I be in your video?* (2012) and *It's a long shot* (2012) are parts of a four-video series. Set in both Tauranga Moana and Te Tai Poutini, they are split screen videos, one showing Rewiti constructing a camera obscura tent, reminiscent of an early surveyor's tent, and the other showing what the camera obscura produces – an inverted view of the reflected landscape. The sites are significant to the iwi and hapū of the specific area due to the geological deposits they hold.⁹ Rewiti's tents in these sacred areas directly resemble what surveyors would have looked like and experienced, as well as the bizarre sight this would have been for early whenua Māori.

In Rewiti's exhibition *Illustrated Shards* (2021), amongst other photographic and moving image works were seven vertical columns, each with three separately framed stereographs of different trig stations. The 42 images were presented small, giving the objects a feeling of fragility or insignificance. Luring the viewer in, much like trig stations do, the images were designed to be looked at through binoculars that make them look three-dimensional. Reviewing the exhibition, David Eggleton states that “for the Māori who were already present in the landscape, encountering these devices was an anxiety-provoking intrusion.”¹⁰ Eggleton also observes that the survey tools were referred to as objects of ‘taipō,’ which translates as ‘devil’ or ‘alien.’ The same term was applied to early photographers taking imagery with the use of a tripod. There is therefore a structural similarity between early New Zealand surveyors, with theodolites and trig stations, and early New Zealand landscape photographers, with tripods and cameras. Both were modern technologies, crucial for new settlers across New Zealand. The act of image-taking seems to relate closely to the act of surveying. Photography, like surveying, captures and grids the land according to the operator's decisions, confining a landscape to square perimeters. Once the processing of each action has been completed, the result has an enduring presence. New Zealand ecologist Geoff Park writes of the grid as an ancient feature engraved in the European landscape: “Desperate for flat land, the grid consumed everything in its path. The grid's rectangular arrangement of space was an essential precondition of the capitalist settlement plan.”¹¹ To grid, one might suggest, is to conquer.

Edward Gibbon Wakefield (1769–1862) was one of the key minds behind the systematic colonisation of Te Ika-a-Māui and Te Waipounamu. As a volatile young man, Wakefield found himself between the walls of London's Newgate prison. It was here that his strong philosophies on colonialism grew, through readings of utilitarianists and classical economists. Wakefield began to express some of his theories and ideologies through in his diaries: “Colonisation will be conducted systematically with a view to the greatest benefit to the mother country.”¹² Wakefield set up the New Zealand Company as a commercial enterprise designed to settle the land of Aotearoa. The company was responsible for the gridding of most of the country with no consideration of the wellbeing of Māori or Papatūānuku.

In the early 1880s, Takaparawhau, or Bastion Point, home to the Ngāti Whātua iwi located in Tāmaki Makaurau Auckland overlooking the Waitemata Harbour, was taken by the crown for defence purposes. In 1885, military fortifications were constructed in response to the ‘Russian scare.’ The Crown held onto the land for the duration of two world wars, leaving Ngāti Whātua with only a slither of land. In 1951, Māori families living in Okahu Bay, next to Takaparawhau, were abruptly evicted, their houses burned to completely clear the land. In 1977, the government announced the military no longer needed Bastion Point. Ngāti Whātua iwi thought the land would be rightfully handed back to them but instead the government had plans to divide the land up and develop it into high income housing. Two days prior to the start of excavation, Ngāti Whātua iwi and supporting protesters reclaimed the land, occupying it for 506 days. It took ten years after the protest for the government to understand what was rightfully Ngāti Whātua's.¹³ The headland of Takaparawhau is home to a geodetic survey mark. During the occupation the wooden trig station was transformed by the protesters into a liveable shelter, as documented by photographer John Miller, who had observed other political social battles in Aotearoa. Miller showed the structure's beautiful modifications of colourful painted wood and recycled glass windows. Cassandra Barnett's words poignantly respond to the image: “When is a trig station a home? When it has feet planted in the earth and four walls. When it squats, forgetting to survey. When it is inhabited with aroha. Reach for Ranginui, reach for Papatūānuku.”¹⁴

The installation *Flagging the Future: Te Kiritangata – The Last Palisade* (1995), by Diane Prince (Ngā Puhi, Ngāta Whatua), uses a structure that resembles a trig station to provoke responses to Pākehā land ownership and the treatment of whenua Māori since early settlement. Prince had a large part to do with the research surrounding the Bastion Point protest and with many other Māori activist movements and social actions regarding land ownership. The work gained attention as part of the 1995 *Korurangi: New Māori Art* exhibition at the Auckland Art Gallery Toi o Tamaki due to Prince's use of the New Zealand flag, which lay on the floor and had the words 'please walk on me' stencilled onto it, though it also featured a woven basket, dried korari and rākau from harakeke making the triangular shape of a trig station with a grid-like cross in the middle.¹⁵ What upset certain people was that a patriotic symbol could be vandalised and treated with such insolence. One might suggest that the work penetrated the comforting and secure walls of the colonising culture, the homely condition that insulates or blinds its inhabitants from the real vandalism and insolent behaviour that has taken, and is still taking, place.

Here, it is worth returning to the sculptural representations of trig stations described at the beginning of this article, using native timber remnants of New Zealand houses, and to consider Moana Jackson's metaphoric description of colonisation as one house replacing another:

The houses represent societies, and each house provides a secure shelter for the people who live in that house. The strength of a house rests on its foundations; the foundations keep the structure above it sturdy and upright. The foundations of society include a resource base utilised to ensure its physical survival; a political system to organise it; justice and laws for the security and safety of its citizens; education to maintain and develop it; health practices to support the well-being of its members; and a language to carry its values, views and norms.¹⁶

When the first European settlers arrived and the Pākehā house was built in Aotearoa, it changed the neighbourhood for good. For many parts of the motu, the neighbourhood started with the four-legged trig structures on the tops of the surrounding hills, followed by the felling of native hardwoods, such as kauri, rimu, tōtara, kahikatea, mataī and silver beech, used to build the new homes and furniture inside them. Remnants of these forests, in the form of joists, posts, skirtings and doors, are now found scattered across neighbourhoods, in wood piles, skip bins and landfill. *When A Trig Station Becomes a Home* uses the colonial structure of the trig station and the materials that emerged from its use in the New Zealand environment. The form of the trig station reassembles the dismantled home and neighbourhood, replanting the native materials feet into the ground, giving it four walls, forgetting to survey. There is new life as it reaches for Ranginui and for Papatūānuku.



Jude Hanson Stevens works between sculpture and photography, recreating structures and documenting sites connected to colonial history in Aotearoa. He graduated from Dunedin School of Art in 2024 and now lives in Tāmaki Makaurau.

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