

VOLUME 1: THESIS

THE MATERIAL-MEDIA HISTORIES OF MARALINGA

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DECLARATION OF AUTHORSHIP

I, David Burns, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

Signed:

A black rectangular redaction box covering the signature of the author.

Date: 13 October 2020

ACKNOWLEDGEMENT OF COUNTRY

I would like to acknowledge the Maralinga Tjarutja people who are the Traditional Custodians of the land concerned in the following research, and I would like to pay my respects to Elders past and present.

ABSTRACT

This practice-based thesis proposes that the nuclear test site at Maralinga, South Australia is a reluctant and traumatic archive comprised of *material* and *media*. The material archive is the physical evidence of the tests and is mostly inaccessible, interred in radioactive burial trenches. The media archive is dispersed and diverse and includes photography, maps, film, documents, and objects. Combined, the two archives constitute the *Material-Media Histories of Maralinga*. It is an archive of the recent nuclear past and the radioactive deep future; an archive of secrecy and betrayal, of disrupted songlines and broken futures.

The thesis begins with the 2014 return of the land to the Maralinga Tjarutja people. The status of the land – highly mediated and remediated – is questioned along with the intentions of the government and the Australian Defence Force. The first chapter examines the colonial declarations of terra nullius that rendered invisible the Aboriginal people, customs, agriculture, architecture, and economies, thereby creating the juridical conditions for the future establishment of Maralinga. The second chapter focuses on the issues of visibility as they relate to Maralinga as a nuclear weapons testing site. The chapter begins with a detailed examination of Tufi, an unused nuclear test site that could be the most resilient – and misleading – legacy of Maralinga. The final chapter traces the land as a political medium from the first moments of nuclear colonisation to a history of Aboriginal acts of resistance. The chapter concludes with a conceptualisation of *remediation* as it pertains to the history and future of Maralinga, beyond the simple definition of land rejuvenation.

The practical component of this thesis situates a new photographic series alongside, and often in opposition to, an extensive collection of found media. Together, this *material-media archive* forms the basis for my conceptual insights on Maralinga. The archive is sampled throughout the thesis in Volume 1 and catalogued in full in Volume 2.

MEDIA APPENDIX

Accompanying this thesis is a second volume that catalogues the material-media archive that I have collected and curated during my research. It includes thousands of found media objects, including photographs, maps, documents, and ephemera. Additionally, I have included a selection of new photography and moving image work produced by me during fieldwork in Maralinga, Woomera, Alice Springs, and other locations in South Australia and the Northern Territory in 2018.

Throughout the thesis, footnotes that begin with the prefix “MMA” direct the reader to the additional content in second volume. The footnotes are formatted with the section number plus the image number. For example, MMA #1.2.345 references section 1.2, item number 345. Images that I have personally produced are labelled with the prefix “FW” and appear in both volumes.

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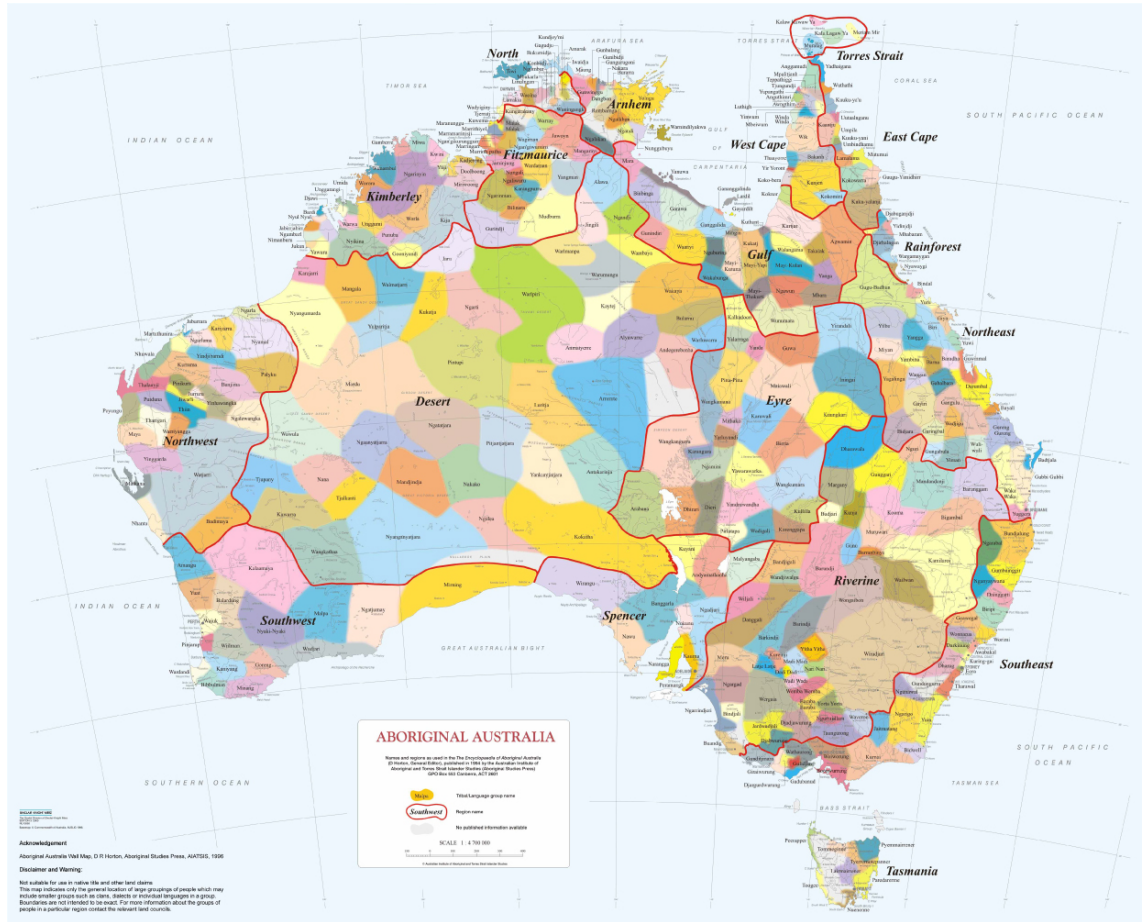
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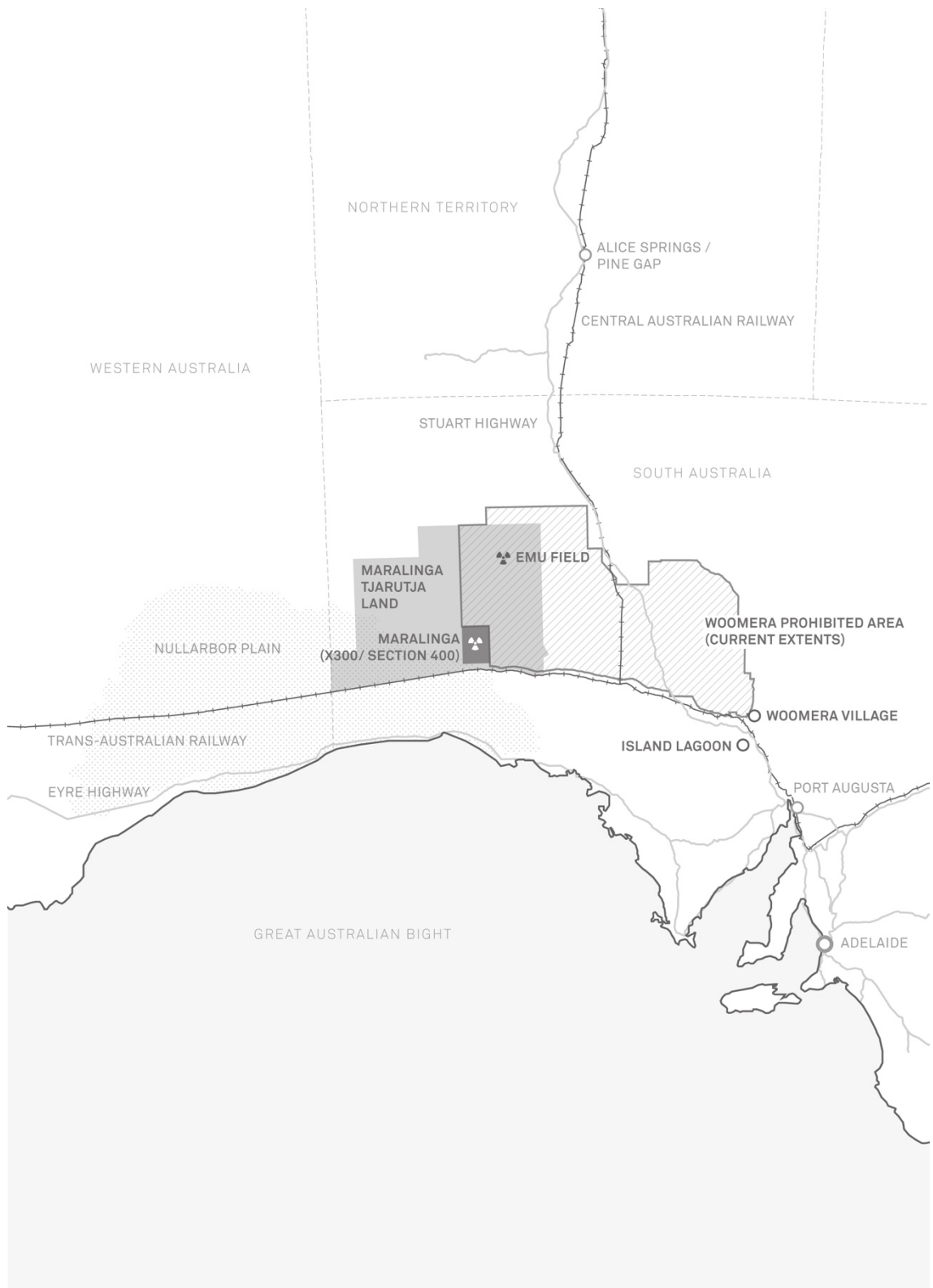
ILLUSTRATIONS



[FIG. 1] AIATSIS Map of Indigenous Australia prior to 1770 (AIATSIS)



[FIG. 2] Map of Australia with key landmarks and references, including the atomic test sites of Monte Bello Islands, Emu Field and Maralinga, the contemporary extents of the Woomera Prohibited Area, state lines, primary roads, transcontinental railways, capital cities, and selected minor towns. (David Burns, 2019)



[FIG. 3] This map provides contextual information for Maralinga and the Woomera Prohibited Area (originally the Woomera Rocket Range) in relation to the surrounding topography and infrastructure, including the Nullarbor Plain, the Great Australian Bight, and primary high-ways and railways. The Maralinga Tjarutja land is shown in grey with Section 400 in dark grey. Woomera Village is situated in the south-eastern corner of the WPA (David Burns, 2019)

PART 0: WHAT WAS RETURNED?

0.1: THE SECTION 400 EXCISION EVENT



[FIG. 4] Section 400 Excision Event - 5 November 2014, left to right: Keith Peters, David Johnson, Nigel Scullion (Australian Defence Force)

On 5 November 2014, in front of a drab aluminium building adjacent to an abandoned airstrip in a remote corner of western South Australia, a rare moment of Indigenous land rights recognition took place. An official Australian Defence Force photograph of the event features two smiling and sunburnt white men in crisp white shirts with their sleeves casually rolled up presenting a framed map to an expressionless, casually dressed, brown-skinned man in dark sunglasses.¹ The map is printed on beige paper and framed in pale wood with a brass title plate and is of the Woomera Prohibited Area: 127,000 square kilometres of restricted military weapons testing ranges. The notes section at the bottom of the map lists a series of alterations and additions. The most recent addition reads “SECTION 400 EXCISED” in red ink. On the left side of the map, just above the labelling for the Nullarbor Plain and the Trans-Australian Railway, situated at the southwest corner of the dashed and dotted line demarcating the boundary of the Woomera Prohibited Area is a small rectangle, also in red. A thin red line defining a cryptically named piece of land. A place voided by countless other colonial maps.² A place stripped of thousands of years of Indigenous history and inhabitation now conspicuously returned in an act called an *excision*. This simple red line signifies the only territory ever removed from the Woomera Prohibited Area.

The caption for the photograph reads:

Minister for Defence, Senator the Hon David Johnston (left), and the Senator for the Northern Territory and Minister for Indigenous Affairs, Mr Nigel Scullion (right), present a map of the Woomera Prohibited Area to the Maralinga Tjarutja Senior Elder and Chairperson, Mr Keith Peters, at the Section 400 Excision Event, held at Maralinga Airfield in South Australia.³

¹ Further photography of the Section 400 Excision Event is included in the accompanying media archive. MMA #0.0.004-007

² The media archive includes several examples of maps produced between 1799 and 1967 that include the primary site of the thesis: the south central region of what is now Australia. The maps provide a sampling of how this region has been classified in the colonial era. The descriptions of the region are diverse, includes labels such as “No man’s land”, various colonial names including Nuyt’s Land, and in many instances, no information whatsoever. MMA #0.0.001-003, 0.0.18-042

³ Australian Defence Force images.defence.gov.au/20141105raaf8526919_0309.JPG

An *excision* suggests a surgery or a careful and deliberate removal. It suggests a potential danger, as in *the excision of a tumour*. Why then do the two officials seem so happy?⁴ The irony of calling the return of a territory an excision despite the fact that the land was being removed from a semi-sovereign prohibited area ceded to the British in 1947, after being taken from the original Aboriginal custodians by the newly federalised government of Australia in 1901 under the White Australia policy, which was supported by the 1835 colonial declaration of *terra nullius*, after being part of the original settler colonisation by the British in the 18th century was apparently lost on Mr. Johnston and Mr. Scullion.

Almost forty years before the Section 400 Excision Event a similar ceremony took place in the Northern Territory community of Daguragu. In the 1975 photo below, Prime Minister Gough Whitlam is seen pouring red dirt into the hand of Gurindji activist and Kadijeri elder Vincent Lingiari, ceremonially ending the multi-year Wave Hill Walk-Off.⁵ The ceremony included the official transfer of the land back to the Gurindji; the documents are seen in Lingiari's left hand in the photograph. Both the 1975 and 2014 events returned land to its traditional custodians. Both took place in remote locations, with a background of Australian blue skies. Both photographs feature white men graciously presenting an Aboriginal man with a token. In fact, the photographic evidence of the two events share such striking compositional similarities that it seems almost too obvious not to be deliberate.

⁴ As Minister of Indigenous Affairs, Nigel Scullion faced repeated accusations of threatening Aboriginal communities with denial of services and community support if they did not sign over their land to the federal government via ninety-nine-year leases. www.abc.net.au/news/2015-01-29/scullion-denies-threats-made-if-leases-not-signed/6054214

⁵ The Wave Hill Walk-Off began in August 1966 when Lingiari led a strike of two hundred Gurindji stockmen, house servants, and their families from the Wave Hill cattle station. At 15,000 km², was the largest of its kind in the Northern Territory and was owned by British pastoral company Vestys.



[FIG. 5] Vincent Lingiari and Gough Whitlam by Mervyn Bishop, 1975 (left) and Australian Defence Force photograph of Keith Peters, David Johnson, and Nigel Scullion, 2014

But, despite the formal similarities between the 1975 photograph of Lingiari and Whitlam and the 2014 photograph of Peters with Scullion and Johnston, the two ceremonies represent highly contrasting ideas about Aboriginal self-determination and land rights. Whereas Whitlam is seen – albeit ceremonially – using the land itself to signify the return, Scullion and Johnston use a military map of the Woomera Prohibited Area. This is the key distinction. The return of Section 400 was not marked with a new map of the region commissioned for the Maralinga Tjarutja, nor was it celebrated with a map of the now full extents of the Maralinga Tjarutja land.⁶ The Australian government chose to commemorate the event by presenting a military map of the state of exception that was the root cause for generations of cultural loss, physical displacement, and tragic death endured by the Maralinga Tjarutja. A map whose focus is not Aboriginal, but colonial.

The land in question in the excision event was the home of British atomic weapon testing. In seven years, from 1956-1963, seven nuclear weapons were detonated and another seven hundred highly radioactive *minor trials* were conducted. In addition to the other contested historiographies and traumas surrounding Section

⁶ Prior to the 2014 Section 400 Excision Event, the promises of the 1985 Maralinga Tjarutja Land Rights were incomplete. Up until 2014, Section 400 was not under full Aboriginal control and appeared in maps as a white rectangular island in the middle of the almost 100,000km² territory controlled by the Maralinga Tjarutja.

400, this land is the same land deemed one of the most contaminated places on earth by the Australian government in 1985.

So what was actually being returned bearing in mind that title to their land was never ceded in the first place?⁷ What does it mean when the first territory returned to its traditional owners from the Woomera Prohibited Area is also the most contaminated, the most dangerous, and the most secretive? Is a land poisoned by atomic blasts and botched remediation attempts still the land it once was?

If we return to the 2014 photograph, the exaggerated smiles on the faces of the ministers are countered by the stoicism of Maralinga Tjarutja elder Keith Peters. This moment is a bittersweet victory for Mr. Peters. For years he and many others in Aboriginal communities and scientific organisations in Australia had been fighting on behalf of his people to regain control of Section 400, a land that is now known as Maralinga and whose story follows. But despite the victory evidenced by the photograph, there would be no celebrations, no rush to move back, no establishment of new houses or settlements. Now that Peters and the people he represents finally controlled the land, there was little interest in using it again.

While conducting fieldwork in Maralinga in 2018, I was told by the caretaker⁸ of Maralinga Robin Matthews that the Maralinga Tjarutja had no intention of disturbing the land again.⁹ Despite the temptation of the untold wealth below the surface including the thousands of kilometres of British copper cabling or the promise

⁷ Australian lawyer and researcher Odette Mazel notes in a footnote to her essay “Returning Parna Wiru: Restitution of the Maralinga Land to the Traditional Owners in South Australia” that it’s important to acknowledge that the Southern Pitjantjatjara people never ceded the title to their land, so describing it as a “return” or “hand back” isn’t correct. Instead, it could be described as a “recognition of Aboriginal ownership”. Mazel, Odette. “Returning Parna Wiru: Restitution of the Maralinga Lands to Traditional Owners in South Australia” *Settling with Indigenous People: Modern Treaty and Agreement-making*. Langton, Marcia, editor. Federation Press, 2008.

⁸ The current caretaker of the test sites at Maralinga is a white man named Robin Matthews. Robin has been employed by the Maralinga Tjarutja people to oversee the former test site for many years and prides himself on being a public representative of the Maralinga Tjarutja. Robin lives in the nearby town of Ceduna which is also the contemporary location of the headquarters of the Maralinga Tjarutja. He is married to a Maralinga Tjarutja woman born and raised near Maralinga. Or as Robin told me as I entered the gate to the site, “she was born just over there, under that tree”, pointing to a tree directly outside the military fence.

⁹ Robin was only referring to Maralinga/Section 400, which encompasses just over 3,000km². He was not referring to the all of the Maralinga Tjarutja land, a vast area of over 100,000km² that comprises one-tenth the area of the state of South Australia.

of uranium, gold, and other minerals, the land was to remain how it is today.¹⁰ This refusal to disturb the land reveals a political position that is clearly at odds with the previous British and Australian “owners” of Maralinga as well as with the contemporary economies of resource extraction. The land surrounding the site is pockmarked with active mines, as well as infrastructure to support the mines, and plans for building new mines. The adjacent land is owned by a range of Australian and foreign companies and produces extraordinary wealth that rarely benefits the average Australian. The Australian continent is open for business and that business is mining. Contemporary mining maps divide the continent into private and public mining holdings, present and future mines, and the potential raw material to be exploited. Maralinga appears on these maps as a blank rectangle with no history and no future.

Maralinga is an archive, a reluctant and traumatic archive. A tangible yet mostly inearthed *material archive* of the evidence of the events that occurred there. The material, both radioactive and benign, is interred in dozens of burial pits and trenches. The pits are both known and unknown, ranging in size of a shallow hole in the ground to a trench that is two hundred meters wide and over twenty meters deep. Most of the pits were constructed by the British during the time of the atomic tests. Some were created by simply piling radioactive debris and covering it with a small amount of sandy soil or maybe a concrete cap. Others are formal and well documented, including the carefully constructed burial trenches produced by Australian contractors during the final remediation attempt in the 1990s using contemporary “best practices.”¹¹ These pits are dutifully marked with concrete plinths and metal signs warning of the dangers underfoot and perhaps still in the air.¹² Finally, there are dozens of suspected pits whose location and contents remain largely

¹⁰ In fact, under the “Special provisions related to the Maralinga nuclear site” in Section 15K of the Maralinga Land Rights Act, mining at Section 400 has been prohibited.

www.legislation.sa.gov.au/lz/c/a/maralinga%20tjarutja%20land%20rights%20act%201984.aspx

¹¹ Alan Parkinson would disagree. Employed by the Australians as a nuclear expert to oversee the final remediation, Parkinson has since become a primary whistle blower of the mistakes made in the process of remediating the sites at Maralinga.

¹² The Australian-constructed pits are conspicuous now. A visit to the site features large signs and concrete plinths that reference the radioactive materials underfoot. However, even now, the pits are starting to fade into the landscape. In one instance, at Taranaki – site of the most extensive contamination and remediation – the main burial pit occupies the landmass of multiple football pitches, but thanks to an aggressive replanting initiative, the main pit is already covered in new native plants and trees. This is discussed further in Part 3.

unknown. British records of these pits are vague, non-existent, or recently re-classified.¹³

In addition to the material archive, there is a second discursive one that is hidden in libraries, dispersed in obscure websites and social media accounts, and digitised in the cloud. This archive isn't physically in Maralinga. It's an immense *media archive* illustrating the conflicting historiographies of Maralinga. It consists of thousands of photographs like the one above, videos and newspaper clippings, objects and paraphernalia, court records and parliamentary proceedings, and first-person testimonies of what happened here, what may have happened here, and what almost happened here.

Combined, the two archives constitute the *Material-Media Histories of Maralinga*. An archive of the recent nuclear past and the radioactive deep future. An archive of secrecy and betrayal, of disrupted songlines and *broken futures*.¹⁴

¹³ www.theguardian.com/world/2018/dec/23/british-nuclear-archive-files-withdrawn-without-explanation

¹⁴ Aboriginal elder Mervyn Day described the atomic destruction of his country by stating, "so our future was broken". This is discussed in depth in Part 4.

0.1.1: THE LAND

Above all they cared for its *kapi*, its water, its precious water, and used it wisely, walking many miles for one rockhole to another, always seeking permission from *Wadarrji*, the Rainbow Serpent, who guarded each one, before they took the living water.¹⁵

For thousands of years before Maralinga was *Maralinga*, the Southern Pitjantjatjara people lived here. This was the land of the Dreaming. Sacred songlines crisscrossed the land connecting ancient countries, languages, and cultures. Rockpools and locations for food were well known. The Southern Pitjantjatjara people speak Pitjantjatjara and Yankunytjatjara, and share cultural customs with many other Aboriginal peoples, including the Pitjantjatjara, Yankunytjatjara, Ngaanyatjarra, and the Spinifex People.¹⁶

Millions of years before their arrival, Maralinga was part of a coastline perched atop the edge of a Cretaceous Period sea. When the sea disappeared, what remained was 180,000 square kilometres of exposed limestone plain.¹⁷ The Anangu called it *Gondiri* meaning “bare like a bone”¹⁸. The coastline of the plain witnessed its first European mapping by Pieter Nuyts of the Dutch East India Company in 1626¹⁹. As a result, the land from the west coast of Australia to the edge of contemporary Maralinga was given the colonial name *Pieter Nyut’s Land* and appeared as such on maps until late into the nineteenth century.²⁰

¹⁵ Christobel Mattingley, *Maralinga’s Long Shadow: Yvonne’s Story*. Allen and Unwin, 2016.

¹⁶ Mazel 161.

¹⁷ MMA #O.O.045

¹⁸ Collins, Neville. *The Nullarbor Plain: A History*. Woodside, SA, 2008, p.2.

¹⁹ Some have speculated that Portuguese sailors may have ventured as far as Kangaroo Island in 1522, only a few hundred kilometres from contemporary Ceduna. Trickett, Peter. *Beyond Capricorn*. East Street Publications, 2007.

²⁰ MMA #O.O.010-021



[FW 0.1] Burns, David. *Nullarbor Plain from Ooldea Range*. 2018.



[FW 0.2] Burns, David. *Nullarbor Plain from Maralinga Village*. 2018.

The contemporary colonial name for the land is the Nullarbor Plain and was coined by the nineteenth century white surveyor Edmund A. Delliser. He described the land in the most basic of terms: the Latin *nullus* for “no” and *arbor* for “tree”. At a length of over 750km and a width of 200-300km, the Nullarbor Plain is part of the Eucla Basin which extends for over a million square kilometres, the majority of which is offshore in the Great Australian Bight. The Eucla Basin is itself the south-eastern edge of the continent-bifurcating Australian Shield. The Australian Shield encompasses more than half of the Australian continent. Its Eastern border is the Great Artesian Basin, the largest artesian basin in the world.

The Nullarbor Plain’s average elevation is 80m above sea level. Sheer cliffs line the southern edge, falling abruptly to the choppy Australian Bight below. Underground, the porous limestone contains a maze of interconnected subterranean spaces, some filled with clear, salty water. On the surface and seen from above, the Nullarbor Plain exemplifies the colonial outback imaginary of the mythic Australian desert, that of desolation and mortal danger. However, Aboriginal communities have navigated the plain for thousands of years, some leaving intricate art in the southern caves of Koonalda, Abrakurrie, and Murrawiginnie.²¹ In 1956, archaeologist Dr Alexander Gallus viewed “finger markings” in the Koonalda Cave and estimated their origins at 20,000 years ago.²² In addition to the art within the cave, Dr Gallus also learned that Aboriginal people had been using the cave for the mining of flint.²³ Prior to his research, it was believed that Aboriginal inhabitation of the continent spanned only 8,700 years.

Moving inland to the north and east, the terrain rises another 120m to the Ooldea Range, the ancient coastline mentioned above. The Ooldea Range separates the Nullarbor Plain to the south from the Great Victoria Desert²⁴ to the north. Acting as the boundary between the Nullarbor Plain and what would become Maralinga, the range is significant for this research both physically and conceptually as it was one of

²¹ MMA #O.O.043B

²² MMA #O.O.043

²³ www.environment.gov.au/heritage/places/national/koonalda

²⁴ The Great Victoria Desert is the largest in Australia, covering almost 400,000km². Named for Queen Victoria in 1875 by Ernest Giles.

MMA #O.O.044

the features that attracted the military surveyors [FW 0.1]. As the elevation rises, the flat white limestone of the Nullarbor Plain gives way to deep red sand, towering mulga and mallee trees, and flocks of wild pink galahs. The British made this range the site of Maralinga Village, the eventual home to thousands of officers and scientists [FW 0.2].

Continuing north and slowly descending from Ooldea Range, the terrain gradually flattens again. The primary geological feature here is a second limestone plate. While considerably smaller than the neighbouring Nullarbor Plain, it still encompasses approximately six hundred square kilometres. Sitting only centimetres below the sandy surface, the limestone has direct effects on the vegetation. Unlike the relatively lush Maralinga Village, the vegetation on the plain is infrequent and low, mostly salt and blue bush, and occasional spinifex grasses. There are very few visible animals, only the occasional wild camel, with indigenous thorny devils below and brown eagles above.

Standing in the centre of this limestone plain and looking south towards Maralinga Village, the Ooldea Range is almost invisible, revealed only by a subtle line of trees [FW 0.3]. The Ooldea is complimented by similar ranges to the north and east: the Barton Range the Paling Range respectively.²⁵ The plain is almost entirely surrounded. In the 1950s, the British and Australian surveyors saw these topographic features and recognised that they would provide the clear line of sight that the scientists and military officials required for testing atomic weapons. From here they would witness the atomic blasts with some of the most advanced photographic equipment the southern hemisphere had ever seen.

²⁵ MMA #0.0.044



[FW 0.3] Burns, David. *Ooldea Range from Tietkens Plain*. 2018.

0.1.2: “MARALINGA”

X300 was the most remote corner of the most remote testing range in the world. It was located as far away from the range’s headquarters at Woomera Village as you could be and still be within the extents of the range. It was, however, relatively close to the trans-continental railway and the raw materials necessary for the construction efforts. Additionally, the weather was predictable and largely dry. Finally, the land had been declared uninhabited by the nineteenth century colonial claims of *terra nullius*.²⁷

In the years before the creation of Maralinga, the British had already successfully conducted five nuclear detonations in Australia. Operation Hurricane (1952) and Operation Mosaic (1956) were both situated in the Monte Bello islands²⁸ off the northwest coast of Western Australia in the Indian Ocean. Operation Totem²⁹ (1953) was the first series on the Australian mainland and were located in the claypan bush of Emu Field in the northwest corner of the Woomera Rocket Range. Monte Bello hosted three weapon detonations and Emu Field two, and while all five were successful technologically, neither test site satisfied the requirements of the British officials. In addition to limitations imposed by geography and location, the first two test sites shared a common critical limitation that is fundamental to this research: optics. Both Monte Bello and Emu Field lacked appropriate topography for the viewing and visual documentation of the blasts.³⁰

While the operation at Emu Field was being mounted, a search was made for a permanent trials site. It was essential that this site should be clear of trees, to permit unimpeded lines of sight for instrument layouts.³¹

²⁷ The conditions that allowed the declaration of *terra nullius* will be discussed in length in Part 1.

²⁸ MMA #O.O.047

²⁹ MMA #O.O.049

³⁰ Emu Field and Monte Bello were both permanently abandoned. However, future tests resumed after Maralinga at Malden Island and Kiritimati in the Pacific Ocean and eventually in the United States at the Nevada Test Site.

³¹ Penney, W. G. foreword. *Blast the Bush*. by Len Beadell, Angus and Robertson, 1967, p. ix.

In the quote above, Sir William G. Penney, the man in charge of the nuclear operations in Australia, outlines the fundamental task at hand in finding the permanent testing site. Penney's influence and presence in Maralinga cannot be overstated. After being on board the American bomber that dropped the nuclear bomb on Nagasaki and personally visiting Hiroshima and Nagasaki to witness the power of nuclear weaponry first-hand, he was chosen to lead the operations to design, build, and test British nuclear weapons. He was singularly responsible for making all major decisions about operations in Australia and was personally present for the detonations.

The above quote appears in the foreword that Penney wrote for a book titled *Blast the Bush* by Len Beadell³², a self-taught Australian surveyor and regular collaborator of the British in and around Woomera. *Blast the Bush* is one of many books written by Beadell documenting his work in Australia for the British and is primarily focused on the early days of nuclear testing in Australia and the many missions to locate and build the test sites. In his foreword, Penney recounts the mandate given to Beadell to find a permanent nuclear site with clear sightlines. The optical limitations at Emu Field (combined with logistical issues of delivery of supplies and the nearly impassable road conditions) led Penney to issue the orders to Beadell to locate a new site even before the nuclear testing at Emu Field had been completed. After an arduous and error-filled expedition, Beadell located a promising site in the southwest corner of the range, 150km south of Emu Field. The site was named X300 and encompassed about 3000 square kilometres, and unlike Emu Field, featured clear sight lines of almost 20km.³³

Once Beadell and his team had decided on X300 as the new site, they quickly began constructing an ad hoc runway so that Penney could see the site for himself. The chosen site for the runway was in the centre of X300, an open field named Tietkens Plain [FW 0.3] after William Harry Tietkens³⁴, an aspiring pastoralist, amateur surveyor, and photographer. Tietkens is perhaps singularly responsible for Maralinga becoming Maralinga. In his search for land that he could claim for his pastoral company, Tietkens originally "discovered" the site in 1875. Financed by

³² Len Beadell's surveying efforts at Woomera are detailed in Part 3.

³³ Robin Matthews provided me with the details of the sight lines.

³⁴ MMA #0.0.050

English patrons, Tietkens worked for several years to lay claim on the land, the primary provision being that he could find a steady source of fresh water. He sank three wells with as many crews, laboriously drilling through the thick limestone and granite. The only water he found was briny and useless.

That night after bitter cogitation, Tietkens was compelled to admit that as his funds were nearly exhausted, and he had spent nearly two years in endeavouring to obtain water in the area, his only course was to collect the plant, material and tools and pay off the men. Thereby abandoning the undertaking. He felt that another £500 might have completed his scheme, but admitted the water would probably be salt, so that he could not justifiably apply to his supporters for further financial assistance. He records that his retreat from Ooldea, and the abandonment of the enterprise, was the most bitter part of his life's history.³⁵

Tietkens left the site and never returned. His failure to find fresh water meant that while colonial pastoralism would ignore Maralinga. Maps from the late eighteenth and early nineteenth century feature dotted lines tracing Tietkens' rambling paths through the land, perhaps as a warning for other would-be pastoralists. In fact, some 19th century maps and even a few in the early 20th identify the region that would become Maralinga as "No man's land" [FIG. 6].³⁶

³⁵ Hulme, Alan S. Forward. *Diary of the Exploration in South Australia of W.H. Tietkens Esq. F.R.G.S.* by W.H. Tietkens, Department of Supply, Weapons Research Establishment, Salisbury, South Australia, 1961, p.9. MMA #O.O.051

³⁶ MMA #O.O.001-003



[FIG. 6] Detail of map produced in 1875 for Stieler's Atlas. (David Rumsey Map Collection)

Had water been found, Maralinga would likely never have become Maralinga. Maralinga's twentieth century British nuclear colonisers viewed the lack of pastoral presence as highly positive. In the forward to the 1961 Department of Supply reprint of the diary³⁷ written by Tietkens documenting his South Australian expedition, Alan S. Hulme, M.P. stated:

For many reasons, it might be argued that it was just as well Tietkens did not find limited quantities of fresh water. This could have given him a false impression of supplies available, with the result that misfortune could well have attended any programme to open up the area on the fringe of the Nullarbor Plain.³⁸

Evidence of Tietkens' attempts are still present at Maralinga. "Tietkens Well No. 3" – a square, wood-lined shaft protected by a contemporary metal railing –

³⁷ MMA #0.0.051-054

³⁸ Hulme 3.

[FW 0.4] is located just south of the atomic fields along with the ruins of one of his campsites [FW 0.5].

The formal agreement to use X300 as an atomic testing site was signed by British and Australian government officials on 7 March 1956. The first act of nuclear colonialism at X300 was the selection of a new name. The British chose “Maralinga” claiming it was a local Aboriginal translation of “field of thunder”. In reality, it was derived from an extinct Aboriginal language once spoken by people who lived two thousand kilometres away in the northernmost tip of Australia.³⁹ The local Anangu word for thunder is *tuuni*.⁴⁰ During his research for the book *Immeasurable World: Journeys in Desert Places*, journalist William Atkins was told by a local Maralinga Tjarutja woman from Ceduna that the word *maralinga*, if translated literally into Pitjantjatjara, would mean “up above, looking down”.⁴¹ While this translation is difficult to verify, if true it would provide a much more subtle and appropriate name for the site. “Field of thunder” is dramatic and evocative of the damage the British intended to wreak, but “up above, looking down” better reflects the optical origins of the site.

The renaming of X300 to an Aboriginal name also sealed the fate for its Aboriginal inhabitants. Indigenous communities that had lived for thousands of years in and around Maralinga were forced from their homes and relocated by military officials into new camps and settlements.

³⁹ Mazel 169.

⁴⁰ Mattingley, Christobel. “Maralinga’s Long Shadow: Yvonne’s Story”, p.27.

⁴¹ This anecdote features briefly in *The Immeasurable World*, but without reference. I confirmed with the author that he learned this in Ceduna. Atkins, William. *The Immeasurable World: Journeys in Desert Places*. Doubleday, 2018.

Ooldea Soak, three miles north of another siding at Ooldea, had for centuries been an important centre for the indigenous people from a vast area around. After the intervention of Prime Minister Menzies and Thomas Playford, the premier of South Australia, the Ooldea Aboriginal Reserve was revoked on 25 November 1953 and relocated to Yalata, near Fowlers Bay. In his plans for Maralinga William Penney had discussions with W.A.S. Butement over possible inconvenience due to the present of Aborigines; Butement reportedly said that he 'was given to understand that the area has now been abandoned'.⁴²

Yalata, two hundred kilometres south of Maralinga, became the new home for people forcibly displaced from local communities and settlements. They came from several different Aboriginal groups: the Anangu, the Southern Pitjantjatjara, Yankunytjatjara, and more. Decades later, after the tests and when the land was first reopened to Aboriginal use in 1984, a new corporation was established to handle its maintenance and future affairs. The Aboriginal people now in control of the land around Section 400⁴³ chose a name that took possession of the word Maralinga:

The name 'Maralinga Tjarutja', meaning the 'people brought down from Maralinga', was chosen as it was agreed that the word Maralinga should continue to be used to remind people of the lasting impact of the British nuclear weapons testing program carried out on traditional lands.⁴⁴

Despite its foreign etymology, the new statutory body and the people that it represents reclaimed the word Maralinga and absorbed the responsibility to future generations that the government officials in the Section 400 Excision Event would not. They chose not to excise the wound inflicted by the name, but instead to carry it forward.

⁴² Cross, Roger. "Nuclear Tests and The Indigenous People." Barnaby, Frank, and Douglas Holdstock, editors. *The British Nuclear Weapons Programme, 1952-2002*. Routledge, 2004, p.84.

⁴³ Section 400 would not be returned until 2009 and full access wasn't granted until the 2014 Section 400 Excision Event.

⁴⁴ Mazel 173.



[FW0.4] Burns, David. *Tietkens Well No. 3*. 2018



[FW0.5] Burns, David. *Remains of Tietkens camp*. 2018.

0.1.3: THESIS STRUCTURE AND METHODOLOGY

The Maralinga Tjarutja peoples' decision to adopt the word Maralinga is an example of the ways in which histories are contested within this thesis. Maralinga, a term that embodies the pain of nuclear colonialism and the dispossession and repeated acts of structural violence that it created, is reconceptualised through a new semantic connection to a group of people. A group of people that have called this part of the world their home for thousands of years, but who are now united in their shared pain and trauma under the name Maralinga Tjarutja. In this thesis I will explain repeated acts of cultural appropriation in which Indigenous terminology is falsely used by nuclear colonial actors to name places and events in and around Maralinga. However, when the newly formed Maralinga Tjarutja consciously decided to adopt *maralinga*, a novel act of re-appropriation took place. An action that conflated conflicting histories of the land and united them under the re-appropriation of a misused and misunderstood Aboriginal word.

The following practice-based thesis engages moments like these through the identification and analysis of a range of actions and events that took place in and around Maralinga. These histories are augmented and contested through the collection, curation, and analysis of a *material-media archive*. The archive includes an extensive collection of found photographs, objects, ephemera, and documents that I have amassed from the cultural and political milieu of Maralinga. Utilising historiographic and conceptual methodologies, I am able to identify the conflicting representations of Maralinga present in the material-media archive and provide new insight.

The function of the archive is twofold. First, it provides the necessary context for the reader. For instance, the historical images sourced from Maralinga custodian Robin Matthews provide visual markers of the surveying and construction of Maralinga, and later of the remediation attempts. By placing the construction images alongside British and Australian propaganda and news reels, the reader is able to craft a greater understanding of not only the practical scale of the operations, but

also the ongoing production of misleading and false narratives that were necessary in the creation of Maralinga.

The second function of the archive is conceptual. The archive functions as a critical apparatus that synthesises a wide range of media through the juxtaposition and curation of the materials contained within. The resulting archive is thus able to generate new insights about the histories of Maralinga. For example, the archive includes first-hand accounts of the colonial exploration of Australia from the diaries of James Cook, Charles Sturt, and William Tietkens. The colonial mindset of these men is challenged by placing them in direct proximity to the work of contemporary Australian Aboriginal artists whose practices critically engage the violence of the colonial era through the use of multi-scalar representations of time. This conflict plays out within the archive, providing the reader with a greater context for the analysis of Cold War nuclear colonialism.

Maralinga and Woomera were founded on, among other things, their ability to create media. This thesis will expose multiple methods by which the site was able to create, collect, and develop a trove of media. The archive serves as a visual resource to further explore the methods of media creation that were used. For example, the reels from British Pathé focus heavily on the optical technologies deployed by the British military. News stories about the range and the weapons tested are regularly augmented with descriptions of the photographic technologies deployed to record the events. Indeed, specific focus in the material-media archive is placed on the photographic techniques used in Maralinga and Woomera. These technologies were my entry point into the research and are explored directly in my own photographic and video practice. These photographic techniques – some of which were developed specifically for Maralinga and Woomera – are coupled with research into the architectural, engineering, and infrastructural work performed in Maralinga. The landscape in Maralinga was heavily modified to create an optical device at the scale of a territory. This thesis returns to Maralinga with the tools that are its legacy, deploying imaging and sensing technologies to provide new, sometimes contradictory, historiographies of the site.

The material-media archive is expanded by the addition of my own photography and moving image work produced in Maralinga, Woomera, Pine Gap, and other locations in South Australia and the Northern Territory. The contribution of

my practice serves two purposes: documentation of the current conditions of the site and critical analysis of methods and results of remediation. Through the combination of my new image-based work with historical documentation of the site, the reader is challenged to confront assumptions about the Australian outback and the effects of nuclear colonialism on remote landscapes while forming a visual image of what the future may hold for Maralinga. Additionally, the work that I produced supports my conceptual thesis by revealing the contemporary appearance of the site and the condition of its advancing invisibility. The archive is referenced heavily in the thesis and is documented in full in the accompanying Media Appendix.



The thesis is structured around overlapped and interconnected timelines. While the chronology of the Maralinga tests is mostly undisturbed, the events that influenced and impacted Maralinga and Woomera come and go throughout the thesis. Each section of the dissertation is introduced by a key photograph that acts as a critical frame for the discussions that follow. These eleven photographs are supplemented by the practice-based components of the research described above. The implementation of this archive across the thesis provides the conceptual basis for performing an archaeology of a land that no longer allows physical interventions.

Part 1 begins with an introduction of the theme of *invisibility* through the work of contemporary Australian artist Tony Albert. While invisibility is a regularly occurring refrain in the analysis of nuclear cultures in the humanities, it can be countered by the identification of the evidence apparent in the material-media archive. Albert's biting social commentary from an Aboriginal point of view provides a productive segue into the second section of the chapter which includes an examination of nineteenth century colonial claims of *terra nullius*. The cultural consequences of these declarations are brought forward to contextualise the political machinations that were necessary for the creation of Woomera. The final section of Part 1 examines the conflation of militarism – the need to develop a response to the German V-2 rocket – and *optical politics* – the rush to manufacture new optical technologies and achievements in the Cold War space race. The establishment of the

Woomera Rocket Range is explored via the combination of these two factors and the evolving notions of nation-making, sovereignty, and nuclear colonialism.

Part 2 combines a close reading of Maralinga as a nuclear test site with an examination of the optical politics that brought the United States, and in particular NASA, to the Woomera Rocket Range. The chapter begins by focusing on an unused nuclear weapons test site called Tufi via British aerial photography from the 1950s, a Landsat satellite image of Maralinga from 1990, and my own fieldwork of aerial and ground photography and video. The second section of Part 2 zooms out from Maralinga to focus on the Woomera Rocket Range and its connections to the NASA Lunar Orbiter missions. Photography is the primary concern of this section, specifically the unique technologies developed for the Lunar Orbiter and how they influenced the future of Woomera. The *politics of invisibility* are introduced in the conclusion of Part 2 to explain the connection that Maralinga and Woomera have to the issues of terra nullius and landscape misreading/blindness discussed in Part 1.

Part 3 traces the land as a political medium beginning with the construction of survey markers or *trig points*, actions that I have identified as the first moments of nuclear colonialism at Maralinga. These attempts to regularise the land are conceptualised alongside the neighbouring Tietkens Well and the radiation warning signs erected in the 1990s as contemporary monuments to the tests. A similar case study in terms of its engagement with land and ideas of monumentality, the 1972 Aboriginal Embassy is introduced as a material-media apparatus that engages issues of Aboriginal sovereignty. The chapter concludes with the work of painter Jonathan Kumintjarra Brown whose brief career produced a body of work that expertly addresses both the nuclear colonialism of Maralinga and Brown's personal experiences as a victim of the *Stolen Generations*.

PART 1: WHAT IS VISIBLE, HOW, AND TO WHO?

1.1: "INVISIBLE IS MY FAVOURITE COLOUR"



[FIG. 7] Albert, Tony. *Invisible is my favourite colour*. 2019. (image courtesy of the artist)

While Western travellers sought monuments carved in stone or wrought in iron and written testaments, in Australia they found none. Europeans saw, or rather failed to see, a continent forged by fire, mapped in song, by people who had created a deep and enduring spiritual and economic relationship with the land many thousands of years before bibles, before pyramids, before Captain Cook set foot on the continent's shores.¹

“Aboriginalia” is a term coined by Australian contemporary artist Tony Albert to describe his extensive collection of paraphernalia depicting Aboriginal people on everyday objects such as ashtrays, cups, etc. Generic images of men throwing spears, bare-chested women holding babies, and familiar iconography such as boomerangs and kangaroos dominate the collection. Albert has said that he originally began collecting Aboriginalia as a child because he saw himself and his relatives in the images, something that excited him and made him proud. The objects possess a kitsch nostalgia and can be easily imagined in Australian homes in the recent past. Today, Albert sees the collection through different eyes. He now uses the objects as the source material for his politically charged, multi-disciplinary practice.

Much of Albert’s work incorporates repurposed objects within large installations and text-based works that confront the exaggerated visibility of the depictions of Aboriginal people and the invisibility that these caricatures are able to inflict.² The work above, *Invisible is my favourite colour* [FIG. 7], assembles found objects combined with fragments of paintings and original works by Albert into a text-based artwork that takes ownership of the cloaking affect that Aboriginalia produces.

In a recent series titled “Terra Nullius”³, Albert incorporates vintage copies of the AIATSIS⁴ Map of Indigenous Australia [FIG. 1]. This map depicts the continent as it is thought to have been organised prior to the British invasion in 1778. The goal of the map is “to represent all the languages, tribal or nation groups of the Indigenous

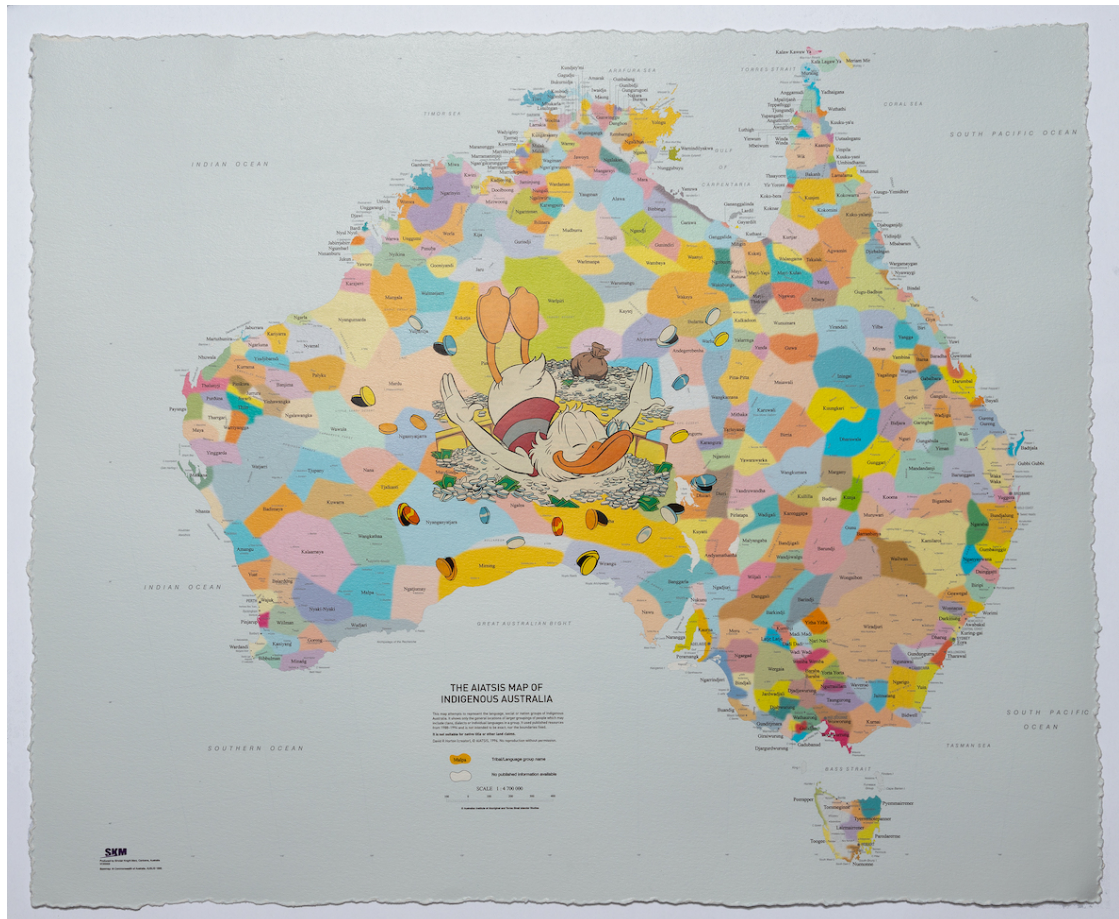
¹ Morphy, Howard and John Carty. “Understanding country.” *Indigenous Australia: enduring civilisations*, Gail Sculthorpe, et al. The British Museum Press, 2015, p. 117.

² MMA #1.1.005

³ MMA #1.1.001-004

⁴ Australian Institute of Aboriginal and Torres Strait Islander Studies

peoples of Australia”.⁵ While the map is not meant to be read as definitive, it is still respected. Formally, the map is an outline of the continent divided into hundreds of pastel-coloured territories, each with blurred edges to heighten the contested nature of the delineations.



[FIG. 8] Albert, Tony. *Terra Nullius (swimming in it)*. 2019, Sullivan+Strumpf, Sydney.

In the work *Terra Nullius (swimming in it)* [FIG. 8], Albert overlays the AIATSIS map with a painting of Scrooge McDuck swimming in money, notes and coins

⁵ “AIATSIS map of Indigenous Australia.” AIATSIS, aiatsis.gov.au/explore/articles/aiatsis-map-indigenous-australia. Accessed 3 June 2018.

scattering as he dives into the pile. The character's smiling face is located just above the location of Maralinga. By conflating the AIATSIS map with pop-culture references to greed and money hoarding, Albert creates a powerful and highly contemporary image. The title references the violent colonial declarations of terra nullius as the sanctity of the Indigenous map is overwhelmed by the flippant, pop culture representation of capitalism with no remorse or self-awareness. A cartoon character known for his conspicuous wealth and who is firmly entrenched in the subconscious of a generation becomes the perfect stand-in for the culture-destroying power of greed. The context created by Albert is one of conflation. The highly recognisable AIATSIS map of pre-colonial Aboriginal Australia is disrupted by the cartoon character of Scrooge McDuck. McDuck, a character whose wealth was derived from gold mining, represents the Australian colonial imaginary that saw untold wealth stripped from the land and sold for private profit.

The title of this chapter asks: *what is visible, how, and to who?* Albert's practice engages these questions by making visible the conspicuous invisibility of Aboriginal people and culture, even while the country is inundated with objects and media that profit from them. This chapter will ask and re-ask these questions to engage the root causes for the continued violent subjugation of Aboriginal peoples in Australia and how the state-sanctioned policies of terra nullius provided the groundwork for the creation of Woomera, and eventually Maralinga.

The next section of this chapter will examine the first moments of contact between Aboriginal people and British colonisers in the late eighteenth century and the subsequent legislative actions of increasingly paranoid and outwardly violent colonial governments to legitimise terra nullius. Issues of visibility are brought to contemporary Maralinga in the second section of this chapter via the fieldwork I conducted in April 2018. Through a detailed description of the process of traveling to Maralinga, I expose my own preconceptions about what Maralinga was, who was there, and what I would see. And in the final section, I focus on how visibility functions through a detailed study of the technopolitical actions that were necessary for the conceptual and physical establishment of Woomera and Maralinga.

1.1.1: LEGACIES OF TERRA NULLIUS

Despite being seen at a distance by Dutch and French seafaring traders in the seventeenth century and being lightly trodden by the early nineteenth century British “explorers” and opportunistic potential pastoralists, the land that would become Maralinga was largely ignored by the initial waves of European colonisers. This was in part due to the absence of fresh water and therefore a perceived lack of value for would-be pastoralists. However, the invisibility of Maralinga is also based on the inability and the unwillingness of the European colonisers to comprehend the land upon which they stood. James Cook, in the diaries from his initial 1770 landing on the continent, established the colonial blindness that would be echoed by countless future British explorers.⁶

We are to consider that we see this country in the pure state of nature; the Industry of Man has had nothing to do with any part of it, and yet we find all such things as nature hath bestow'd upon it in a flourishing state.⁷

The land appeared to them as the “pure state of nature” and the ideal territory for a new colony for the British empire. The inability to see, or perhaps more accurately the ability to deny, what is easily observable is the basis of Australian settler colonialism. This wilful blindness is a violent colonial trope that has been repeated across the continent in a variety of methods that have destroyed Indigenous lives, cultures, and modes of living.

When James Cook landed on the eastern shores of Australia, he was under orders to survey the new land and to avoid engaging any local inhabitants. Cook and his men ignored these instructions and landed on what he would later name Botany Bay on 29 April 1770. The first encounter between Europe and the oldest continuing civilisation on Earth ended in violence with a British soldier shooting at and wounding

⁶ MMA #1.1.007-022

⁷ Cook, James, Hutchinson, John, Wallis, Samuel and Bolckow, Henry William Ferdinand. *Journal of H.M.S. Endeavour*, : , 1768. Web. 23 July 2018 nla.gov.au/nla.obj-228958440

the Indigenous men standing on the shore. After a few days Cook and his men left and continued sailing north while claiming the coast for the crown.

However, Cook did not leave empty-handed. He collected the objects left on the shore by the injured men. These items, including the famous Gweagal Shield⁸ with a distinct bullet hole [FIG. 9], are still in the collection of the British Museum. This shield, and the spears that accompanied it, sit on permanent display in London bearing material witness to the first moment of British aggression and invasion and, as Australian anthropologist John Carty says, they “continue to speak to the silences in Australia’s recent history.”⁹ The British arrived and viewed the continent with wide eyes, seeing nothing; with a peaceful mandate that they ignored with gunfire.

⁸ The shield is British Museum collection item Oc1978,Q.839, and is referred to the British Museum website simply as “shield”. This Aboriginal shield made of red mangrove and is thought to have been taken by Captain James Cook on his first landing on the Australian continent in 1770.

⁹ Morphy, Howard and John Carty. “Understanding country.” *Indigenous Australia: enduring civilisations*, Gail Sculthorpe, et al. The British Museum Press, 2015, p. 117.



[FIG. 9] *Shield*. British Museum, London.



[FIG. 10] Talmadge, Algernon. *The Founding of Australia. By Capt. Arthur Phillip R.N. Sydney Cove, Jan. 26th 1788.* 1937, Mitchell Library, State Library of New South Wales, Sydney.

When the British returned in 1788, it was to stay. Captain Arthur Phillip landed the so-called *First Fleet* of eleven ships in Port Jackson (the contemporary city of Sydney) on 26 January 1788. The ships were loaded with over one thousand British subjects to establish the new colony for Great Britain. The majority of the original settlers were convicts. The 26th of January is now celebrated as Australia Day and is a contentious national holiday that I will discuss in detail in Part 3. The landing of the First Fleet was the first iteration of a series of official acts by the colonial forces to negate the culture and livelihood of the millions of Indigenous people that had made the continent their home for more than 60,000 years.

Sixty-five years later, on 26 August 1835, only a few kilometres from where Cook invaded the Australian continent under orders of the British Crown, New South

Wales Governor Richard Bourke¹⁰ signed a simple two-page proclamation that officially opened the Australian continent to naked conflict between a visible and deadly coloniser and a now invisible and expendable Indigenous population.

Now therefore, I, the Governor, in virtue and in exercise of the power and authority in me vested, do hereby proclaim and notify to all His Majesty's Subjects, and others whom it may concern, that every such treaty, bargain, and contract with the Aboriginal Natives, as aforesaid, for the possession, title, or claim to any Lands lying and being within the limits of the Government of the Colony of New South Wales... is void and of no effect against the rights of the Crown;¹¹

Bourke was responding to a series of conflicts about land ownership, to a rising resistance among Indigenous peoples against the steady expansion of white settlers into Australia, and specifically to a recent “treaty” signed by pastoralist John Batman and a contingent of Wurundjeri elders on 16 June 1835.¹² The document, that was later known as Batman's Treaty, recorded the sale of the land around Port Phillip (contemporary Melbourne, Victoria) to Batman, and by default, recognised the previous Aboriginal ownership. This distinction could set the precedent that the continent was legally occupied at the point of Cook's arrival. Just two months after the signing of Batman's Treaty, Governor Bourke issued the proclamation voiding this sale and any other agreement with Aboriginal people.

This moment is critical for the imaginary of the fledgling Australian state. Bourke's 1835 proclamation can be understood as the first juridical Australian declaration of *terra nullius*, establishing the precedent that Australia was a void. Terra nullius, and the violent politics it engendered and enforced, has been repeated in obvious and sometimes unexpected ways. For example, in contemporary Queensland, a multi-year debate has been unfolding about the construction of a new coal mine, rumoured to be the largest in the world. In September 2019 it was revealed that the Labor government of Queensland had “extinguished native title over 1,385

¹⁰ MMA #1.1.014

¹¹ *Proclamation of Governor Bourke*, 10 October 1835 (National Archives of the United Kingdom)
MMA #1.1.015

¹² MMA #1.1.016

hectares of Wangan and Jagalingou country”¹³ for the new Adani mine. Despite ongoing protestations by Aboriginal representatives, the revocation of native title happened without public disclosure. These actions represent the contemporary condition of terra nullius in which Aboriginal and Indigenous land and culture is always subordinate to external mining concerns.

Through this contemporary example it is easy to understand how the underlying ideology of terra nullius facilitated the conditions in 1947 by which Woomera (and eventually Maralinga) could become the state of exception that it became. From the initial British invasion of the continent in 1770 to the first agreement with the Maralinga Tjarutja in 1984, terra nullius held firm at Maralinga. The arrival of twentieth century British scientists and engineers in 1953 was simply the next wave of destruction that the land had witnessed. To the British, Maralinga was empty, strategic, and conveniently out of sight.

At the time of Governor Bourke’s 1835 declaration of terra nullius, the idea of “Australia” as a nation was still very much in formation. In fact, the state of South Australia (the location of Woomera and Maralinga) did not yet formally exist. South Australia was founded in 1836 with a unique idea that sets it apart from the other seven states and territories in Australia: it was formed as a free state, without the “convict stain”.¹⁴ This fact is still very much present in the contemporary imaginary of South Australia making it a “self-financing example of free-enterprise capitalism”.¹⁵ Linklater continues by establishing another unique quality of the founding of South Australia:

Unlike the creation of a new territory in the United States, the act made no mention of buying the land from its indigenous inhabitants. A later amendment did refer to respect for Aboriginal rights of “occupation and enjoyment” of the land, but in the original colony of New South Wales, Australia had already been declared to be *terra nullius*, or empty land,

¹³ Doherty, Ben. "Queensland extinguishes native title over Indigenous land to make way for Adani coalmine." *The Guardian*, 31 August 2019, www.theguardian.com/business/2019/aug/31/queensland-extinguishes-native-title-over-indigenous-land-to-make-way-for-adani-coalmine. Accessed 31 August 2019.

¹⁴ The “convict stain” is common phrase identifying the shame that some Australians have regarding their convict past.

¹⁵ Linklater, Andro. *Owning the Earth: the Transforming History of Land Ownership*. P239

effectively obliterating fifty thousand years of occupancy by about a half-million Aboriginal Australians.¹⁶

So, despite the fact that the founding document for South Australia – known as the Proclamation – included rights and protections for Aboriginal people that other states in Australia did not, the sovereignty of Aboriginal people in South Australia had already been voided.¹⁷ As Robert Foster and Amanda Nettlebeck argue, the Colonial Office’s inclusion of language about the presence of Aboriginal peoples was intended to minimise violence between the settlers and Aboriginal people that had occurred in each of the other Australian states. However, despite these intentions and the persistent reputation that South Australia was a peaceful and inclusive state, violence was widespread.

Wars were fought, but these were wars that could not generally be openly acknowledged. The inherent tension between Aboriginal people’s nominal status as subjects of the Crown and the lived experience of violent dispossession shaped the way frontier conflict was reported and remembered.¹⁸

Terra nullius had been declared in Sydney in 1835, but as the language of the South Australian Proclamation evidences, the ambiguity around the status of Aboriginal people was widespread in the still-forming nation. Different regions of Australia experienced the effects of the totalising proclamation of terra nullius in disproportionate scales, at varying levels of acuity, and within different timelines. The common denominator, however, was the very real deadly violence and disproportionate harm on Aboriginal lives and communities whether within the terra nullius of New South Wales or in the recognition of South Australia. This is confirmed by the continent-wide elongated period of state-sanctioned deadly conflict between Aboriginal peoples and the British settlers known as the Frontier Wars. The Frontier Wars were never officially declared – nor did they ever officially end – but historians

¹⁶ Linklater 239-240.

¹⁷ Foster, Robert and Amanda Nettlebeck. *Out of the Silence: The History and Memory of South Australia’s Frontier Wars*. Wakefield Press, 2012, p. 2.

¹⁸ Foster and Nettlebeck 8.

agree that they spanned over one hundred years, from the invasion in 1788, well into the twentieth century. As the colonial continent slowly evolved into distinct states and territories, legal relationships between white settlers and traditional Indigenous owners varied greatly from territory to territory and this ambiguity contributed to the escalation of violence towards Aboriginal people.

The Frontier Wars remained largely undocumented and invisible in the eyes of average Australians until the 1970s when a small group of popular writers and historians began to research and uncover the extent of the damage caused by the declarations of terra nullius. A speech by historian Geoffrey Blainey in which he categorised Australian history as either “black armband” – focusing too closely on violence and guilt – or “three cheers” – focusing wholly on achievements of Europeans. This distinction, made as a simple comparison, became common lexicon and sparked intense debate about the nation’s colonial history, creating a simplistic either/or relationship within the argument. As knowledge of the Frontier Wars increases thanks to new research and scholarship, so does the response that none of this ever happened. Regardless, the Frontier Wars persist to this day in the form of fluid native title (as in the Adani Mine case), disproportionate Aboriginal incarceration rates¹⁹, decreased life expectancy²⁰, and continued lack of representation in the national constitution.

This concerted effort by certain people to not see or to acknowledge the deadly conflicts that are at the foundation of Australia rely on a few basic myths from 1788 about the status of the land and the people that inhabited it. Recent scholarship is beginning to detail the sophistication of the Aboriginal population prior to invasion, effectively undoing two centuries of strategic misinformation that the Australian Indigenous peoples were few in numbers and solely nomadic hunter-gatherers. In fact, as Bruce Pascoe, Bill Gammage, and others have recently proven, Indigenous peoples

¹⁹ Recent data places the Aboriginal and Torres Strait Islander population at 2% but 28% of the prison population. And the rates are rising. Russell, Sophie and Chris Cunneen. “As Indigenous incarceration rates keep rising, justice reinvestment offers a solution.” *The Conversation*, 10 December 2018, theconversation.com/as-indigenous-incarceration-rates-keep-rising-justice-reinvestment-offers-a-solution-107610. Accessed 1 September 2019.

²⁰ The Australian Bureau of Statistics published that the life expectancy for an Aboriginal male is over eight years lower than for a non-indigenous male. The difference jumps to almost fourteen years when comparing males living in “remote or very remote” locations.

in Australia had developed complex systems of agriculture, land management, livestock cultivation, baking, architecture, and economics. Terra nullius, in addition to the primary goal of dispossession, also necessitated the erasure of culture, language, and modes of living.

Negotiations and compromise continued until in July and August 1834 the Act establishing the Province of South Australia passed both Houses of the British Parliament. The preamble to the Act declared all the lands of the colony ‘waste and unoccupied’. There was not a single reference to the significant Aboriginal population Sturt had observed just a few years before.²¹

Noted author and Bunurong, Tasmanian, and Yuin man Bruce Pascoe sparked widespread interest in the colonial blind spots and their legacies on knowledge about pre-colonial Aboriginal food production, agriculture, and innovation. In *Dark Emu*, Pascoe uses a close reading of the diaries and observations of colonial “explorers” to uncover the truths hidden in plain sight. He recounts the damage inflicted on Aboriginal people as “colonial Australia sought to forget the advanced nature of the Aboriginal society and economy”.²² He begins his chapter on Aboriginal agriculture by co-opting the guidelines of colonial Europe:

When Europeans began their classification of eras and the peoples of the world, they decided that five activities signified the development of agriculture: selection of seed, preparation of the soil, harvesting of the crop, storage of the surpluses, and erecting permanent housing for large populations.²³

Then, using evidence within the journals and field notes of well-known Australian “explorers”, proves that each of these conditions existed in Australia prior to 1788. His references include Charles Sturt, whose early nineteenth century expeditions into regions that would become South Australia factored heavily in the formation of the state. Earlier in his career, Sturt demonstrated his inability to

²¹ Foster and Nettlebeck 15.

²² Pascoe, Bruce. *Dark Emu: Aboriginal Australia and the Birth of Agriculture*. Scribe Us, 2018.

²³ Pascoe 2.

acknowledge the sovereignty of Aboriginal people. In 1830 he set out to find the mouth of the Murray River, leading him to area that would become Adelaide, the state capital of South Australia. Along the way he encountered significant populations of Aboriginal people and wrote about them in his journals. However, as Foster and Nettlebeck note in *Out of the Silence: The History and Memory of South Australia's Frontier Wars*, Sturt could not see.

Yet despite the extensive Aboriginal population, and the hospitality of his hosts, Sturt never saw them or wrote about them as the owners of the country thought which he travelled. What he saw, inches mind's eye, was a patchwork of nearly cultivated fields, wisps of smoke rising from scattered farm-houses, vessels plying their trade along the river, and church spires in the distance.²⁴

One of Sturt's final expeditions²⁵ took him within kilometres of the future site of Woomera Village to a location north of the vast Lake Torrens, one of the many salt lakes in the region.²⁶ Here Sturt found a large fresh water well, a "village consisting of nineteen huts" [FIG. 11], and grinding stones.²⁷ Pascoe notes that this infrastructure, located deep in the interior of the continent, proved that Aboriginal people were living on and using the land in an organised and sophisticated manner.²⁸

²⁴ Foster and Nettlebeck 14.

²⁵ MMA #1.1.018-024

²⁶ MMA #1.1.017

²⁷ Sturt, Charles. *Narrative of an Expedition into Central Australia*. T & W Boone, 1849.

²⁸ Research is also advancing knowledge about the architecture of Aboriginal communities, specifically in the work being conducted by the Aboriginal Environments Research Centre in the School of Geography, Planning, and Architecture at the University of Queensland. *Gunyah, Goondie & Wurley: The Aboriginal Architecture of Australia* by Paul Memmott has begun the conversation about the architecture of pre-colonial Aboriginal communities.



[FIG. 11] *Native Village in the Northern Interior* from Sturt, Captain Charles. *Narrative of an Expedition into Central Australia*. T. and W. Boone, 1849.

Sturt's observations about the scale of Aboriginal infrastructure and technology illustrates that the land in and around Maralinga had experienced a variety of different types of occupation and that each new overlay of inhabitation brought its own technologies and modes of living. However, each shared at least one common trait: an inability to see the evidence of the previous. Colonial declarations of terra nullius justified the desire of eighteenth-century settler colonists for complete control of the continent, without the annoyance of having to negotiate or compromise with the existing Indigenous peoples, customs, or cultures. Opportunistic would-be pastoralists ignored the evidence of inhabitation and the intelligence of Aboriginal modes of living in the semi-arid climate and were doomed to fail. Twentieth century Cold War nuclear colonists saw empty land of no value, giving them the permission to wreak unimaginable destruction.

The Australian urge to deny the horrors of its colonial past permeates all corners of the continent. Maralinga is no exception. In fact, the persistent avoidance of the obvious truths of colonial violence was a foundational bedrock upon which Woomera and Maralinga were built. The irony, of course, is that twentieth-century Australia allowed the British in 1947 to (re)claim land for the crown to build vast weapons testing ranges only a few decades after successfully uniting under a federal government in 1901. I'm not suggesting that the Australian government's compliance with the British in 1947 is equal to the violence inflicted on Aboriginal people by the settler colonialists from 1788 until today, but the creation of the Woomera Rocket Range was unquestionably a significant act of neo-colonial dominance. While acknowledging that Australia in 1947 was still very much a compliant commonwealth subject, it is nonetheless important to address the fact that Australia offered little resistance to the request for the surrendering of over 200,000 square kilometres of sovereign land. For this to occur, for it to be palatable to the government but also to the Australian people, bears witness to the pervasive lack of respect or acknowledgment of the brutal legacy of terra nullius, particularly on Indigenous peoples and cultures.²⁹ Even in 1947, the land was still seen through the eyes of British

²⁹ The debates around the Frontier Wars, referenced above, have also been described as *history wars*. See: Hughes, Robert. *The Fatal Shore: The Epic of Australia's Founding*. 1st Vintage Books ed edition, Vintage Books, 1988.; Reynolds, Henry. *The Other Side of the Frontier: Aboriginal Resistance to the European Invasion of Australia*. New

colonial terra nullius. Its value was determined by its perceived emptiness and its lack of cultural value as it was determined in relation to a population of people that had been classified as essentially sub-human, primitive, and expendable.

This is terra nullius, or as Karen Barad has offered, the “void – a much-valued colonialist apparatus, a crafty and insidious imaginary”³⁰. An imaginary based in the arrogance to assume the void and to bring destruction and contamination via nuclear radiation at Maralinga. Terra nullius was metastasised and projected into untold future generations. Terra nullius is a common thread in Australian discourse, but primarily in discussions of the past, of settler colonialism. The nuclear bombs, however, created a new – and quite literal – terra nullius. The destruction wrought by the nuclear detonations and by the introduction of highly radioactive elements into the landscape reinforced the colonial maps’ designation of “No man’s land”. Maralinga became a tangible, unseen, and timeless void written in the radioactive materials interred at the site and in the media archive surrounding its operation and competing historiographies.

The declaration of terra nullius, repeated through official government policy and by informal settler actions, paved the way for the land to be reclaimed by the original colonialists, to be exploited without explanation or limit, and to be abandoned in a conspicuously radiated state without consequence. Terra nullius created a condition of deliberate, purposeful, and voluntary blind spots. These blind spots negated the production of politics, effectively forbidding the creation of an atmosphere of common ground.

Ed edition, UNSW Press, 2006.; Macintyre, Stuart, et al. *The History Wars*. 2nd edition, Melbourne University Publishing, 2004.

³⁰ Barad, Karen. “NO SMALL MATTER: MUSHROOM CLOUDS, ECOLOGIES OF NOTHINGNESS, AND STRANGE TOPOLOGIES OF SPACETIMEMATTERING.” *Arts of Living on a Damaged Planet: Ghosts and Monsters of the Anthropocene*, edited by Anna Tsing et al., University of Minnesota Press, MINNEAPOLIS; LONDON, 2017, pp. 103–120. *JSTOR*, www.jstor.org/stable/10.5749/j.ctt1qft070.10.

1.2: WHAT IS VISIBLE?



[FW1.1] Burns, David. *Maralinga Road I*. 2018.

In some respects, Australia denies itself sovereignty, for it's the most foreign-owned of any developed country. So what does "land rights" really mean? Who really owns Australia?³¹

Only a few of the roads we're³² on have signs, some don't have official names, and regardless, Google Maps won't work out here anyway. There's only a few places to stop on the Nullarbor Plain between Ceduna and our first turn-off. There's a roadhouse or two that are surprisingly modern and packed with *grey nomads*³³ and an Aboriginal community called Scotdesco that draws in the tourists with a Big Thing (a wombat)³⁴. The directions we were given by the Maralinga Tjarutja instruct us to call from Nundroo; the last chance to use a mobile phone until the Trans-Australian railway. Nundroo is a couple of semi-connected buildings with a roadhouse, a bar (now closed), and a few rooms for hire. For the first time on our trip, Aboriginal people outnumber the white. Kids run around laughing and yelling out to each other in language peppered with English. We call Robin, the current caretaker of Maralinga, and he sounds exactly like I imagined: a deep Australian drawl, gruff, yet friendly. He says we're close; he'll see us in a few hours.

³¹ Pilger, John. "The Secret Country: The First Australians Fight Back". *Vimeo*, uploaded by John Pilger, 18 November 2010, <https://vimeo.com/16961683>.

³² I was accompanied in all of my fieldwork by my partner Kenzie Larsen. She was an invaluable source of intellectual and creative inspiration.

³³ "Grey nomad" is the nickname given to recently retired Australians traveling the country in expensive, overly outfitted off road vehicles, often towing elaborate camping gear. During our fieldwork in Maralinga in April / May 2018, we were regularly the only non-grey nomad travellers on the road or at the nuclear sites.

³⁴ Rural Australia is dotted with so-called *Big Things*, oversized representations of animals, food, or other objects, often rendered in plaster and situated at roadhouses or other tourist stops only the highway.



[FW 1.2] Burns, David. *Iluka Mine Road I*. 2018.



[FW 1.3] Burns, David. *Iluka Mine Road II*. 2018.

Our first turn is unmarked, unnamed, and doesn't appear on any maps. This is confusing as the new road is in much better condition than the road we were just on, and that road is legendary. We had been driving on the Eyre Highway, the first road to connect South Australia to the west. It originated as a by-product during the construction of the East-West Telegraph in the 1870s. A trail developed alongside the telegraph lines, informally connecting the more populated east with the frontier of the west. Eyre Highway as a formal road was not completed until 1942, and even then, it was still little more than a dirt track. In Part 2 I will explain the scale of the construction work in Maralinga in the 1950s, but in short, it was shocking. As we turn onto this new, unmarked, and unmapped road, it strikes me that well into the 21st century, it's still possible to build significant infrastructure in the Australian bush in relative secrecy. The dark flat bitumen of the new road has perfect hard shoulders and brightly painted centre lines [FW 1.2]. Soon after we turn, we see a road train – a single truck with multiple trailers – parked on a well-maintained side road. The driver smiles and waves.

We drive for an hour and see no one else. No grey nomads, no cars. We begin wondering aloud, *why is this road here?* In the distance, the reason for the new road becomes clear: the Iluka Mine.³⁵ The road is likely semi-private, or possibly wholly subsidised by the mine. Weeks later, in the trove of photographs provided by Robin that will augment my Media Appendix, I find historic photos of the drive from Ceduna to Maralinga.³⁶ The road that we're on now was recently red-sand, not dissimilar to most of the other roads in the area. The Iluka mineral sand mine is the largest source of zircon on earth and judging by the quality of this road, very profitable. Mining is the foundation of the Australian economy and the pressure is on to privatise the Woomera Prohibited Area and to open it for mineral extraction.³⁷ The Iluka Mine sits just below the southern border of the current extents of the Woomera Prohibited Area, but other mines have already surfaced within the boundary.

³⁵ MMA #1.2.001

³⁶ MMA #1.2.003-006

³⁷ When the Maralinga Tjarutja were first granted limited control of their lands in 1984 with the Maralinga Tjarutja Land Rights Act, one of the key components of the new organisation was their position towards mining. Since then over thirty initiatives have been approved and have commenced on their lands.

The laying of thousands of kilometres of sealed bitumen road in Maralinga³⁸ is even more astounding when considering that the major roadways crossing the continent –were unsealed, sandy roads in 1955. Highway 1, which includes the Eyre Highway, connects the continent east to west, while the Stuart Highway bifurcates the continent from south to north. Highway 1 wasn't fully sealed until the 1970s and the Stuart Highway, also known as *The Track*, wasn't completed until the 1980s. When Maralinga was established in 1953, nearby Ceduna had no sealed roads at all. Not only was Maralinga years ahead in science, it also possessed the most modern civic infrastructure in South Australia aside from Adelaide. This fact is made more incredible with the knowledge that this expansive contemporary infrastructure was invisible and unusable to the Australian public.

The landscape has begun to change but driving at 130kmph on the smooth mining road, it is difficult to notice. The next direction on the map warns us that the road we're currently on is the end of the bitumen with only red sand roads ahead. There's a sign this time. [FW 1.4] It's obviously new and proudly directs us west to Maralinga. We pull off, the hot bitumen immediately giving way to soft, shifting red sand. We cross a dry riverbed and before us is a straight red line carved into the bush. [FW 1.5] I think of surveyor Len Beadell, perched in the distance, reflecting the sun at us with a pocket mirror, as we bulldoze scrub and expose the red sand underneath. Like him, we carry our colonial privilege conspicuously; he with the mandate from the governments of Australia and Great Britain to build his roads anywhere he saw fit, us in our contemporary SUV with air conditioning blasting. [FW 1.6]

³⁸ Robin Matthews told me that the British sealed over 2,500km of new roads in the construction of Maralinga and Emu Field, but I have yet to find confirmation of this observation. Much of the British road infrastructure was repaired, in some case completely reconstructed, during the Australian remediation process in the 1990s. Other roads were removed and buried due to contamination or destroyed in the explosions. Taranaki was the farthest north that I was permitted to travel, but the grid of British paths and roads continues at least 40km past there, and East Street continues 150km to Emu Field. All told, it is possible that the 2,500km claim is correct,.



[FW1.4] Burns, David. *To Maralinga and Oak Valley*. 2018.



[FW1.5] Burns, David. *Maralinga Road II*. 2018.



[FW1.6] Burns, David. *Maralinga Road Salt Bush*. 2018.



[FW1.7] Burns, David. *Red Lake*. 2018

I'm shaken from this distraction by deep washboarding, or corrugations in the sandy road. The road is now a continuous surface of sandy ribs that pound the truck as we leave a very conspicuous cloud of disturbed earth. We lumber along until unexpectedly there's a truck coming our way. He blasts past us at 100kmph, the sunburnt driver completely ignoring us despite the fact we're the only other humans in sight. Feeling inspired I accelerate, discovering the best method to navigate the corrugations is to surf across them at speed. These revelations arrive regularly and often.

We continue driving, roughly towards the northwest, the landscape seems to change at every slight rise. Are we imagining this? The bush, so famed for being relentless in its monotony, is proving to be rich and diverse. Our colonial presumptions are already front and centre. One presumption – the lack of regular human presence – is hard to shake. As we drive, it's hard not to feel absolutely alone. The general flatness of the terrain means we can see for kilometres, and there's no one there. We know this land is occupied and has been occupied for thousands of years, but we can't ignore the feeling. We top the next rise and onto another new terrain. This time a blood red, dry riverbed extending at least 500m [FW1.7].

Our phones suddenly jump back to life, signalling that the railway is ahead. In 1917, settler Australia achieved something few thought possible: an east-west transcontinental railway. Urged on by the 1901 federation of Australia, the construction of the railway connected the state of Western Australia to the east. A feat that previously was only possible via a treacherous ship voyage through the rough waters of the Australian Bight or an almost impossible drive on an unsealed road. When it was completed at the beginning of the 20th century, the Trans-Australian Railway finally connected Western Australia to the cities and markets in the east. It fuelled the expansion west into the ore-rich lands that are now amongst the wealthiest places in earth. The Trans-Australian Railway was also a primary infrastructural feature for the British as they began to outfit Maralinga. The bulk of the construction materials that arrived in Maralinga were either flown in or delivered via rail.



[FW 1.8] Burns, David. *The longest stretch of straight track in the world*. 2018.

Our intersection with the railway is much less rich. A truck is parked on the side of the road for the mobile data or perhaps an impromptu lunch. The tower is conspicuous as the only piece of modern infrastructure for kilometres. It rises well above everything else and is planted next to an immaculately maintained set of perfectly straight rail. In fact, we're sitting near the beginning of the longest continuous stretch of straight track in the world. The 478km length begins in nearby Ooldea – a traditional Southern Pitjantjatjara home and one of the landmarks that Tietkens mentions in his diary – and ends in Loongana, Western Australia. The laser straight rail cutting its way through the bush, nothing allowed to divert it, nothing permitted to alter its way. [FW 1.8]

After another hour or two on the washboarding, we mount another bitumen road that is much older than anything we've seen thus far. The edges are worn and the two lanes couldn't support modern traffic. Potholes have eaten deep craters in the surface and it's warped from decades of heat and sun. I realise we're on a road that I've studied from above since the beginning of this research. It's a road that I have drawn over and over by tracing screenshots of satellite images and recomposing them into new maps. [FIG. 3] This road is British and is perhaps one of the oldest sealed roads around. It leads directly to Maralinga [FW 1.9]. If we had turned south instead of north, the road would have taken us to Watson, home to an abandoned railway village and rock quarries. Watson was the source for much of the raw materials that facilitated the construction of the roads we're driving on, the Maralinga airfield, and eventually the rubble that helped bury the radioactive waste.

We're ascending slowly, the old British road pulling us up from the ancient seabed of the Nullarbor Plain to the deep sand of the Ooldea Range and Maralinga. Our drive ends with radiation warning signs and a chain link fence [FW 1.10]. Robin is waiting on the other side. The fence is a formality long past its necessity – it only extends about 20 meters either way from the gate [FW 1.12] – no one is trying to break into Maralinga anymore and the Maralinga Tjarutja people want little to do with it. We stop nonetheless, out of respect for the new (old) custodians of this highly mediated land. This is now (or is once again) Maralinga Tjarutja land.



[FW1.9] Burns, David. *British Road*. 2018.



[FW1.10] Burns, David. *Maralinga Gate*. 2018.



[FW 1.11] Burns, David. *Maralinga Gate Spinifex*. 2018.

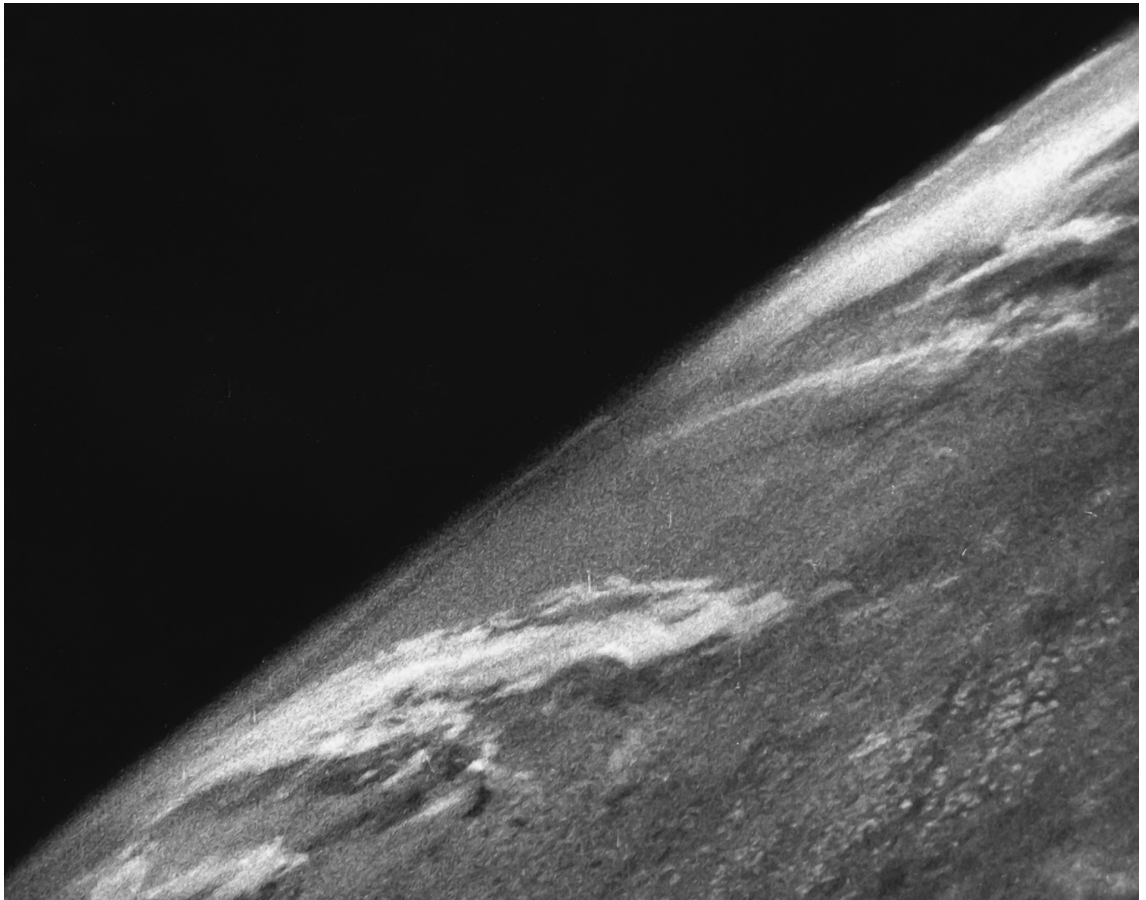


[FW 1.12] Burns, David. *End of the Gate Fence*. 2018.



[FW 1.13] Burns, David. *Maralinga Gate Fence*. 2018.

1.3: THE ORIGINS OF MARALINGA



[FIG. 12] The first photograph from space, White Sands Missile Range (Applied Physics Laboratory)

War fighting became ever more deeply invested in image and information technologies and in which the borders between the civilian and the military, the domestic and the international, became more and more blurred.³⁹

On 24 October 1946, just a few months before the establishment of the Woomera Rocket Range, a German V-2 rocket was launched from the White Sands Missile Range in the United States. It was one year and about seventy miles from the site of the world's first atomic weapon test at Trinity, New Mexico. The rocket, scavenged from the remains of Nazi Germany and codenamed V-2 No. 13, wasn't carrying a warhead, but instead a DeVry 35mm motion picture camera⁴⁰, known by its nickname, "the lunchbox". The flight was short. After reaching an altitude of approximately 100km – the border of the upper atmosphere and the lower limits of what is considered *space* – the rocket plummeted back to the New Mexico desert. The rocket was destroyed but the film survived. Once processed, it revealed the first ever photographs of the Earth taken from space.

The twentieth century witnessed a sharp increase in the alignment of military technologies and the optical means by which they are documented, or indeed facilitated. Or as Paul Virilio notes in *War and Cinema*, "... the function of the weapon is the function of the eye."⁴¹ Although seemingly contradictory in nature, weaponry and photography occupied similar trajectories during the Cold War. As military technologies and the expanding initiatives for space exploration and domination achieved advancements that were previously unimaginable, priorities began to shift towards commensurate optical technologies to document them. Soon military and space missions included highly advanced photographic and optical accompaniments.

In this section, I will explore these relationships, specifically in relation to the push to develop rocket technology to counter the invention of the German V-2 and the international race to build and test nuclear arms. These initiatives – specifically by the British and American governments, but also happening in Soviet Union, France, etc. – had profound effects on Australia and in particular, Woomera and Maralinga.

³⁹ Kurgan, Laura. *Close Up at a Distance: Mapping, Technology, and Politics*. MIT Press, 2013, p. 11.

⁴⁰ MMA #1.3.002-006

⁴¹ Virilio, Paul. *War and Cinema: The Logistics of Perception*. Verso, 1989. p. 10.

The optical politics of international, military-industrial research and testing directly affected the ways in which post-war Australia understood itself and its colonial relationship with Britain, contributing to the conditions by which Woomera would come into existence. As established in the first section of this chapter, the denial of visibility of Aboriginal civilisation on the Australian continent had already rendered the land to be unowned, unoccupied, and available. The story begins with the testing of scavenged V-2 rockets in the American desert, but quickly moves to central Australia and the search for sites to test new British rockets and nuclear weapons.



Just a few years prior to the tests at White Sands, the emergence of the V-2 rocket had contributed to a reorganisation of the world's political landscape. Falling silently from the skies over London, the V-2 created equal amounts of physical destruction and abstract terror. The V-2 was the world's first long range ballistic missile and was introduced in the final year of World War II. It wasn't developed to win the war; it wasn't meant to reverse the impending Nazi defeat. The V-2 rocket, officially known as the Retribution 2, was deployed solely to create fear. In twelve short months of use, the V-2 caused the death of thousands of Allied soldiers and citizens.

As the war neared its end, both the East and West began an urgent and secret collection of German V-2 rockets and the scientists that helped to develop them. The United States called this "Operation Paperclip". Wernher von Braun, the German scientist responsible for the development of the original V-2, soon found himself living in Huntsville, Alabama, deep in the rural American south.⁴² His task was to expand the V-2 rocket research into a new generation of American rockets and

⁴² MMA #1.3.014-16

weapons. The project was codenamed “Redstone”⁴³ after the deep red clay of northern Alabama.⁴⁴



[FW1.14] Burns. David. *Redstone*. 2018.

⁴³ The name Redstone would later achieve heroic status in Woomera. Following several tests by the Americans using Redstone rockets, a single rocket was left over. The Americans had no need for the older technology, so the rocket was donated to Australia for their fledgling satellite program, with the stipulation that it must be used within a short time span. On 29 November 1967, the Australians launched the WRESAT satellite (Weapons Research Establishment Satellite) into orbit with the help of the American Redstone. Today, the history of the Redstone lives on. While conducting fieldwork in Woomera, we stayed in a former military barracks building with the name Redstone [FW1.14].

⁴⁴ MMA #1.3.017

Returning to 1946 New Mexico, the launch of V-2 No. 13 was one of many experiments the American military was conducting on and with the German rockets. Dozens of repurposed V-2 rockets were being launched into the desert sky in a variety of scenarios. Some rockets were loaded with instruments, others with warheads.⁴⁵ Starting with V-2 No.13, the rockets were also equipped with a camera, an auxiliary optical device to assist the scientists in recording the trajectory and bearing of the flight. The camera was modified and fitted to the rocket by Clyde Holliday, principal staff engineer at Johns Hopkins University Applied Physics Laboratory.⁴⁶ Holliday had aesthetic and visual interests in the V-2 tests even if the official mission did not.

Holliday's camera had no ability to choose its intended subject, alter its exposure or focus, or indeed manoeuvre in any way. The shutter snapped a new frame every 1.5 seconds, and when the frames were collated in succession, they constituted a crude film of the short flight with its speed exaggerated by the low frame rate.⁴⁷ The scientists at White Sands had purely diagnostic intentions for the resulting photographs. Once released to the public, however, these grainy black and white photographs of the American southwest, obscured by clouds and floating in a solid sea of black, became a significant achievement of the V-2 tests and provided the world with its first glimpse of the Earth from space, an unintended poetic result from a violent series of tests.⁴⁸

For this research, we can view the V-2 No.13 photograph as an opening salvo in an upcoming optical race – an international initiative for higher resolution and more compelling images of the Earth and beyond. Running in parallel to and imbedded within the competition to conquer the Moon and to harness the destructive power of the atom, this optical race would similarly unite and divide countries, would provide evidence to prove and disprove achievements, and would contribute to military and science decision making. Existing optical technologies from television and motion

⁴⁵ www.airspacemag.com/space/the-first-photo-from-space-13721411/

⁴⁶ "Clyde T. Holliday, 70; Filmed Earth Features." *New York Times*, 26 June 1982, <https://www.nytimes.com/1982/06/26/obituaries/clyde-t-holliday-70-filmed-earth-features.html>. Accessed 1 February 2019.

MMA #1.3.001

⁴⁷ MMA #1.3.009

⁴⁸ Reichhardt, Tony. "First Photo From Space." *Air & Space*, <https://www.airspacemag.com/space/the-first-photo-from-space-13721411/>. Accessed 2 April 2019.

picture industries would be modified and reimagined. New optical and sense detection technologies would become a priority for governments as they fought to establish themselves in the new Cold War landscape. John Noble Wilford, the primary New York Times reporter covering the Apollo missions, remarked that perhaps the most significant achievement of the Moon landing was the fact that it was a shared experience thanks to the advances in optical and communications technologies:

In just 1.3 seconds, the time it takes for radio waves to travel the 238,000 miles from Moon to Earth, each step by Armstrong and Aldrin is seen, and their voices heard, throughout the world they have for the time being left behind. In contrast to exploration's previous landfalls, the whole world shares in this moment.⁴⁹

The V-2 No. 13 photograph was an afterthought. A by-product of military research that inadvertently gave an inspirational public face to the otherwise highly secretive work being done in space and weapons research. And yet, despite the fact that V-2 No. 13 had no warhead and no military target, the result of its launch in October 1946 was no less destructive. My research has shown that photographic and optical technologies like these would contribute to the decision-making process that led to the identification and destruction of landscapes around the globe. Nuclear sites such as Trinity, Bikini Atoll, Christmas Island, and Maralinga, were sought out for their clear sightlines and their cloudless skies. And as I have established in Australia, these decisions were aided by colonial declarations of *terra nullius*, smoothing the way to easily displace and destroy Indigenous populations and cultures. The V-2 No. 13 photograph of the Earth can be understood as the beginning of a new *politics of visibility* that was equally revelatory and horrific. A political imaginary that provided a uniquely poetic understanding of the Earth, while enabling the political structures for the creation of nuclear colonial sites such as Maralinga.

⁴⁹ Wilford, John Noble. "On Hand for Space History as Superpowers Spar". New York Times, 13 July 2009. Accessed July 2019 www.nytimes.com/2009/07/14/science/space/14mission.html

1.3.1: THE ESTABLISHMENT OF WOOMERA



[FIG. 13] Original extents of the Woomera Rocket Range, an area encompassing more than 270,00km² (David Burns, 2018)



[FIG. 14] Current Woomera patch (Australian Defence Force)

The nuclear story in South Australia begins in 1947 with the establishment of the Anglo-Australian Joint Project. This formal alignment between Great Britain and Australia would pave the way for the creation of what would become known as the Woomera Rocket Range⁵⁰ – a combined defence initiative of the Australian and British governments to research long-range weaponry. From 1947-1980⁵¹, the range served as a secret outpost for the West’s war apparatus and featured two essential spatial characteristics required in the growing Cold War and Space Race: remoteness and scale. At the height of its operation it encapsulated more than 270,000 square kilometres – an area greater than the United Kingdom [FIG. 13]. This nation within a nation was, and remains today, restricted land.

The range has been called many different names through the decades: the Woomera Rocket Range, the Woomera Test Facility, the RAAF Woomera Test Range and today the RAAF Woomera Range Complex. The only commonality is the Aboriginal Dharug word *woomera* which is a traditional Aboriginal wooden device used to aid the throwing of a spear. A woomera itself is not a weapon, it is a prosthesis

⁵⁰ A complete map of the contemporary extents of the Woomera Prohibited Area are included in the archive. MMA #1.3.013

⁵¹ While 1980 marked the end of the range as a fully functioning entity, it still exists today; primarily for domestic use and private hire.

to the human arm to make the weapon more effective, more accurate, and deadlier. Historic examples, and counterfeit replicas, of woomeras appear in every gift store, military museum, and document about the now infamous Cold War outpost.

In fact, the contemporary ephemera for the base – including the patch above that is still in use and for sale through the Australian Defence Force – features the slogan, “SHARPEN THE SPEAR” [FIG. 14]. This is presumably a reference to the word woomera, mistaking the tool for the spear that it propelled and perpetuating the misunderstanding about the Aboriginal words that are so prevalent in the Woomera complex.

Recognisable and prevalent Aboriginal objects like the woomera, boomerang, and digeridoo are authentic artefacts of Aboriginal culture and are still used in contemporary Aboriginal ceremonies, art, and culture. However, they are also emblematic of the historical and contemporary phenomena of cultural destruction through the practice of cultural appropriation and the removal of objects and even human remains to be placed in international museum collections. Perhaps the most infamous is the Gweagal Shield, mentioned earlier in this chapter. This object, displayed permanently at the British Museum, can be understood as the first item stolen in a heist that would claim countless Aboriginal items, hundreds of thousands of Aboriginal lives, and ultimately an entire continent. The removal of Aboriginal artefacts and human remains are conspicuous acts of vandalism that leave material trace in museums and archives. Other forms of violence against Aboriginal cultures are more subtle. The adoption, and confusion, of Aboriginal language abounds in white Australia, but is especially present in Woomera and Woomera Village. In fact, *woomera* is a word in the Dharug language, traditionally spoken by Aboriginal peoples in and around Sydney, almost two thousand kilometres from Woomera. In the local language, spoke by the Kokatha people, the same tool is called *miru*.⁵²

This obsession with Aboriginal words should not be confused with genuine respect or admiration for Indigenous peoples or cultures. While the creation of

⁵² Additional dubious usage of appropriated Aboriginal terminology includes the *Jindivik* unmanned aircraft which translates as “the hunted one”, the *Pika* aircraft (flier), the *Karinga* cluster bomb (today), and the Joint Defence Facility *Nurrungar* (to listen). This etymology was included in historic literature at the Woomera Heritage and Visitor Information Centre that I collected in person in April 2018.

Woomera marked a new mutation of Anglo-Australian colonialism, the victims remained the same. The extents of the range overlapped or entirely overtook traditional Aboriginal communities and newly created reserves. And despite well-organised opposition and protestations to the British reclamation of these lands, there was little concern among the militaries or governments of the U.K. or Australia.

These documented examples of institutional racism and structural violence were not simply cultural, they were deliberate weapons used to secure the extraordinary expanse of land required by the British for the weapons range. A key component of the siting of Woomera was a feature no other country could hope to offer. The British military demanded a clear testing trajectory of 1500km of land – rumoured to have been decided because of the distance between London to Moscow – and an additional 2500km at sea. The political brashness of drawing a line at such an abstracted scale could only have occurred in the frenzy of nuclear colonialism of the mid twentieth century. Despite the enormity of the action, this line was drawn. It began 150km north of Port Augusta, the closest source of fresh water to Woomera and an important direct access to the sea. Extending northwest through the western half of South Australia, it then bisected the entire state of Western Australia and continued deep into the Indian Ocean and eventually over Christmas Island.⁵³

They thought enthusiastically in fantastic distance, surely not comprehending how great the distances were, nor how dismaying the future of their rocketry was to be.⁵⁴

The 4000km firing line, hastily scratched onto a map with the assistance of Australian surveyor Len Beadell, would alter Australian politics for decades to come by establishing a contemporary precedent for the widespread reclamation of land and air space by foreign interests. Additionally, it contributed to the further disruption and destruction of Indigenous lives and cultures. Many Aboriginal communities along this trajectory had little or no contact with white people prior to the establishment of Woomera. Finally, the Woomera firing line provided a conceptual challenge to the

⁵³ Christmas Island is itself a notorious site. It was the locus of the so-called “Tampa affair” in 2001, an event that led to the establishment of Australia’s *Pacific Solution* and contemporary policies of offshore detention.

⁵⁴ Southall, Ivan. *Woomera*. Angus and Robertson, 1962, p. 19.

Australian government's understanding of their own sovereignty. In the decades following the initial establishment of Woomera, the precedent of the line would factor into the establishment of Island Lagoon, Nurrungar, and Pine Gap; institutions that directly affected the stability of the Australian government.

Perhaps unsurprisingly, transcontinental vectors are not unusual in Australia [FIG. 15]. *The Dingo Fence*, built in the late nineteenth century and completed in 1885, spans a staggering 5614 kilometres. It begins at the Australian Bight in South Australia and winds its way across the width of the state and into Queensland. *The Rabbit Proof Fence*, completed in 1907, bisects the state of Western Australia from the south to the north in an uninterrupted run of 1833km. The Trans-Australian Railway connects Kalgoorlie in Western Australia and Port August, South Australia, near Woomera Village. Its total distance is 1692 kilometres and includes the world's longest stretch of perfectly straight track: 478 kilometres in total. Combined with the Eastern Goldfields Railway in Western Australia and the Western and Broken Hill lines in New South Wales and South Australia, it crosses the continent for a total of 4,352km. Its north-south corollary is the Adelaide-Darwin Railway that features 2979km of track and was completed in 2004. So, while unimaginable today, the decision to create a 4000km missile path across a continent and deep into the ocean was not so radical in the imaginary of twentieth century Australia.⁵⁵

⁵⁵ The Woomera firing line also has a violent precursor in the so-called *Black Line* in Tasmania. Conceived and implemented by Governor Arthur in 1830, the Black Line was a physical line comprised of soldiers and civilian volunteers that attempted to collect and push Aboriginal families into a reserve in the southern tip of Tasmania. The effort was unsuccessful thanks to the superior bush knowledge of the Aboriginal people, but ultimately Tasmania's desire to completely remove Aboriginal people from the island was largely successful. Connor, John. *The Australian Frontier Wars 1788-1838*. University of New South Wales Press, 2002, pp. 93-99.



[FIG. 15] Map of Australia including (A) Woomera firing line, the (B) Trans-Australian Railway, the (C) Rabbit-Proof Fence, the (D) Central Australian Railway, and the (E) Dingo Fence (David Burns, 2018)



[FW1.15] Burns, David. *Stuart Highway near Island Lagoon*. 2018.

But something was beneath them in that emptiness. It ran ahead as a thin faint line into the shimmer of invisibility, and it ran astern as the same faint line back into another invisibility. It was the transcontinental railway and it spanned this country, as it had done since 1917.⁵⁶

Located at the beginning of the firing line was a site earmarked for Woomera Village, a new restricted military town to house British, Australian, and later American officials and their families. At its height in the 1960s, Woomera Village boasted a population of over seven thousand residents. Once the Earth station at Island Lagoon and the Joint Defence Facility Nurrungar were up and running, Woomera Village assumed the characteristics of a suburban American town, complete with baseball teams and Independence Day parades.⁵⁷

The scope of Woomera's mission has changed as often as its name. It has hosted scores of sensitive or secret programmes including the ELDO Europa 1 launch⁵⁸, NASA's Deep Space Station 41, and the United States Air Force's Joint Defence Facility Nurrungar. Nurrungar brought thousands of Americans to Woomera in the 1960s to monitor Russian missile launches and conduct surveillance using emerging space technologies. Deep Space Station 41, also known as the Island Lagoon Tracking Station, was integral for the NASA Gemini and Apollo programmes and played a critical role in the first moon landing.⁵⁹ As the Cold War subsided, most of the major facilities were decommissioned and their functions moved to new sites. The restrictions at Woomera, however, remained.⁶⁰

Despite its scale and increasing pressure to privatise, Woomera remained a closed, invisible terrestrial island in the centre of a land that was declared empty by colonial forces. However, as the twentieth century drew to a close, Woomera's self-imposed and cherished geographical exile was breached with a series of well-publicised riots, protests, and jailbreaks. In the 1990s, modifications to the Australian

⁵⁶ Southall, Ivan. *Woomera*. Angus and Robertson, 1962, p. 20.

⁵⁷ The State Library of Australia has a collection of photographs of daily life in Woomera in the 1960s.
MMA #1.3.016-021

Further images of Woomera were collected from various social media groups of veterans stationed in Woomera.
MMA #1.3.030-071

⁵⁸ MMA #1.3.086-095

⁵⁹ These facilities are discussed at length in Part 2.

⁶⁰ The extraterritorial designations evolved as well, most notably with the increasing significance of the Joint Defence Facility Pine Gap, also discussed further in Part 2.

migration policy by the Labor government of Prime Minister Paul Keating created mandatory detention for all people that the government decided had entered the country illegally. The existing Australian detention facilities quickly reached capacity and in 1999 the Woomera Immigration Reception and Processing Centre (WIRPC) was opened just outside Woomera Village.⁶¹ WIRPC began as a 400-person detention facility, but soon housed more than fifteen hundred people. In 2000, hundreds of Australian protesters crashed gates of the swollen detention facility; their collective patience for the mainland territorial detention waning.⁶² While the detention facility closed soon after, the stage was set for the contemporary offshore detention policies begun by Prime Minister John Howard's 2003 doctrine of the Pacific Solution. The territorial isolation and invisibility of Woomera found a new and impossibly more removed corollary in Manus Island and Nauru.

The implications that Woomera had on the nation's migration policy would have been unimaginable when the range was established in 1947. At that time, Woomera was enthusiastically supported by the Australian government as a necessary component in the West's growing Cold War with the Soviet Union. Australia was more than happy to surrender hundreds of thousands of square kilometres of "desert" if it meant that Britain was successful and happy.

⁶¹ MMA #1.3.102-115

⁶² MMA #1.3.104-107



[FIG. 16] Laing, Rosemary. *Welcome to Australia*. 2004, National Gallery of Victoria, Melbourne.



The story of Maralinga is tied directly to the invention of the V-2 rocket and the optical politics that were evidenced by the *first photograph from space*. While the United States was testing V-2 rockets and pioneering space photography, Britain was falling behind. The wartime weapons development agreement with the U.S. had ended due to high-profile cases involving Russian spies infiltrating the British ranks during the Manhattan Project, leading to an accelerated uptick in Russian nuclear weapons developments. Britain found itself alone and in a distant third place in the burgeoning nuclear arms race; full attention to the development of a British atomic weapon began.

The British had a second major problem: once they had designed and built an atomic weapon, where would they test it? The British were no longer welcome at the Nevada Test Site, so the search began to find a new location. Several commonwealth locations were vetted but it became clear that the best (and easiest) option was Australia. Here, two hundred years of enforced colonial terra nullius would ease the introduction of twentieth century nuclear colonialism.

The language used to describe the Australian landscape that would become the Woomera Rocket Range and Maralinga would be very familiar to Australia's original eighteenth century colonisers. Terra nullius was not only alive and well, it had a metastasised during the Cold War. In the problematic 1962 book *Woomera*, Australian author Ivan Southall echoed the sentiment of the British scientists when describing the new British antipodean rocket range:

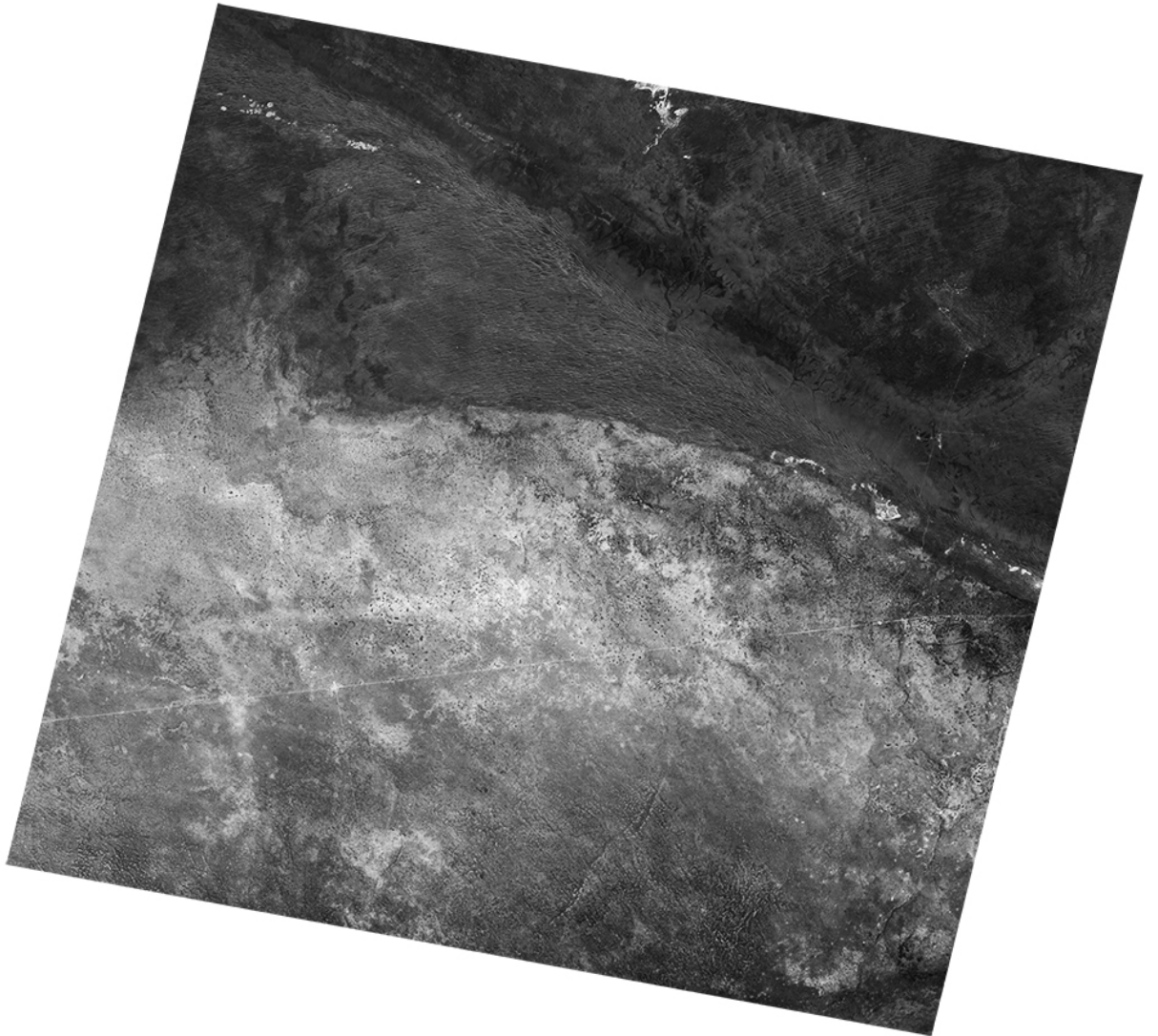
Here it was, one of the greatest stretches of uninhabited wasteland on earth, created by god specifically for rockets, a magnitude of emptiness, all the way from Pimba in the east to the Eighty Mile Beach half a continent away on the far-distant west.⁶³

This overly poetic romanticising of a land that was about to be annihilated is surely a product of the naked reverie Southall had for the British, but its underlying message was that Woomera – and indeed all of the interior of Australia – existed simply to satisfy the destructive urges of white men and there was literally nothing to stand in the way. This opinion existed in Botany Bay in 1770. It was the root of the 1835 proclamation of terra nullius. It bolstered the politicians in 1901 when they created the White Australia Policy. And it was in Woomera, a town of thousands, supported by billions of pounds and dollars, created from nothing for the sole purpose of weaponry and optics. This opinion was equally shared by all: the British who demanded the land from its commonwealth subject, the Australians who agreed, and eventually the Americans that would use the vacuum created by the tests to establish a larger, and ultimately longer lasting presence in Australia.

⁶³ Southall, Ivan. *Woomera*. Australia: Angus and Robertson, 1962, p3.

PART 2: "WAYS OF LOOKING AT THE WORLD"

2.1: A NUCLEAR FUTURES FALSE POSITIVE



[FIG. 17] Landsat, 1990 (original image accessed in 2019, modified by David Burns)

From above, high above, hundreds of kilometres above, Maralinga is stubbornly invisible. The pale, mottled Nullarbor Plain dominates the southwest. The Ooldea Range to the northeast appears disturbed and banded. This land could be anywhere, but probably not Australia. Where is the flat desolation? Where is the empty nothingness? Colonial assumptions confuse the reading of this satellite photograph. Vilém Flusser's *Towards a Philosophy of Photography* may help us to decode. He explains that due to its physical mode of production, the technical image is the "final link in a causal chain"¹ between the world and the image's significance:

This apparently non-symbolic, objective character of technical images leads whoever looks at them to see them not as images but as windows. Observers thus do not believe them as they do their own eyes. Consequently, they do not criticize them as images, but as ways of looking at the world ...²

The satellite image challenges colonial assumptions about how this part of the world should appear, how it should or should not function, and what should be visible to the viewer. A predisposition towards viewing the Australian outback as a conceptual and actual terra nullius overrides our trust in our own eyes. Our "ways of looking at the world" tell us what to see, tell us how to see it, and tell us how to act upon what we think we see. Flusser makes a distinction between traditional images and technical images by their inherent levels of abstraction. A technical image is a third-order abstraction: "They abstract from texts which abstract from traditional images which themselves abstract from the concrete world."³ We usually do not interpret the satellite image as an abstraction of anything. We view them through our screens as though we are physically there, silently hovering and observing like an anthropomorphised drone. The satellite image, however, is always a conflation of concepts: the distraction of distance and perspective, the contradictions of complicity in military histories, the production of state politics, and the growing intellectual conflict in the fact that most images are created to be seen only by other machines. Or

¹ Flusser, Vilém. *Towards a Philosophy of Photography*. Reaktion Books, 2000, p. 14.

² Flusser 15.

³ Flusser 14.

as Laura Kurgan via Lisa Parks warns, the satellite image “resists sovereign control and opens itself to other sorts of interpretation.”⁴ The satellite image is a remote construction that packages conflicting historiographies by enforcing the colonial claims on what is visible and to whom.

What the satellite image does not disclose is the evidence of the Cold War trauma that Maralinga experienced. What remains in the images of Maralinga, and yet frustratingly unseen, is what anthropologist Joseph Masco calls the “multimillennial colonisation of the future”.⁵ The product of years of atomic research and testing – invisible in the Landsat image from 1990 yet still present and essentially eternal – is interred in burial pits, vitrified in glass tombs, or hidden in plain sight as seemingly harmless rocks and sand. Maralinga has become a reluctant archive of nuclear futures imaginaries. Its past is the result of a politics of repeated and layered forms of colonialism and environmental destruction that is now buried underfoot, defying the omniscient satellites above.

What is most valuable here is the caution she invites: no satellite image presents a simple, unambiguous picture of the Earth, and a visit to the site itself can often raise more questions than it answers, reaffirming rather than reducing the openness of the image to interpretation.⁶



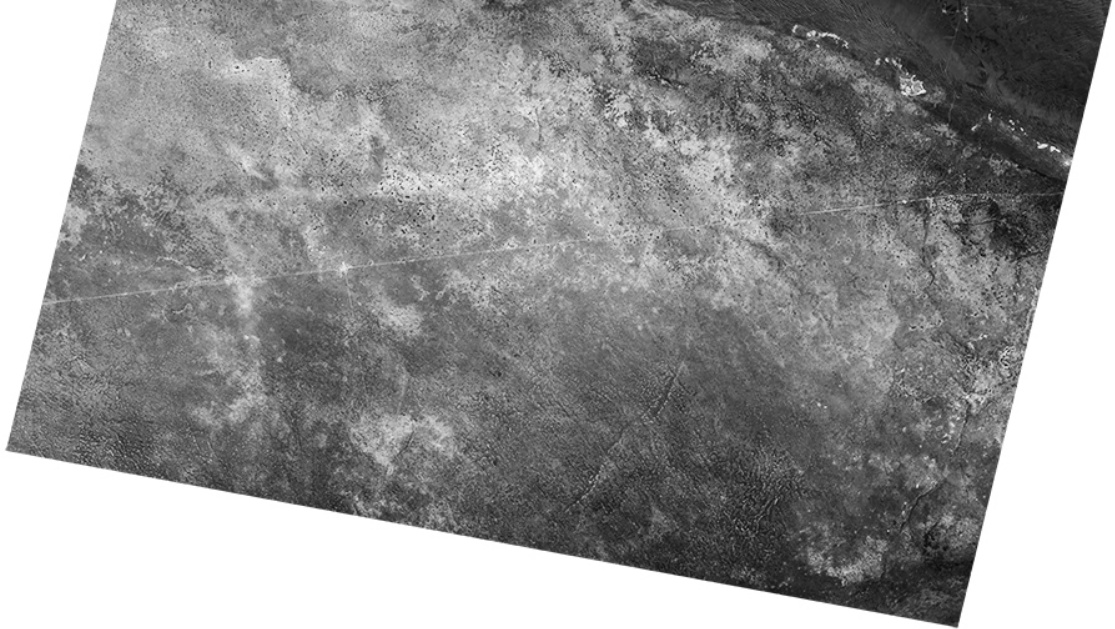
Too straight and too long, a line in the landscape reveals Maralinga. Almost. This line isn’t British, at least not directly. This is the Trans-Australian Railway. Constructed at the apex of Australia’s push for federation, a time of heightened white nationalism⁷, the railway was a proud moment for white settlers as they compulsively pushed the Australian frontier farther and farther into the desert.

⁴ Kurgan, Laura. *Close Up at a Distance: Mapping, Technology, and Politics*. MIT Press, 2013, p 30.

⁵ Masco

⁶ Kurgan, Laura. *Close Up at a Distance: Mapping, Technology, and Politics*. MIT Press, 2013, p 29.

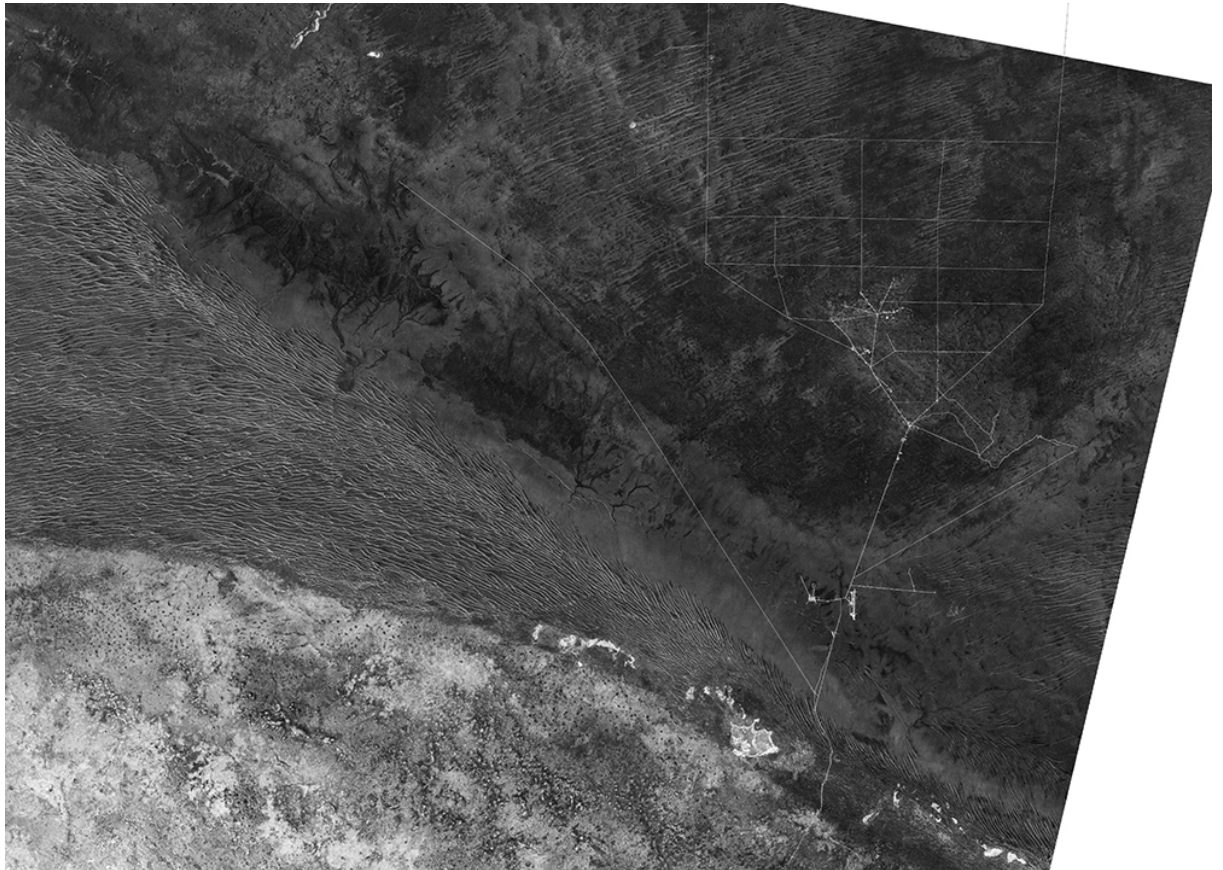
⁷ Even in today’s context of increasing populism.



[FIG. 18] Landsat, 1990 (original image accessed in 2019, modified by David Burns)

Taken from an altitude of over 400 miles, this image [FIG. 18] observes the railway in its most literal colonial expression: hundreds of kilometres of perfectly straight track. Overlaid onto and barely engaging the terrain, the railway is an arrogant human intervention that contrasts sharply with the land on which it sits. As illustrated in the introductory chapter of this research, Maralinga became Maralinga partly due to the Trans-Australian Railway. From 1953 to 1967, the British military maintained a semi-secret, semi-sovereign state within a state in Maralinga. Thousands of engineers, scientists, soldiers, pilots, and photographers established a self-sustaining world in the Australian outback, supplied primarily by rail and air. Hundreds of buildings were constructed from leftover WWII aluminium flown in from British military bases overseas. Elaborate water collection systems were built to avoid conspicuous and vulnerable pipelines. Quarries were dug to harvest sand and stone for concrete. At a time when the primary roads crisscrossing the Australian continent were still red dirt, Maralinga boasted a vast grid of smooth bitumen. They laid

communication networks, installed advanced optical devices, and exposed millions of feet of photographic film. They tested rockets and missiles and even launched a satellite into orbit. They detonated nuclear weapons.



[FIG. 19] Landsat satellite image with the British grid of primary roads accentuated with white tracing (original image accessed in 2019, modified by David Burns)

If we zoom in one more step [FIG. 19], the British roads begin to appear. Conspicuously disconnected from the two-lane cross-country road following the southern edge of the continent, a single road appears. One road becomes two, then five. An angular grid emerges that stretches out into the distance; a misplaced modern infrastructure. Scars pockmark the southern section of the grid. The deep colouration of the earth is rubbed pale. Repetitive patterns of dots line the roads. The ruins of a small village become legible. To the south of the grid is two miles of perfect tarmac,

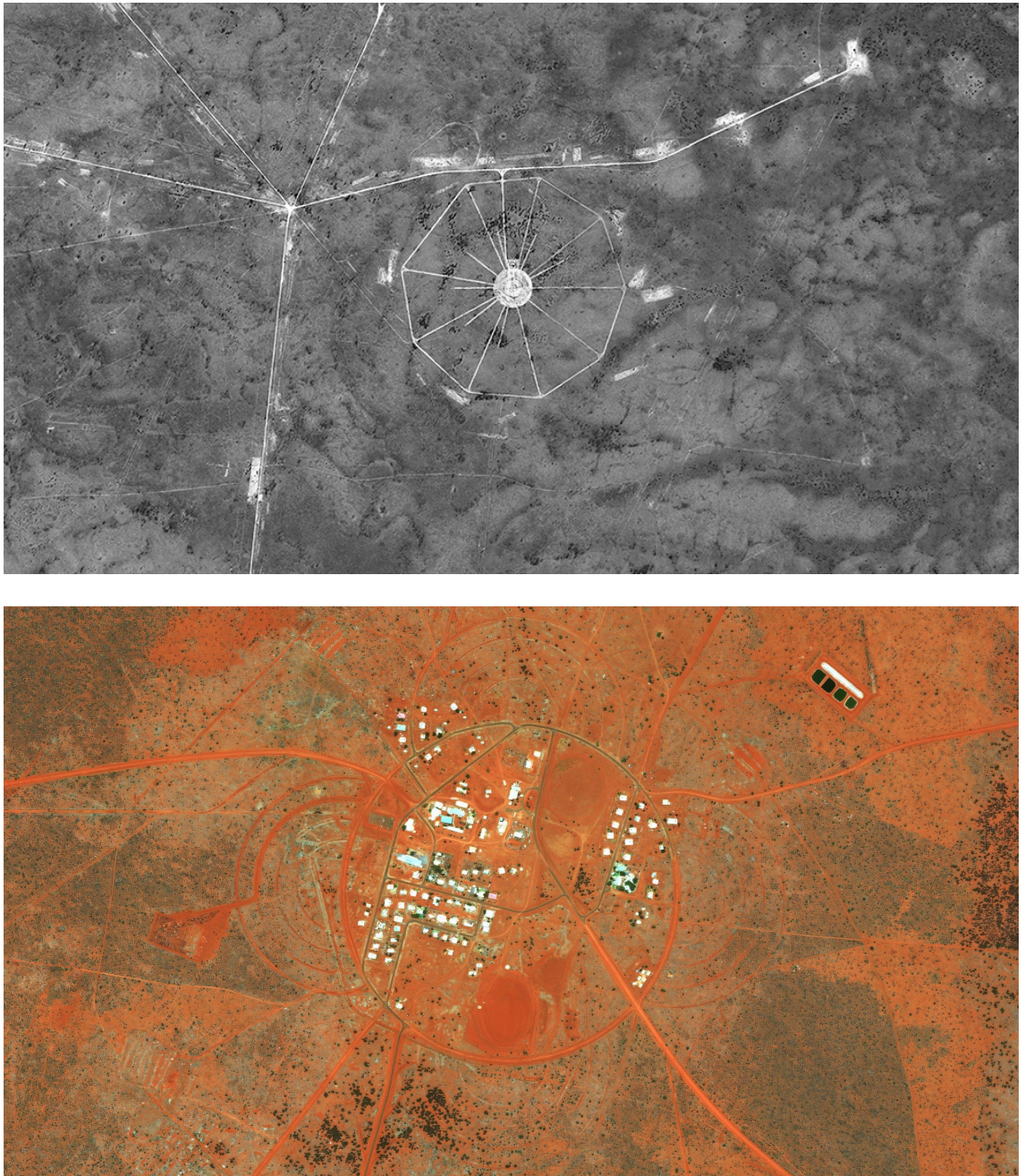
oriented due north-south and engineered to accommodate the most significant transport aircraft in the Royal Air Force.⁸ In the centre of the grid is a circular pattern of concentric rings divided by sixteen spokes that form the outline of a nine-sided polygon. As I searched for evidence of the 1950s nuclear tests that took place at Maralinga, I was prepared to see the deep craters still visible in the Nevada desert from similar tests. Instead, I found intricate and deliberate scoring in the terrain at the scale of a village; long white lines inscribed with perfect architectural purpose.

This is Tufi, one of several nuclear test sites at Maralinga. Its presence bears physical record of the nuclear colonial potentiality of Maralinga. From above, the patterning at Tufi could be many things: a target, a military resolution target, or even land art. It bears a striking resemblance to an earthwork 800km north of Maralinga in the Northern Territory Aboriginal town of Papunya.⁹ Historians credit the emergence of Western Desert Aboriginal dot paintings to this small town. According to the official website of the Papunya, local Aboriginal men had long painted – in private – depictions of sacred places and rituals. In the early 1970s, they were encouraged to translate these sacred paintings into public murals which launched a genre of contemporary painting that would quickly alter the world’s perception of Indigenous Australians. The Papunya murals were then scaled to the size of the village in the form of roads and pathways.[FIG. 20] A single ring encapsulates the village with smaller concentric rings growing from the edge of the primary circle. The patterning at Papunya persists today simultaneously as town planning and land art.

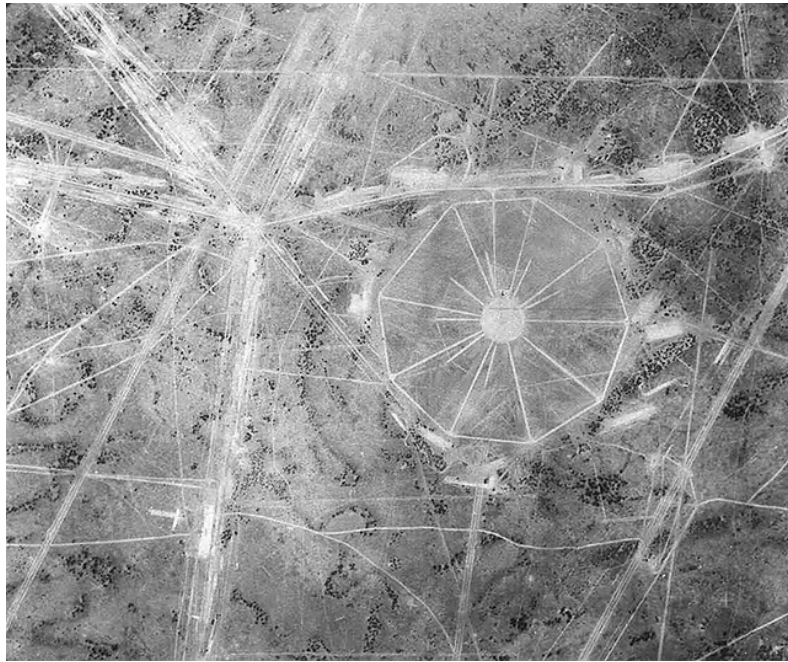
It’s highly unlikely the patterns of Tufi were known to the artists in Papunya, despite the fact that Maralinga predates Papunya by two decades. What is clear, however, is that the practice of articulating natural and spiritual features on the terrain had an unintended and violent precursor at Tufi.

⁸ The airfield was also designated as an emergency landing strip for the NASA Space Shuttle missions.

⁹ MMA #2.1.002A-002B



[FIG. 20] Tufi test site in Maralinga (above) and Papunya Village (below)
(Bing Maps screenshots accessed in 2019)



[FIG. 21] British aerial photograph of Tufi, ca. 1956 (Robin Matthews)

British aerial photography from the 1950s [FIG. 21] strengthens Tufi's time-travelling channelling of the earthworks at Papunya. In this grainy black and white photograph, the landscape surrounding the Tufi test site is crisscrossed with a lattice of ad hoc paths worn into the shallow, sandy soil. The flat landscape yielded an infinite number of informal roads for impatient truck drivers. Today, only sixty years later, these paths have long since disappeared. On the ground at Tufi today, the geometrical logic of the site is invisible [FW 2.1]. What is so obviously apparent from miles above fades away when standing at the site, lost to proximity. The soil is sandy and shallow. The land is covered in low brush, spinifex, and pale blue saltbush. The white paths seen from above are not concrete or sun-bleached bitumen, but exposed limestone and limestone rubble. A square concrete pad in the centre of the circular pattern becomes obvious and foreign once you understand the limestone substrate of the site. [FW 2.2]



[FW 2.1] Burns, David. *Tufi Spurs*. 2018.



[FW 2.2] Burns, David. *Tufi Ground Zero*. 2018.



[FW 2.3] Burns, David. *At Tufi*. 2018.



[FW 2.4] Burns, David. *Nuclear Futures False Positive*. 2018.

Unlike the desire lines in the historic aerial photography, Tufi's pinwheel inscriptions are still present [FW 2.4]. During the rush to build the test sites and detonate the bombs, the British engineers formed the paths by simply pushing aside the fine sandy soil, creating a soft curb on either side of the limestone paths.¹⁰ For decades, the soft curbs have been collecting seeds and rainwater, and now new plants and brush grow in straight lines along the edge of the nuclear limestone paths. The linear inscriptions at Tufi are being fortified by the new growth, ensuring their survival for decades (maybe centuries) to come.

Tufi was ready for the bomb and had the bomb been detonated, the support cables would have been vaporised, the anchors would have been sheared, and the limestone paths would have been obscured and perhaps recovered with soil. But the bomb was not detonated. Tufi was never used as a weapons testing site and its infrastructure remains as a nuclear colonial ghost. Unlike other sites at Maralinga that were cleared away and obfuscated by remediation, Tufi remains exactly as it was when it was constructed in 1957. The long straight vectors of Tufi pointing to an empty non-radioactive centre; a nuclear futures false positive.

¹⁰ This is not dissimilar to the methods by which bush roads are maintained to this day.

2.1.1: THE AUSTRALIAN NUCLEAR

Through the lens of an orbiting satellite or a hovering drone, the visual evidence of Maralinga's past is unclear. Twenty years after the final remediation, sections of Maralinga are recovering, while others are not. Zooming in and out of commercial satellite photography, the conflicting states of recovery is visually apparent. In certain areas of Maralinga, the change is so rapid that just a year or two will evidence a dramatically different terrain. The unused Tufi test site, however, is constant and unchanging. These multiple and asynchronous timelines of Maralinga complicate our "ways of looking".

If we were constrained to the site at Tufi, we would be able to interpret Maralinga clearly. Elsewhere in Maralinga, however, interpretation becomes increasingly difficult; atomic bombs were detonated at several of the other sites. The destruction wrought by the blasts in the 1950s is very real. Just a short distance from Tufi sits a site called Taranaki. Taranaki is home to the most dangerous legacies of the tests at Maralinga, radiating imperceptibly from within burial trenches. While the success of the remediation of the test sites has been disputed, they were highly successful in obfuscating sites like Taranaki. In a relatively short period of time, most of the material evidence of the nuclear detonations has been removed or is slowly being absorbed by aggressive replanting initiatives. Hence, the physical appearance of the test sites is being radically altered. But once again, Tufi is unique. Due to the lack of radioactive contamination, the remediation efforts ignored Tufi altogether, thereby preserving the limestone circular pattern in the terrain.

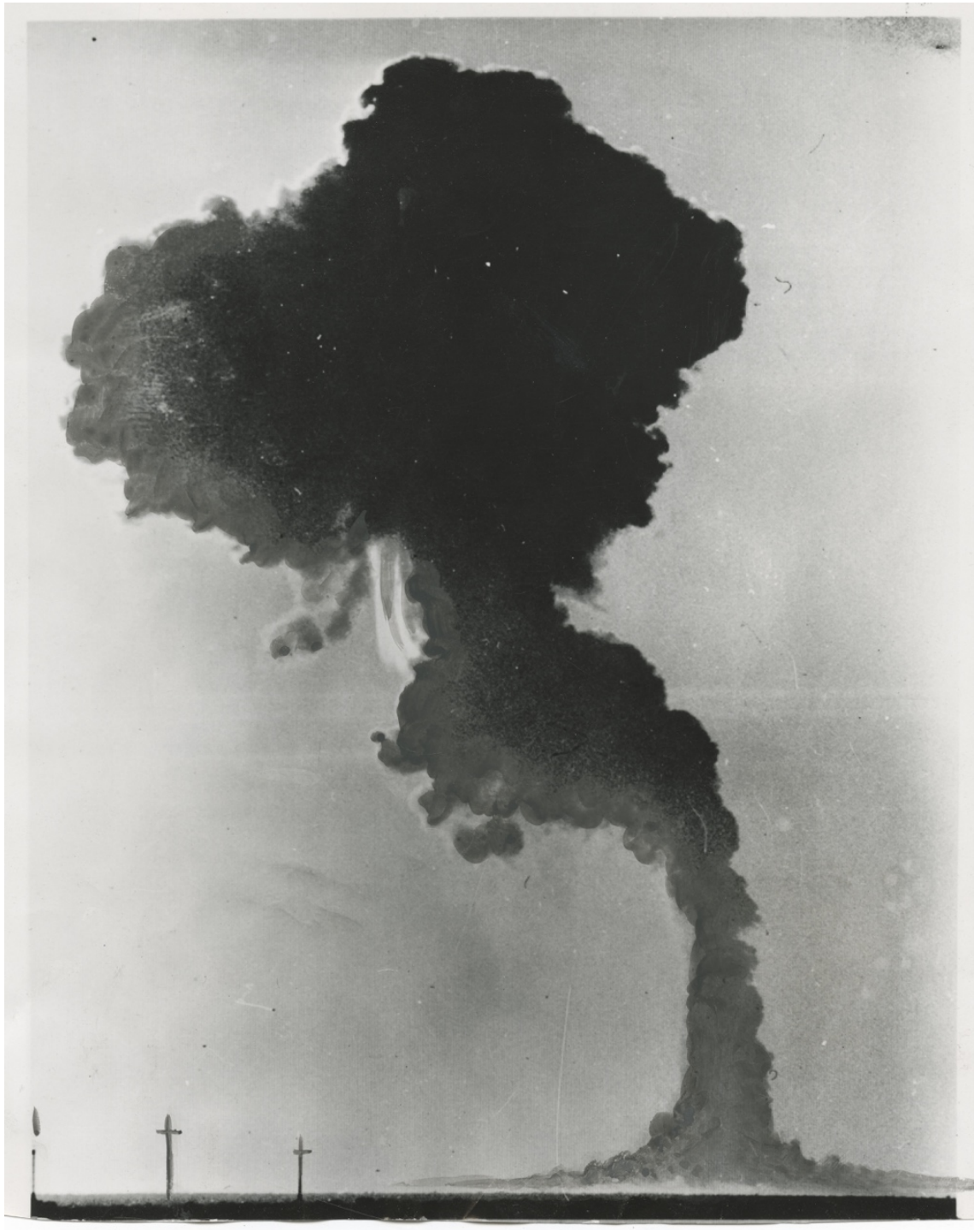
While the visibility of nuclear Maralinga is slowly receding, the first two bomb test sites in Australia are already almost completely invisible. The first site for British nuclear weapons testing in Australia was in the Monte Bello islands, situated off the northwest coast of Western Australia. The first test at Monte Bello was named Operation Hurricane and it was a success. However, the data retrieved from the blast was insufficient. The characteristics of the terrain provided little opportunity to track the effects of the blast and the decision was soon made to move the tests inland. Australian bushman and surveyor Len Beadell, who was prominent in the siting of the

Woomera Prohibited Area and drafting the 4000km firing line, was brought in to identify an area in South Australia that could host the tests. An expansive clay pan nicknamed Emu Field¹¹ was chosen. In twelve short months Emu Field was transformed into a functioning test site and on 15 October 1953 Operation Totem was commenced with the first nuclear weapon detonation on the Australian mainland.

The press coverage of Operation Totem included a single image featuring the distinctive mushroom cloud.[FIG. 22] Rising ominously in the frame, the cloud is portrayed as a foreboding black mass reaching up to the sky and dwarfing the utility poles at bottom left. A closer examination reveals significant painted alterations to the printed photograph, including what appears to be a modification to the entire left side of the cloud and the addition of the utility poles. It is clear that the three poles depicted in the doctored photograph were a hasty addition to the image, perhaps in an attempt to bolster the scale of the cloud and to provide a familiar foreground for the picture.¹²

¹¹ MMA #010-028

¹² MMA #2.1.028



[FIG. 22] Press photograph of Totem 1, Emu Field, 15 October 1953 (National Archive of Australia)

The British were pleased with the successful detonations at Emu Field but again decided that the test site was not ideal. The deep sand was too difficult to traverse and the site was too remote. A key concern for the engineers was the limited sightlines for the collection of crucial still and moving images of the explosions. Only two devices were tested at Emu Field and before they were completed the decision had already been made to make another move.

The British presence in Emu Field was brief, but the legacy of the tests remains. In the years following the tests disturbing accounts of fallout would emerge from Aboriginal communities in the vicinity of the test sites. Eyewitness accounts describe a “black mist” rolling across the landscape bringing illness, blindness, and death. Testimonies about the black mist would feature heavily in the 1985 McClelland Royal Commission, and while documented evidence of the event has been continually contested by military authorities, the effects of the nuclear tests were very real. Yami Lester, a Yankunytjatjara man who was a 10-year-old boy at the time of the Emu Field tests, lost his vision from the black mist.¹⁴ Later in his life he became a recognised and respected voice for bringing awareness of the tests at Maralinga. Black mist and other events that relate to issues of visibility are discussed further in the final section of this chapter.

¹⁴ MMA #2.1.029

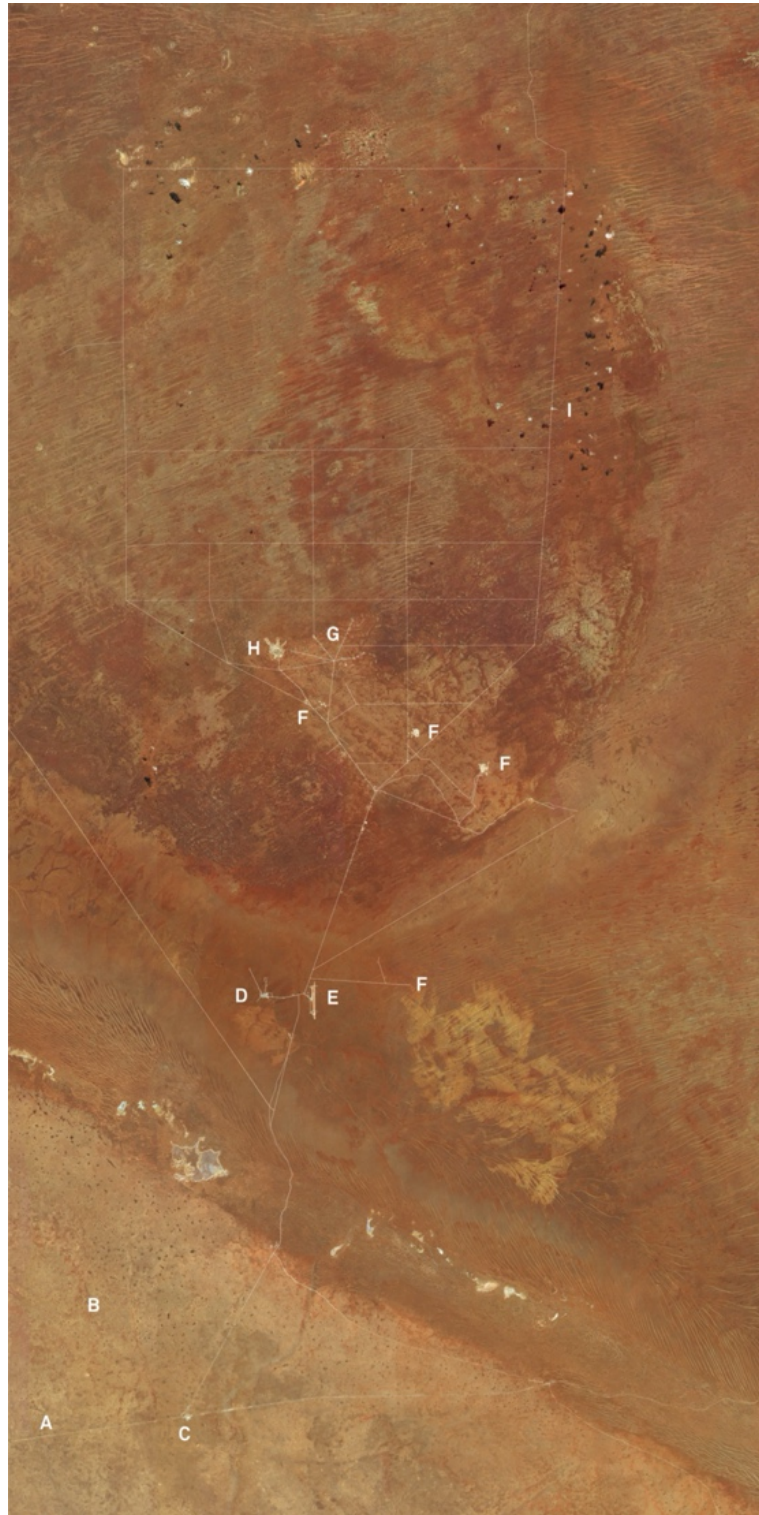
2.1.2: BUILDING MARALINGA

The following section offers a detailed description of the spatial design of Maralinga and the infrastructure needed to test the weapons successfully. The architectural effort to construct Maralinga was significant.¹⁵ The spatial politics of the site are expressed in the exploitation of the remoteness of the site, specifically concerning efforts to isolate the enormous testing site from nearby existing towns and settlements. This decision was reliant on two factors: the successful excision of the Woomera Rocket Range from the public use of everyday Australians and the complicity of Prime Minister Robert Menzies in the decision to allow the British to claim 130,000 square kilometres of land in South Australia.¹⁶ Nineteenth century settler colonialism evolved into twentieth century nuclear colonialism in Maralinga's infrastructure and architecture. The British engineers envisioned Maralinga's lifespan to be thirty years and a yield of twenty nuclear weapons detonations. In a time when Britain was experiencing stifling post-war austerity at home, the economic scale of Maralinga was shocking.¹⁷ Maralinga was not only a closely guarded secret in Australia, it was also largely unknown in England.

¹⁵ The Material-Media Appendix features hundreds of photographs from the surveying and construction of Maralinga.
MMA #2.1.032-307

¹⁶ MMA #2.1.030

¹⁷ 1947 was also the year that Britain hastily exited India by moving up the Indian Partition.



[FIG. 23] Contemporary Maralinga with specific features highlighted in white. Running along the bottom of the image is the Trans-Australian Railway (A), the Nullarbor Plain (B), and the quarry village of Watson (C). To the north is Maralinga Village (D) and the Airfield (E). Minor trials (F) occurred throughout the site, whereas the nuclear detonations (G) were concentrated in the north. The primary test site of Taranaki (H) is clearly visible, as are the grid of roads with the eastern road leading to Emu Field (I). (Bing Maps screenshot montage accessed 2017-2019 with modifications and overlays by David Burns, 2019)



[FW 2.5] Burns, David. *Old Fire Station (Maralinga Village)*. 2018.



[FW 2.6] Burns, David. *Old Provision Store (Maralinga Village)*. 2018.

The site can be divided into three primary regions: Maralinga Village, Maralinga Airfield, and the Forward Area. Located at the highest point on the site and bordering the Nullarbor Plain to the south is Maralinga Village.¹⁸ The village housed thousands of officers and scientists and featured a variety of buildings with a range of functions. The village was fully appointed with a hospital, church, dozens of barracks and support buildings, and even a cinema. [FW 2.5, 2.6] During the 1990s remediation, Maralinga Village again housed scientists and workers in new temporary accommodation and the reinstatement of cafeterias and limited social infrastructure. New diesel power generators were installed and a satellite connection to mobile phone networks provided the first-ever telecommunication connection at Maralinga. Most of this infrastructure remained at the Village after the remediation was completed in 2000 and is used today by the Maralinga Tjarutja for the caretakers and guests to the site.

1950s Maralinga Village featured contemporary infrastructure including a water catchment system, an independent power grid, and a town plan of sealed roads with commonwealth names.¹⁹ A critical strategic vantage point of the village is apparent even today: with minimal effort, one is able to gain clear sightlines to the Forward Area in the north and the airfield to the east. First-person accounts from the test era describe a viewing area near the village where detonation observation took place.

Maralinga Airfield is a few kilometres to the east of Maralinga Village. It was one of the first major construction projects at Maralinga and features a 3.5km runway that can accommodate the largest RAF transport aircraft [FW 2.7]. According to Robin, the concrete foundation for the runway is approximately five metres deep for the entire length of the runway. While I was unable to verify this fact, the runway is still in good condition today and is regularly used by commercial and military aircraft. A recent functional addition to the airfield is a system of solar-powered lamps lining the edge of the runway. The only building to remain at the airfield is the terminal building

¹⁸ MMA #2.1.032-140

¹⁹ MMA #2.1.139

[FW 2.9] which served as the backdrop of the photographs of the 2014 Section 400 Excision Event.



[FW 2.7] Burns, David. *Maralinga Airfield I*. 2018.



[FW 2.8] Burns, David. *Maralinga Airfield II*. 2018.



[FW 2.9] Burns, David. *Maralinga Airfield Terminal I*. 2018.



[FW 2.10] Burns, David. *Maralinga Airfield III*. 2018.



[FW 2.11] Burns, David. *Maralinga Airfield Terminal II*. 2018.



[FW 2.12] Burns, David. *Maralinga Airfield Terminal III*. 2018.



[FW 2.13] Burns, David. *Maralinga Airfield Terminal IV*. 2018.



[FW 2.14] Burns, David. *Maralinga Airfield Terminal V*. 2018.



[FW 2.15] Burns, David. *Maralinga Airfield IV (Water catchment)*. 2018.

One conspicuously absent necessity at Maralinga – already discussed briefly in relation to Tietkens’ pastoral attempts – was fresh water. The headquarters for the rocket range, Woomera Village (500km to the east), solved this problem by building a pipeline to Port Augusta alongside the Stuart Highway. The secrecy of Maralinga however prohibited such conspicuous infrastructural interventions. The eventual solution was ingenious and still functions today. The construction of the airfield provided the British with an enormous manmade water catchment area [FW 2.15]. A system of concrete waterways was built on the perimeter of the airfield to channel rain water from the tarmac, past the terminal building, disturbingly close to the *Airfield Cemetery*,²⁰ and finally to a series of ponds and purification tanks.²¹ Robin estimates that a single rainy day can add up to five million litres of water to the ponds and tanks. The purification process was updated in the 1990s and the aqueduct system is still fully functional.

²⁰ Adjacent to the airfield is the British built Airfield Cemetery, a grid of eighteen burial pits, eleven of which contained “high level activity” waste.

²¹ MMA #2.1.328-346

North of the village and airfield was the location of the nuclear weapons testing and the majority of the minor trials. The Forward Area encompasses the bulk of the Maralinga site and was connected by hundreds of kilometres of sealed and unsealed roads, thousands of kilometres of underground communications cabling, and extensive above ground electrical cabling. The Forward Area included all of the weapons detonation fields, the decontamination centres, makeshift housing for soldiers, and outposts for both British military and Australian Federal Police. A single road connects the village and the airfield in the south to the Forward Area in the north. Approximately 30km from the village, at a location known as Roadside, an extensive grid of new roads (sealed and unsealed) running exactly north/south and east/west fans out for 100km into the bush. The roads feature curiously generic names: 1st Avenue, 10th Avenue, Left Street, and Central Street. Roadside also featured expansive temporary architecture to support the military staff working in the Forward Area. All of this spatial infrastructure is gone, dismantled and interred in the dozens of burial pits scattered throughout Maralinga.

In addition to siting Emu Field and Maralinga, Len Beadell was also the principle author of the road grid in the Forward Area.²² Beadell's influence in outback Australia cannot be understated and his presence is felt throughout the Woomera Prohibited Area, Maralinga, and across central Australia. In addition to the roads at Maralinga, Beadell's Gunbarrel Road Construction party also surveyed and built several roads across South Australia, Western Australia, and the Northern Territory, including the eponymous Gunbarrel Highway a few hundred kilometres north of Maralinga. Beadell insisted on straight (hence gunbarrel) roads and the grid at Maralinga is no exception. From above they appear as fine surgical incisions in the landscape, their extraordinary simplicity adding to the surreal, yet efficient, appearance of Maralinga.

²² It's important to emphasise Beadell's complicity in the exposure of remote Western Desert Aboriginal people to white culture. While Beadell pictured himself as a protector of Aboriginal people, he also happily and dutifully executed the British orders to expand into previously uncharted regions and was a primary source for the highly contested Giles Weather Station. Beadell's account of his time in Woomera and Maralinga features heavily in this research due to his compulsion to document and publish all facets of his life and work.

When, three years later in 1956, I flew into Maralinga, it was then a village of gleaming aluminium, and out to the distant horizon led straight ribbons of roads and instrument lanes, the accuracy of which had the imprint of Lennie's surveys.²³



[FW 2.16] Burns, David. *Inside Robin's Truck I*. 2018.

²³ Penney, W. G. Forward. *Blast the Bush*. by Len Beadell, Angus and Robertson, 1967, p. ix.

2.1.3: GROUND ZERO(ES)

Australia has the distinction of being the only country in the world to have supplied uranium for nuclear bombs, which its leaders allowed to be dropped by a foreign power on their own territory and their own people, without warning.²⁴

The sites for the atomic tests were situated in surprisingly close proximity to Roadside and the temporary housing for soldiers and police. Today, most of the weapons detonation sites are barely visible in satellite imagery due to the 1990s remediation. Hundreds of thousands of cubic metres of contaminated soil was scraped from the surface and interred in enormous burial trenches. Fresh soil was brought in and spread evenly at most test sites, producing a surreal change in colouration from above. The most contaminated places are now the most visually innocuous. Because of this, it's important to step back and take a moment to understand the different methods that were used to test the bombs. Each method had a unique impact not only on the physical landscape of Maralinga, but also on the Aboriginal songlines and movement of people and the understanding of time and the deep futures imaginaries of the people who once lived on the land and who now occupy it once again.

There were four distinct methods of testing nuclear weapons. The first test at Maralinga, codenamed *One Tree* and conducted on 27 September 1956, utilised a simple method of detonating the device on a tower.²⁵ Four of the seven tests conducted at Maralinga used the tower method. For these tests, a 30m aluminium tower was constructed on a large concrete pad surrounded by a network of concrete trenches leading to winch used to hoist the weapon was hoisted to the top of the tower. A periphery of steel anchors embedded in small concrete pads were used to tether the tower to the ground. Very little remained of the tower, the steel anchors or the concrete

²⁴ Pilger, John. "The Secret Country: The First Australians Fight Back". *Vimeo*, uploaded by John Pilger, 18 November 2010, <https://vimeo.com/16961683>.

²⁵ This is the same method that the Americans used in 1945 for Trinity, the world's first nuclear weapon test in what is now called the White Sands Missile Range in New Mexico (the same site that hosted the V-2 rocket tests in 1947). MMA #2.1.347-369

foundations after the detonation. What did remain was buried in informal pits in the late 1960s.



[FW 2.17] Burns, David. *Gona I*. 2018.

Only one weapon was detonated at ground level but the repercussions of that blast are felt to this day in Aboriginal communities surrounding Maralinga. A 1.4 kiloton bomb was placed on a concrete pad at a site called Marcoo and detonated on 4 October 1956. The resulting crater would measure over 40m in diameter and almost 20m deep²⁶. Just months after the detonation, it was reported that a fire was spotted in the vicinity of Marcoo. The soldiers sent to investigate the fire found an Aboriginal family of four, the Milpuddie family, using the crater as a campsite. The steep sides of the deep crater collected rainwater and created a manmade waterhole. The family discovered the crater while walking south along Beadell's Central Avenue to visit family near Yalata. The soldiers sent to Marcoo emerged from their Land Rovers in white head-to-toe protective gear with their faces covered by breathing apparatuses.²⁷ In the McClelland Royal Commission of 1984, Edie Milpuddie referred to the approaching agents as "mamu" or the devil.²⁸

The family was brought back to Roadside and were subjected to showers and scrubbing until the radioactivity on their skin was at acceptable levels for the British officials. Shortly following, Edie delivered a stillborn child. The hardships on this family last to this day and Maralinga continues to be an area that Aboriginal communities will not enter. The current custodian of the site, Robin, claims that the 1990s placement of hundreds of signs warning Aboriginal families not to camp at Maralinga is pointless. In his opinion, the Maralinga Tjarutja people will never return.

Only one week after the ground detonation at Marcoo, a weapon twice its size was dropped from an RAF bomber at an elevation of 11,000m and detonated at 150m above the Breakaway test site. This detonation produced significant environmental damage, some of which is still visible today. For several kilometres surrounding Breakaway, the intense heat from the bomb fused the sand on the ground into greenish glass [FW 2.18]. In the United States, similar glass was nicknamed

²⁶ The exact dimensions of the crater vary from source to source, but from photographs of the crater, it appears the depth was approximately 20m.

²⁷ These figures featured in the work of artist Jonathan Kumintjarra Brown, as discussed in Part 3. MMA #2.1.371

²⁸ "Mamu" is a Pitjantjatjara word for "evil spirit", Yvonne Edwards also used this language to describe how her family interpreted the nuclear tests. Mattingley, Christobel. *Maralinga's Long Shadow: Yvonne's Story*, Melbourne, 2016, p.43.

trinitite in honour of the Trinity test site. Some refer to the glass in Maralinga as *maralingite*. [FW 2.18]



[FW 2.18] Burns, David. *Maralingite*. 2018-19.

The final method for detonation utilised World War II era balloons to suspend the nuclear device for a stationary aerial explosion. This method was used at Taranaki and was scheduled to be used at Tufi, the site described in the introduction to this chapter.²⁹ Balloon suspension involved suspending the weapon from a group of large balloons tethered to the ground in a complex series of steel cabling. Suspending the weapon from balloons allowed for an altitude of 300m in some cases, but possessed its own limitations and difficulties. The design of a balloon suspension test site began with a 5m deep concrete pad at ground zero containing two large steel anchors. Next, a series of concentric rings was constructed radiating from the central point. The first ring of anchors was located at 5m from ground zero and were set into similar foundations. This pattern was repeated five times with the final ring approximately 300m from the ground zero. The bomb was suspended from five or more military barrage balloons stacked one on top of the other. In Maralinga, the balloons used were the same balloons that once protected London from Nazi aerial attacks.³⁰ At Taranaki, the barrage balloons were not a deterrent for violence but the method of its delivery.

The balloon suspension system was used at the Taranaki test site on 9 October 1957. At over 26kt, the Taranaki bomb was the largest detonated at Maralinga. Despite the scale of the test, contemporary satellite imagery reveals little trace of the nuclear infrastructure at Taranaki. This was the primary site for the 1990s remediation due to the highly contaminating *minor trials* that took place at Taranaki in the years following the end of the nuclear weapons testing. I will discuss these tests in Chapter 3.

Thus far in this chapter I have discussed how satellite and aerial images complicate our understanding of Maralinga. Contrary to the belief that satellite photography can reveal the true nature of a place, the images of Maralinga are layered with obstructions. Additionally, I outlined the origination and design of Maralinga, specifically in terms of the optical requirements placed upon its siting. In the following section, titled “Looking at the Earth”, I will expand the discussion of the contradictions of photography by zooming out of Maralinga to include the entire Woomera Rocket

²⁹ MMA #2.1.396-407

³⁰ MMA #2.1.399

Range. Specifically, I will trace Woomera's involvement in the NASA missions of the mid-1960s to photograph the surface of the Moon and will connect the optical origination of Woomera to the expansion of its influence on global politics.

2.2: LOOKING AT THE EARTH



[FIG. 24] Photo No. I-102-H2, 23 August 1966 (<https://www.lpi.usra.edu/resources/lunarorbiter/frame/?1102>)

The photographic apparatus lies in wait for photography; it sharpens its teeth in readiness.³¹

(Clears throat)

This is station 41 Woomera recording video data from Lunar Orbiter spacecraft number zero five. This is the beginning of tape reel number two, with a view period starting at 19:26 GMT. Day of year is three three four, the date is 30th November 1966. The tape is Memorex 77WENA72B. The (clears throat) tape reel ident number is WT143. (Pause) The start time of recording on this reel was 20:39:27. Input level to the 900 at this time is one-decimal-zero volt peak-to-peak.³²

On an early summer evening in 1966, an Australian engineer sits down at his desk in a nondescript metal building at Island Lagoon Deep Space Station 41 and begins a recording. He clears his throat and in a thick Australian drawl, sounding slightly bored, begins speaking. He states that he's at Woomera and identifies the tape contains data from the Lunar Orbiter spacecraft. He records the date and time, a cryptic serial number, a quick reference to the make and type of magnetic tape, and ends with a technical detail about the input levels. He's done this several times before. Over the course of the five Lunar Orbiter missions, thousands of these tapes would be produced in Woomera solidifying the range's importance in the American space program.

In the first section of this chapter, I discussed various ways in which we see the residue of the nuclear tests at Maralinga are mediated not only by the technological limitations of photography, but also by the transformative and temporal effects of *remediation*. The example of Tufi illustrated how the decision to not detonate a bomb has led to a potential deep futures confusion about the location of radioactive materials. Ironically, the cleanest section of the Forward Area is also the most conspicuously foreign; the vast limestone pinwheel of Tufi presumably pointing

³¹ Flusser, Vilém. *Towards a Philosophy of Photography*. Reaktion Books, 2000, p. 20.

³² www.moonviews.com/2009/08/technoarchaeology_finding_the_right_image_in_a_room_full_of_tapes.html
Accessed 14 February 2019

to an important point in the landscape. In reality, there's nothing dangerous there. This case study engages our primary concern about *what is visible, and to who*. If we return to Flusser's observation that photography, due to its "non-symbolic, objective character", can become a "window" into "ways of looking at the world", we can look anew at the images of Maralinga and see that our assumptions about the site are often misguided or incorrect. Later in this chapter I will examine several case studies in which the *politics of invisibility* are manifested in Maralinga. But first I will outline a second example of a significant leap in our understanding of the location of photography in relation to military research.

In the first chapter I analysed the V-2 No. 13 photographs of the Earth and their status as a conflation of military and optical technologies. I traced the significance of this moment on the establishment of Woomera and eventually Maralinga, both of which owe their conceptualisation and actualisation to the desire to develop advanced rocket technologies and the optical ability to evidence their achievements. And while the V-2 No. 13 photographs were a milestone in the alignment of imaging and military technologies, they were essentially an afterthought, a happy accident. Photography during the V-2 No. 13 experiment was simply a means to an end. The experiments needed to be documented, the trajectory and bearing of the rockets needed to be determined, and photography was the obvious solution. However, the V-2 No. 13 photograph from space was a significant achievement, technologically and aesthetically. From the moment that the public saw the Earth from space, and specifically when they saw the Earth from space because of a military technology, the politics of visibility became deliberate and accelerated. In a few short years, American rocket technology would advance dramatically, allowing spacecraft to leave the atmosphere, to orbit the earth, and by the 1960s, to travel to the Moon. Along the way, photographic technologies would drive major aspects of the missions: providing essential scientific data, evidence of achievement, and valuable marketing. Photography and military achievements were permanently linked.

On 10 August 1966, NASA launched an unmanned spacecraft named Lunar Orbiter 1 on a one-way mission to the Moon.³³ Over the course of five similar missions, NASA mapped 99% of the surface of the Moon using thousands of high-resolution photographs taken, developed, scanned, and transmitted from onboard the spacecraft in situ. Meticulous and orchestrated, exhaustive and wholistic, the Lunar Orbiter photographs are emblematic of the technological leap that had occurred since the V-2 images of 1947. What was once an afterthought, photography became a primary mission objective. The photographs taken by the Lunar Orbiter missions from 1966-67 can be seen as a conceptual bookend to the V-2 photographs and as monuments to the conflation of military and photographic technologies.

Like the V-2 No. 13 experiment, the Lunar Orbiter missions also produced another world's first photographic achievement. Thirteen days into its mission, Lunar Orbiter I was repositioned to capture the image above: *the first image of the Earth from the Moon*. Subsequent NASA missions would recreate this photograph, most notably the so-called *Earthrise* photograph taken on 24 December 1968 by astronaut William Anders during the Apollo 8 mission.³⁴ However, the first photograph of the Earth from the Moon remains the 1966 image from Lunar Orbiter I.

The Lunar Orbiter missions are critical for this research for two primary reasons. First, they cemented the relationship between the United States and the Woomera Rocket Range. The initial founding of Woomera was a British affair, a necessary endeavour to ensure weapons technology parity with the U.S. and Russia. This arrangement was ultimately short-lived and by the mid-1960s the British had abandoned Maralinga and their presence in Woomera was already beginning to wane. The Lunar Orbiter missions – along with other NASA missions including the Ranger and Mariner projects – provided Woomera with a new partner to fill the void left by the

³³ The Material-Media Appendix has extensive coverage of the Lunar Orbiter missions including photography and technical drawings of the spacecraft, full technical manuals of the camera technologies, information about film and the tape used on the ground, MMA #2.2.001-184

³⁴ Anders' photograph further captured the public's attention due to the high-resolution colour format. The similar photograph from Lunar Orbiter I was black and white and very low resolution, due to the transfer and reconstitution techniques used at the time and the haste by which NASA was working to identify a landing site for the Apollo missions. Anders' photo would become known as *Earthrise* and is often considered one of the most important photographs ever taken. MMA #2.2.051

British. The U.S. would come to dominate the activities at Woomera and would enable the longevity of the base.

Secondly, the Lunar Orbiter missions foreshadowed the heightened focus on the politics of visibility with the construction of the so-called *Earth stations*, specifically Island Lagoon, located just a few kilometres from Woomera Village. Although initially considered a temporary solution to fulfil communications requirements for manned and unmanned NASA missions, Island Lagoon would become a critical link in the communications chain of Earth stations positioned around the globe and would serve as the eyes and ears for NASA. Eventually, the remoteness of Woomera and its relative proximity to regions in which the United States had specific intelligence interests would combine to influence the establishment of the nearby Joint Defence Facility Nurrungar. Nurrungar was a highly secretive space surveillance Earth station with a very different mandate. Its purpose was to compile the growing amount of satellite-produced intelligence. Nurrungar would factor heavily in the war in Vietnam and later in the Gulf War. Nurrungar's most critical contribution to this thesis, however, is its position as the precursor to the second, and much larger, Joint Defence Facility at Pine Gap.

This section is interested in the position that the Earth stations possess within Australian politics from the Cold War to the War on Terrorism as sites photographic political production. The secrecy of the activities that take place in the Earth stations is rivalled only by the ambiguity of their origination. But before delving into the spatial politics of the Earth stations at Woomera, I will devote the following section to outlining the unique photographic methods utilised in the Lunar Orbiter missions. Each phase of the process – the capturing of the image, the developing of the negatives, the scanning, and the transmission and reconstitution – defy traditional photographic methods and contributed to a new understanding of how we look at the Earth.

2.2.1: THE MOMENT OF PHOTOGRAPHY

The camera generates events other than the photographs anticipated as coming into being through its mediation, and the latter are not necessarily subject to the full control of the agent who holds the camera.³⁵

In the quote above, photography theorist and author Ariella Azoulay complicates traditional conceptions about the *moment of photography*. She reminds the reader that the camera is able to produce “events” beyond the obvious photograph that is anticipated. Further, the photographer is not always capable of dictating the event produced, despite being the author of the image. In the previous chapters in this research, I have explored several moments of photography that captured unforeseen and extraordinary outcomes. The V2 No. 13 images are the obvious example here, inadvertently contributing to the beginning of an optical arms race that redefined not only the conflation of military and optics, but also the ways in which we as humans understood our place in the universe.

The photograph featured at this beginning of this section, in addition to being historically significant as the first photograph of the Earth from the Moon, is also an example of a disruption of our assumptions about photography. The Lunar Orbiter images complicate the basic photographic relationship between the subject, the camera, and the photographer. The image above challenges all three components of traditional photography. Perhaps the most significant disruption is the lack of a single author. Who took the photograph? What was the criteria by which they decided on the subject of the photograph? These basic questions allow for an entry point into the intention of an image. In Part 1 I performed this process on the 1975 Mervyn Bishop photograph of Vincent Lingiari and Gough Whitlam; arguably the most important photograph produced during the early stages of the Aboriginal land rights era. Bishop’s status as one of the first Aboriginal professional photographers assists in the comprehension of the intention of the photograph, beyond the obvious

³⁵ Azoulay, Ariella. *Civil Imagination: A Political Ontology of Photography*. Reprint edition, Verso, 2012, p. 15.

documentation of an important historical event. The Lunar Orbiter images, in comparison, lack a photographer. Or perhaps more specifically, they lack a single photographer. The images are the product of hundreds, if not thousands, of voices and opinions, layered atop one another and obfuscating a singular photographic relationship between the subject and the photographer. This fact challenges John Berger's observation that "photographs bear witness to a human choice being exercised in a given situation."³⁶ Whose choice is present in the Lunar Orbiter images? Can a photograph taken autonomously in space by an orbiting robot bear witness to anything?

To answer these questions, we must look closely at the photographic methods implemented in the Lunar Orbiter missions, while simultaneously stepping back to understand the optical politics that informed the decision to produce the images in the first place. The photographic infrastructure onboard the Lunar Orbiter spacecraft was unique. Pieced together from standard consumer photography and highly advanced satellite surveillance imaging, the "camera" did not conform to traditional camera design. NASA, along with Eastman Kodak and Boeing, had designed and constructed a self-contained, fully automated photographic laboratory capable of capturing, developing, fixing, scanning, and transmitting high-resolution photographs from the vacuum of space while enduring heightened exposure to radiation and temperature swings of hundreds of degrees.³⁷ The camera on board the Lunar Orbiter spacecraft had no viewfinder, had no real time ability to alter its subject or to test an exposure, and its subject matter was predetermined and programmed into its memory. The detailed reports created by Boeing and NASA following the missions include exhaustive schedules and maps that identify the time and location of each photograph. The camera's lenses were fixed, the only alteration was to compensate for the speed of the orbit. The images were collected in a choreographed script. Each second of the Lunar Orbiter's life was predetermined.³⁸

The only instance when the Lunar Orbiter camera operated similarly to a traditional camera was when it was hastily repositioned to capture the image of the

³⁶ Berger, John. *Understanding a Photograph*. Reprint edition, Aperture, 2013. P 25.

³⁷ MMA #2.2.076

³⁸ MMA #2.2.091

Earth. But even when it was being used by its human programmers on Earth to take a relatively standard portrait, the Lunar Orbiter still defied our traditional assumptions about the act of taking a photograph. The programmers at NASA had no idea if the repositioning worked, had no ability to test the image or to see if it was correctly positioned. They had no ability to retake the photograph, or to know if they needed to. Once the shutter opened and the 70mm film was exposed, all of the subsequent operations were automated.

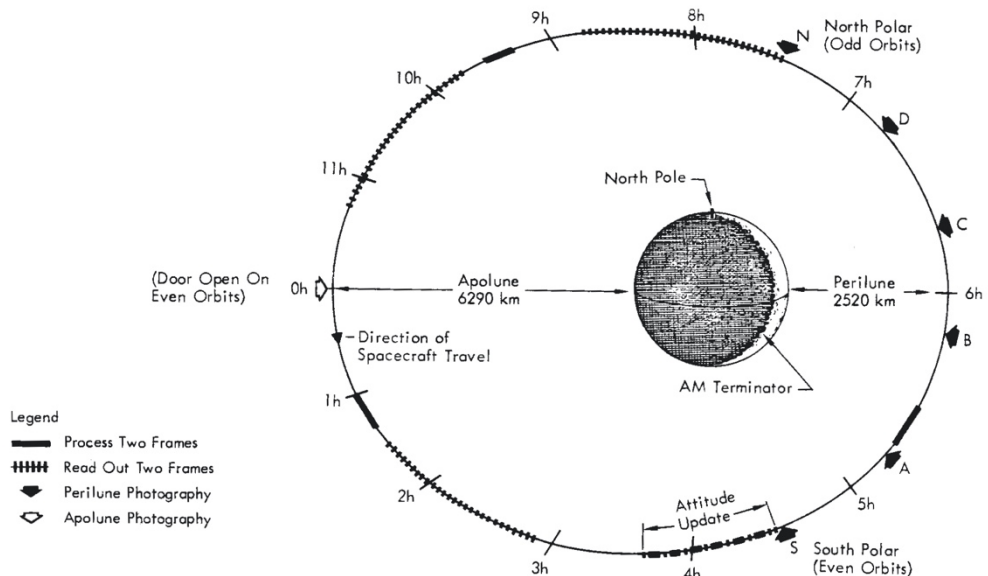
For the critical photographic work to take place, the Lunar Orbiter spacecraft were equipped with all the technology to capture high and medium resolution images, develop, fix, and scan the 70mm negatives, and finally transfer the data to the waiting tracking stations on Earth. After the completion of the missions, NASA's National Space Science Data Centre created comprehensive reports of the process and results of the Lunar Orbiter Missions and manuals to assist in the use of the data they received.³⁹ Additional images were captured at an angle and in pairs to allow for the creation of stereoscopic images which allowed NASA scientists to measure the depth of craters, the size of boulders and rocks, and to make detailed topographic maps.⁴⁰

Each second of the lunar orbit was exploited. A graph produced by NASA illustrates the choreography of the Lunar Orbiter as it completed its orbits.⁴¹ When the spacecraft was behind the Moon, and thus out of radio connection, the orbiter would devote this down time to develop the film. Once the spacecraft emerged from behind the Moon and reconnected to the Earth stations, it would begin transmission of the scanned images, only interrupted by capturing of new photography of the surface. This was further complicated by the rotation of the Earth, so the graph also shows which of the three Earth stations would be within radio contact with the orbiter to receive the incoming data. Each orbiter performed hundreds of orbits of the Moon in order to capture, develop, and transmit the required images.

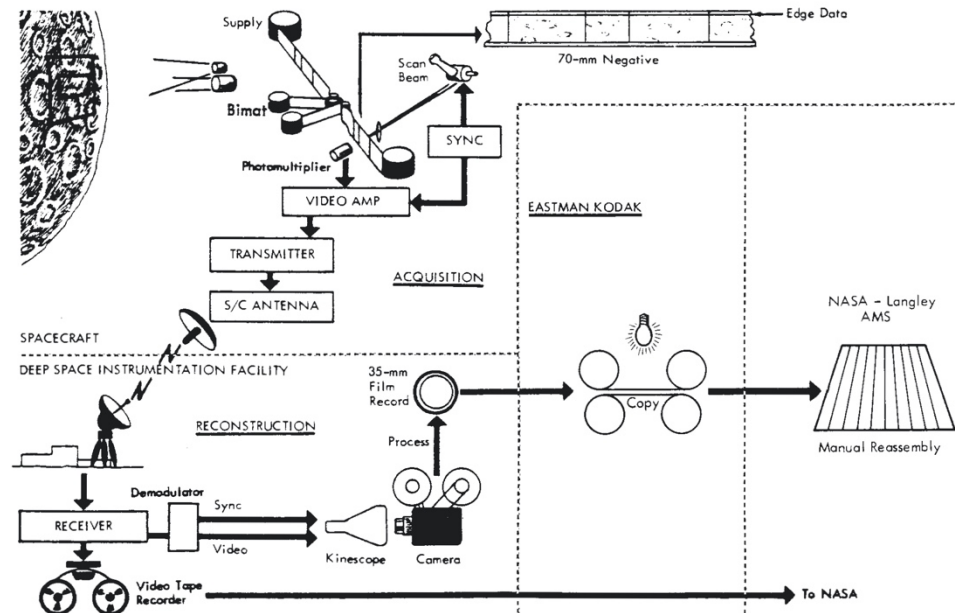
³⁹ MMA #2.2.156-184

⁴⁰ MMA #2.2.089-090

⁴¹ MMA #2.2.005



[FIG. 25] Diagram outlining the Lunar Orbiter functions while orbiting the moon from “Lunar Orbiter IV Photographic Mission Survey” (NASA, 1968)



[FIG. 26] Diagrammatic description of the photographic, developing, printing, scanning, and transmission processes of the Lunar Orbiter from “Lunar Orbiter IV Photographic Mission Survey” (NASA, 1968)

Once scanned, the 70mm film then finished its path by respooling itself, a precious document of the moon, carefully archived in the spacecraft for a brief time until the spacecraft completed its final operation. Unfortunately, none of the Lunar Orbiter spacecraft and the film they contained, ever returned to Earth. The justifications for this focus primarily on the weight of the fuel that would be needed for the return journey, but also the fear that if the spacecraft were allowed to indefinitely orbit the Moon, they may interfere with future missions' communications with Earth. At the end of each mission, each Lunar Orbiter was crashed into the surface of the Moon.

As long as the photograph is not yet electromagnetic, it remains the first of all post-industrial objects. Even though the last vestiges of materiality are attached to photographs, their value does not lie in the thing but in the information on their surface. This is what characterizes the post-industrial: The information, and not the thing, is valuable.⁴²

⁴² Flusser, Vilém. *Towards a Philosophy of Photography*. Reaktion Books, 2000, p. 51.

2.2.2: RECONSTITUTION

Capturing photographs on board the Lunar Orbiter spacecraft was a meticulous and perilous process of precise mechanisms. Two lenses, focused on the same spot on the lunar surface, produced a series of extraordinary images imprinted on the hundreds of feet of Kodak 70mm film. The decision to use 70mm film and to scan the negatives at such a high resolution resulted in a unique problem on the ground. The scanning was so detailed that the image had to be transmitted back to the Earth stations in sections. Each individual image (or frame) was dissected into twenty-six bands, called framelets. Once all of the framelets for a single image were successfully transmitted back to Earth, a complex process of reconstituting the image took place. To hasten the process, the framelets were reconstituted at a lower resolution and the slight variations of the framelets were not fully corrected. So, while the missions produced highly evocative, large-scale images of the Moon, the full potential of images was not completed until almost fifty years later.

The process by which the images were transmitted and reconstituted relied on technologies from the military and the motion picture industry. It is difficult, if not impossible, to be able to speak of a single camera or photographic process that created the image. The data arriving from the Lunar Orbiter missions was received and interpreted in two separate ways. First, the data was immediately transmitted to the U.S. via dedicated high capacity data lines, commercial phone lines, and satellite relays giving NASA almost instant access to the data for analysis. A backup copy of the data was recorded at the Earth stations onto two-inch magnetic tape, as described at the beginning of section 2.2.⁴³ Labelled simply with a single letter identifying the Earth station (W for Woomera) and the frame number, the tapes were packed in temperature-controlled containers and immediately shipped to the United States.⁴⁴

⁴³ MMA #2.2.092

⁴⁴ Following the phasing out of the Apollo missions, the Lunar Orbiter tapes would find themselves stored for over two decades in various NASA warehouses. In the early 2000s, the tapes were scheduled to be destroyed only to be rescued at the last moment by a team of NASA scientists and civilian enthusiasts. Over the course of a decade, the Lunar Orbiter Image Recovery Project reconstituted the images in full resolution, producing stunning new glimpses of the Moon's surface.

The second use of the data was localised and handled by the technicians and scientists in the Earth stations. In addition to the photographs produced by NASA, each Earth station made their own physical reconstructions of the images. Specially designed Ampex reel-to-reel machines⁴⁵ translated the analogue data into an image that displayed on a kinescope. The magnified image would then be filmed by a 35mm motion picture camera reproducing the long, narrow framelet described above.⁴⁶ Each framelet of the reconstituted image was compiled with the other framelets, producing a large, high resolution image of a section of the Moon.⁴⁷ And while the resolution of these images was crude by today's standards, the images were sufficient for the mapping project. Following the five Lunar Orbiter missions, a comprehensive volume was published by NASA titled, *Lunar Orbiter Photographic Atlas of the Moon*.⁴⁸ The 700-page book includes 675 plates which document 99% of the lunar surface. The atlas also provides instructions for users on how the data was collected and how it may be utilised for research.

The delicate and extremely costly process of capturing the images in space, converting the negatives to analogue data, transmitting the information back to Earth, and finally reconstituting the photographs in the tracking stations established the photographic image as one of the primary tools of not only the imaginary of space travel, but also of the military-industrial arrangement that was at the root of the founding of Woomera. In comparison to Clyde Holliday's modified motion picture camera used on the V-2 No 13 flight, the photography conducted by the Lunar Orbiter missions was highly advanced. Each image was the product of an orchestrated series of actions, each relying on precise calculations and planning, and then implemented automatically 380,000km from Earth, in the vacuum of space. Each step of the process contributed to a final result of a highly mediated image composed of hundreds of smaller processes. The multiple actors complicit in the capture, transmission, and reconstitution of the images manufactured by the Lunar Orbiter missions created new procedural relationships that altered our understanding

⁴⁵ MMA #2.2.106-142

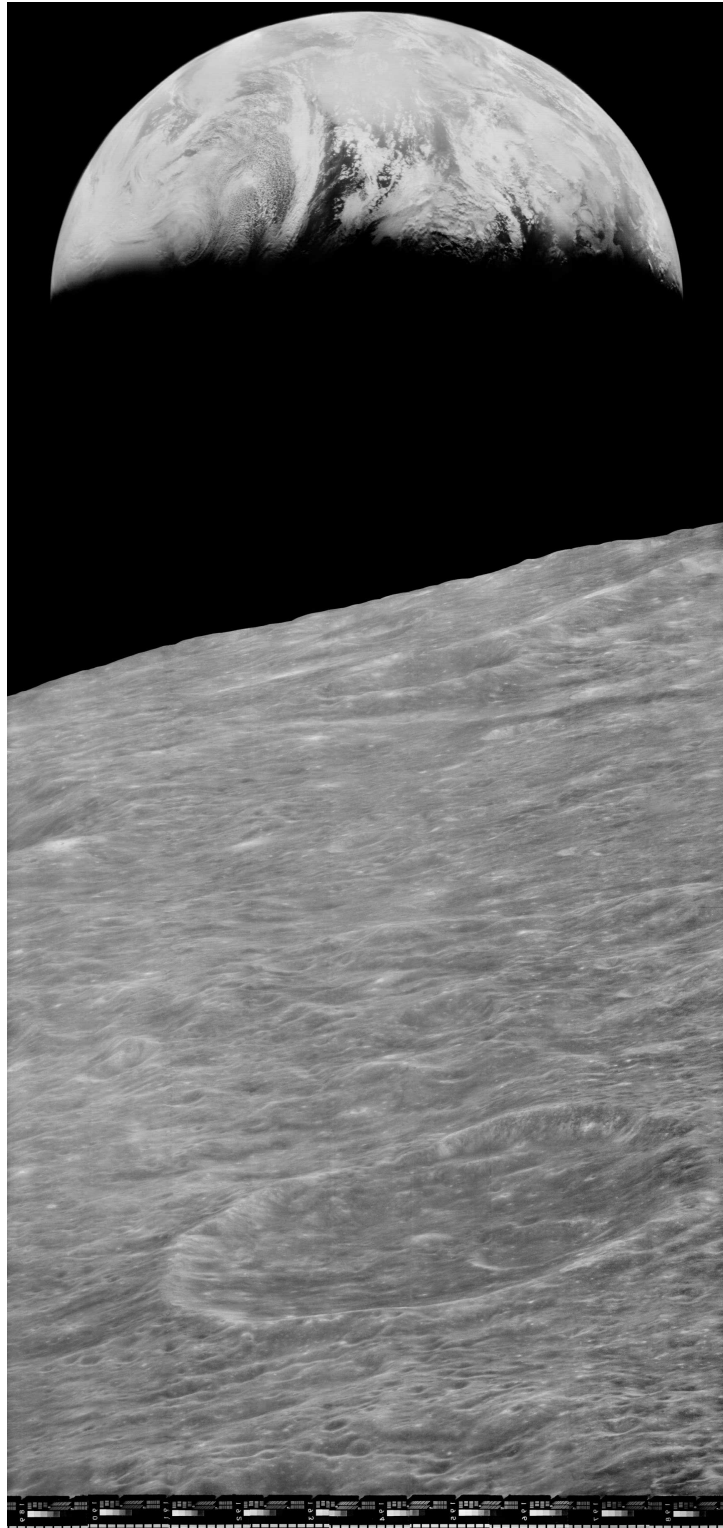
⁴⁶ MMA #2.2.147-148

⁴⁷ MMA #2.2.149

⁴⁸ The full Atlas has over 700 pages and includes all of the primary photography from the missions.
MMA #2.2.156-182

of photography as a medium. Simultaneously, the critical importance of the images for the success of the American lunar missions elevated photography as a discipline to a previously unimaginable political status.

These photographs become not only data for the waiting astronauts, but also part of political leverage wielded by the Americans over the Australians. For this research, Island Lagoon's significance as one of three Earth stations to receive the Lunar Orbiters' transmission placed Woomera (and Maralinga) in a delicate chain of the construction of the imaginary that facilitated the expansion of the presence of NASA, and therefore the United States. And as we will see in following section, the American Earth stations in Australia will become a significant player in the rewriting of the political relationships between the United States, Great Britain, and Australia.



[FIG. 27] Reconstituted image (detail) from Lunar Orbiter I of the Earth, the first image of the Earth from the Moon (NASA / Lunar Orbiter Image Recovery Project, 2014)

2.2.3: EARTH STATION SPATIAL POLITICS

The Lunar Orbiter missions were a critical component of NASA's plan to land men on the surface of the Moon and safely return them to earth. The Lunar Orbiter missions also marked an important milestone for the optical politics of the Woomera Rocket Range. Island Lagoon Tracking Station⁴⁹ was established in 1960 just a few miles from Woomera Village, near the southeast boundary of the Woomera Rocket Range. Island Lagoon was the first American tracking station established outside of the United States and was one of three stations that NASA used to track and receive photographic data from the Lunar Orbiter missions, amongst other duties. NASA's arrival in Woomera (and in other parts of Australia) coincided with the final years of the nuclear tests in Maralinga and the imminent departure of the British. And while the British conducted their work in almost complete secrecy, NASA was a visible and conspicuous partner in Woomera.

Island Lagoon was a multi-national, semi-sovereign facility, situated within the largest military testing range in the world whose founding was the result of a complex network of diplomatic relationships and decisions influenced by the paranoia and panic of the Cold War. By extension, Island Lagoon's existence was itself originated by colonial claims of terra nullius and the void of Indigenous land rights. The Australian government hoped that the success of the nuclear tests in Maralinga would aide in the establishment of Australia as a nuclear state on its own, separate yet connected to the United Kingdom.⁵⁰ However, this was not to be the case. The nuclear weapons tested in Maralinga were developed and built in England, and the technology remained there.

Despite this betrayal, when America and the newly formed National Aeronautics and Space Administration (NASA) came calling in the 1960s, Australia

⁴⁹ MMA #2.2.187-188

⁵⁰ Alan Parkinson, a chief engineer in the remediation efforts in Maralinga in the 1990s turned whistle-blower, discusses Australia's misguided hopes about the sharing of nuclear technologies in his book, *Cleaning-up Maralinga*. Parkison, Alan. "Cleaning-Up Maralinga." Barnaby, Frank, and Douglas Holdstock, editors. *The British Nuclear Weapons Programme, 1952-2002*. Routledge, 2004.

was again happy to surrender land, resources, and sovereignty. While geographically distant and structurally a separate undertaking, the activities at the Woomera Rocket Range are linked to the nuclear colonialism of Maralinga through what anthropologist and author of the nuclear ethnography *The Nuclear Borderlands* Joseph Masco observes as the ability of the nuclear to “saturate both environments and social imaginations”.⁵¹ The saturation of the Australian nuclear imaginary that justified the British destruction of the environment and Indigenous ways of life in Maralinga is the same impulse that allowed NASA (and by extension the CIA and the NSA) to organise communication and surveillance bases at the edge of the Woomera Rocket Range.

But, as fortune would have it, the optimists were again vindicated. This time the rumours that the Americans would be Woomera’s salvation, so often repeated over the past twenty years, proved for once to be accurate. Woomera was selected as the base town for the Joint Defence Space Communications Station, Nurrungar, which was to be built a short distance out of the village. This was a timely decision indeed, for the establishment of Nurrungar was nothing less than the salvation of Woomera. By becoming in effect the civilian support centre for the station, Woomera took on a new role and its economy was revitalised by the lavish injection of USAF funds. As the joint project work fell away to nothing the Americans were persuaded to more than triple their original payments to Woomera.⁵²

The arrival of the Americans in Woomera was aided by the extensive optical and sense detection infrastructures already in place in the range. Towards the end of the nuclear tests in Maralinga, Earth stations began to proliferate across Australia. Of the thirty-two active Earth Stations in Australia, ten are run by the United States, primarily by NASA and the Jet Propulsion Laboratory.⁵³ These stations fall into two categories: tracking stations and joint defence facilities. The first American action in Woomera was the establishment of a tracking station at Island Lagoon, named for the adjacent salt lake and situated just 20km from Woomera Village. Also known as Deep Space Station 41 (DSS41), the base was part of the global Deep Space Network

⁵¹ Masco, Joseph. “Mutant Ecologies: Radioactive Life in Post–Cold War New Mexico.” *Cultural Anthropology*, vol 15, no. 4, 2004, p. 523.

⁵² Morton, Peter. *Fire Across the Desert: Woomera and the Anglo–Australian Joint Project 1946–1980*. Defence Science and Technology, 1989, p. 535.

⁵³ MMA #2.2.239-259

created by NASA to ensure constant communication with future satellites and manned and unmanned spacecrafts regardless of their position in relation to the earth. DSS41 was the first deep space tracking station to be built outside of the United States and would be joined soon after by a similar facility near Madrid, Spain. Combined with the original facility in Goldstone, California in the United States, the three tracking stations provided services for most early NASA missions, up to and including the Apollo 11 mission to land humans on the Moon. A network of smaller tracking stations followed, and at any given moment there were between five to ten in service in Australia alone. Neil Armstrong's declaration from the surface of the Moon was famously received and relayed by the Parkes Observatory in New South Wales.⁵⁴

Island Lagoon's establishment coincided with the International Geophysical Year of 1957 and with the increase in ambition and frequency of NASA missions, Island Lagoon quickly expanded and was soon home to two of the world's most advanced optical and communication devices in the world. Weighing 3.5 tons and featuring a 20" aperture, the Baker-Nunn telescope was able to track the smallest of satellites, some as small as six inches in diameter, and whose camera was able to photograph a 6m sphere on the surface of the moon.⁵⁵ The optical abilities of the Baker-Nunn were complimented by the minitrack radar system⁵⁶ and the 26m antenna⁵⁷ for which DSS41 derives its name. This massive antenna was able to track satellites into deep space, including the Mariner 4 mission to Mars, and provided a key component of NASA's communication with its satellites and spacecraft.

⁵⁴ MMA #2.2.242, 260

⁵⁵ MMA # 2.2.261-270

⁵⁶ MMA #2.2.273-276

⁵⁷ MMA #2.2.277-287



[FIG. 28] DSS-41, Island Lagoon, c. 1963 (Don Gray)

By the late 1960s, a new base was constructed that did not share the same scientific intentions of Island Lagoon. Joint Defence Facility Nurrungar⁵⁸ [FW 2.20] was opened in 1969 as an Earth station operated by the Australians and the Americans. Also positioned adjacent to the restricted boundaries of Woomera, Nurrungar was designed specifically for space-based surveillance, separating it from Island Lagoon's work with NASA or the space missions that the Tracking Stations served. Nurrungar was built to compile data from orbiting satellites that monitored potential missile launches in Russia, Vietnam, the Persian Gulf and everywhere in between.

Despite the functional disparity in the two stations, Nurrungar and Island Lagoon were architecturally quite similar. Featuring banal buildings and a series of large antennae and support structures, the facilities could easily have been confused for one another. The key difference was the presence of large radomes at Nurrungar.⁵⁹ Radomes are spherical, tessellated structures that hide the enclosed antenna from prying eyes on the ground or in the air. While the Island Lagoon station was proud to display its 25m antenna, the type and function of the antennae at Nurrungar were closely guarded secrets.

⁵⁸ "Nurrungar" is another dubious adoption of Aboriginal languages, this time a rough translation of the Aboriginal word for *listen*.

⁵⁹ MMA #2.2.288-305



[FIG. 29] Joint Defence Facility Nurrungar patch (collection of the author)

Nurrungar had a modest beginning, but with the uptick in conflict in Vietnam and the continuing Cold War and arms race, the base became a strategic and political hotspot. Nurrungar grew and at its peak employed hundreds of Americans. So many in fact that the nearby Woomera Village adopted many American customs and cultures, including Independence Day parades. The larger it grew, the more attention it garnered. At one point, it was considered a prime target for the Russians should an intercontinental nuclear war begin.⁶⁰ Eventually Nurrungar was phased out, partly due to a few key failures of the station to track missile launches during the Gulf War. The facilities at Nurrungar were decommissioned and its operations were moved to the larger Joint Defence Facility Pine Gap [FW 2.19].⁶¹ Founded as part of a joint US-Australian treaty, Pine Gap opened in 1966 and initially employed approximately four hundred people, all American. In an attempt to align it with the peaceful missions of

⁶⁰ Pilger, John. "The Secret Country: The First Australians Fight Back". *Vimeo*, uploaded by John Pilger, 18 November 2010, <https://vimeo.com/16961683>.

⁶¹ MMA #2.2.306, FW.307

the Tracking Stations, its original name echoed the misdirection upon which it was founded: the Joint Defence Space Research Facility. Pine Gap operated for many years in complete secrecy.

Located only 18km from Alice Springs – a traditional home and cultural centre for Aboriginal culture – Pine Gap grew steadily to over one thousand employees. While conducting field work in 2018, I visited Alice Springs and was struck by the conspicuous presence of American culture in the small town. Generic “McMansions” sit in large, gated communities. Basketball courts and baseball fields dot the landscape. Cab drivers told me stories of drunk U.S. Marines leaving them large tips for rides from the casino back to their houses. Pine Gap is common knowledge, but the activities are still shrouded in vagaries and misinformation. It wasn’t until the leaks by Edward Snowden in 2014 that details about the operations and mission of Pine Gap became widely known. These documents revealed that Pine Gap was in fact one of the bases of operations for the U.S. surveillance of global cell phone communications. Pine Gap is in the business of collecting data from untold numbers of watching satellites. Its job, it seems, is to collect, collate, and report back to the CIA, NSA, etc. In essence, Pine Gap is the final cog in global system of surveillance collection; a planetary camera, an all-seeing photographic device that absorbs data and spits out a resultant image of innocence or guilt.

Two bases perform these functions: Pine Gap and its northern twin: RAF Menwith Hill in North Yorkshire UK, four hours north of London. Recent articles⁶² have raised the question: due to the use of cell phone data collected by the U.S. military on Australian soil in assassinations by unmanned aircraft in Yemen, Somalia, and Pakistan, could Australians be accused of war crimes and tried in the International Criminal Court? This is the invisible, multi-national, and multi-scalar platform of the optical politics that Woomera and Maralinga were founded. Hidden in plain sight, then denied, then exposed, the function remains the same. Living on a steady diet of

⁶² Cronau, Peter. “Pine Gap plays crucial role in America’s wars, leaked documents reveal.” *ABC News*, 20 August 2017. www.abc.net.au/news/2017-08-20/leaked-documents-reveal-pine-gaps-crucial-role-in-us-drone-war/8815472

plausible deniability combined with nostalgic ideas of geographical remoteness plus deafening political inaction, the politics of invisibility are here.



[FW 2.19] Burns, David. *Pine Gap I*. 2018.



[FW 2.20] Burns, David. *Nurrungar I*. 2018.

2.3: THE POLITICS OF INVISIBILITY



[FIG. 30] Knibbe, Morgan. *The Atomic Soldiers* (accessed 2018)

The fact that the void is not empty, mere lack or absence, matters. The question of absence is as political as that of presence. When has absence ever been an absolute givenness? Is it not always a question of what is seen, acknowledged, and counted as present, and for whom?⁶³

Documentary filmmaker Morgan Knibbe's "The Atomic Soldiers" highlights the ongoing trauma of American servicemen placed in alarming proximity to nuclear weapons tests in New Mexico and Nevada in the 1950s and 1960s. In a particularly harrowing section of the film, several men describe the optical force of the nuclear blasts and the effects on the soldiers placed in ad hoc trenches near ground zero. The men describe being instructed to turn their backs to the blast and to place their heads in their crossed arms resting against the back of the trench. Each soldier wore only normal fatigues and WWII era steel helmets. The men describe the sensation of the light coming from behind them, through their helmets, through their heads and eyelids, through the skin and muscle of their arms, making the bones and blood vessels in their arms clearly visible. One man describes being able to see the bones of the man crouched in front of him through his own closed eyes and crossed arms.⁶⁴

How did it come through all that, to get to your bones – that you could visually see them?⁶⁵

These claims are echoed by Ric Johnstone, a motor mechanic for the RAAF stationed in Maralinga during the Buffalo tests in 1956. He was positioned at a post near the village, so he would have been 20-30 kilometres from the blast. The American men interviewed for *The Atomic Soldiers* were less than two kilometres from

⁶³ Barad, Karen. "NO SMALL MATTER:" In *Arts of Living on a Damaged Planet*, 103–20. Ghosts and Monsters of the Anthropocene. University of Minnesota Press, 2017. <http://www.jstor.org/stable/10.5749/j.ctt1qft070.10>.

⁶⁴ In *The Nuclear Borderlands*, Joseph Masco describes the so-called Flashblindness experiments conducted on military volunteers during the Operation Plumbbob atomic tests in the United States. Specially designed high-speed electromagnetic shutters were placed in the pilots' goggles in hopes of developing equipment to temporarily shield the pilots' eyes during a nuclear war. Test subjects were deliberately blinded by nuclear blasts to determine the amount of time necessary for sight to return, if it did.

⁶⁵ *The Atomic Soldiers*. Directed by Morgan Knibbe, The New York Times, 2018. www.nytimes.com/2019/02/12/opinion/atomic-soldiers.html

ground zero. Despite the difference in distance, Johnstone describes a sensation very similar to that of the American soldiers:

We watched the detonation of the fist bomb from the compound near the village, wearing our everyday clothes. We were told to turn our backs to the blast area. There was a countdown over loud speakers from ten seconds after which we could turn to face the blast. While our backs were to the blast there was a white flash that seemed to come through the back of one's head and a warm feeling on the back of the neck.⁶⁶

In Australia, Yami Lester, an Aboriginal man originally from the area that would become Emu Field, describes the black mist fallout that descended onto his family in 1953, partially blinding him and many others, causing cancer in some, instantly killing more. Mr. Lester, with heavily sunken eyes, became a prominent activist and advocate for those injured or killed by the British atomic tests.⁶⁷

Island Lagoon was the first NASA outpost located outside of the United States and featured a 25m antenna. When the antenna was in operation, the electromagnetic transmissions were so intense that signs posted around the antenna warned the soldiers and scientists not to look directly at it while it was in operation.⁶⁸

Also at Woomera, at the nearby rocket testing ranges, operators of the regularly placed kinetheodolites⁶⁹ describe the sensation of focusing so intently on a missile or rocket's flight that when the impact and explosion occurred, they would temporarily feel the urge to flee their station, confused by the proximal inversion of the powerful telescope/camera.⁷⁰

These disconnected episodes are emblematic of the heightened state of the optical politics within and surrounding the Cold War era, and specifically that of Woomera and Maralinga. These instances transcend traditional visibility in that the normal physical operations of vision and visibility are deliberately exaggerated to the point of trauma; to the point of vision being hyper accentuated and then permanently

⁶⁶ Johnstone, Ric. "My First Trip to Ground Zero". *The British nuclear weapons programme, 1952-2002*. Douglas Holdstock and Frank Barnaby, editors; London, 2003.

⁶⁷ MMA #2.3.001-002

⁶⁸ MMA #2.3.003

⁶⁹ MMA #2.3.004-009

⁷⁰ *Woomera: The Silent Partners*. Australian Broadcasting Corporation, 1988.

removed. Visibility and vision – both human and machinic – were the cornerstones of the foundation of the Woomera Rocket Range and Maralinga.

The operative agent in these tests and situations is the otherworldly intensity of the light produced by the nuclear explosion. This light, described with almost nostalgic awe by the American servicemen, becomes a destructive metaphor for visibility. Visibility relies on light, but the nuclear tests, the extreme radio waves of DSS41, the extreme proximity of the images produced by the kinetheodolites place the human in direct contact with the violence.

When it comes to nuclear landscapes, loss may not be visibly discernible, but it is not intangible. The losses emblazoned on walls: shadows of what once was become eternal ... the flash so bright, the heat so hot, nearly every surface becomes a photographic plate. Loss is not absence but a marked presence, or rather a marking that troubles the divide between absence and presence.⁷¹

Light and visibility, though inherently connected and interdependent, are at odds in the milliseconds following a nuclear blast,⁷² and for the millennia of radioactive contamination and half-lives of the materials produced for and by the tests. The light, impossible to describe even for people who have witnessed it, stretches out its presence through the destruction of the optical devices placed in its proximity.

Just before an airplane breaks the sound barrier, sound waves become visible on the wings of the plane. The sudden visibility of sound just as sound ends is an apt instance of that great pattern of being that reveals new and opposite forms just as the earlier forms reach their peak performance.⁷³

⁷¹ Barad 106.

⁷² The Material-Media Appendix has several images from Manhattan Project head photographer Berlyn Brixner and Harald Edgerton that reveal a nuclear explosion milliseconds after the detonation.
MMA #2.3.010-039

⁷³ McLuhan, Marshall. *Understanding Media: The Extensions of Man*. Sphere Books Edition, 1967, p. 20.

In this passage Marshall McLuhan describes a moment of *remediation*, or a change of state from one medium to another. In this case, sound waves becoming visible just before an airplane breaks the sound barrier. In the case of the nuclear explosion, visibility becomes invisibility through the extreme manifestation of light. Woomera came into being because of a requirement for optimal optical conditions; the British engineers required a limitless space that was easily surveilled. They built a weapons range based on observation and were soon joined by the Americans who further advanced the optical technologies present in Woomera. The technology that was the basis of Woomera was in turn destroyed by the nuclear blasts.

PART 3: MEDIATE / REMEDIATE

3.1: COLONIAL MAPPING AND AUSTRALIA



[FW 3.1] Burns, David. *Trig point (Tietkens Well)*. 2018

Scattered throughout central Australia are conspicuously placed survey markers called *trig points* [FW 3.1, 3.2, 3.3, 3.4, 3.5]. Some are circular brass plates mounted to a concrete pad or footpath, others are complex stone cairns that require disassembly and re-assembly to use. Some include a mount for a theodolite and a small plaque with basic coordinates. At Maralinga, the trig points are identified with three-legged aluminium signposts. Standing approximately five metres in height with a four-sided cap that loosely marks the cardinal directions, the trig points dot many high points in the landscape. In Maralinga, there's a trig point near the perimeter boundary of the Forward Area, within walking distance of Tietkens Well. Their appearance is obviously modern when compared to the nineteenth century well and its rotting timber shaft. This particular trig point sits on a slight rise, overlooking the nuclear test sites to the north. Adjacent to the trig point is a warning sign erected during the remediation in the 1990s. It is written in Pitjantjara alerting anyone traversing the site not to disturb the land.⁷⁴ In a place with so few visible objects, the trig point's proximity to the well and the warning sign is unique. These three things, from three distinctly different eras and about fifty years older than the next, create an unintentional monument to the history of colonialism.

The trig point's functional purpose is to provide a base point for locating oneself in the landscape. This trig point is surprisingly fragile. Its long legs are standard aluminium tube and the four-sided head is constructed of sheet steel. The legs are mounted to crude concrete foundations. The choice of lightweight aluminium makes sense, Len Beadell and his team would have transported the materials for long distances and over rough terrain. Aluminium's resistance to corrosion is ideal for the South Australian climate. But still, the object seems too slight and its height a bit too tall.

⁷⁴ These signs are spaced every fifty metres along the perimeter boundary of the nuclear fields, for a total of 1995 signs. This perimeter was determined during the 1996 remediation and encompasses 412 km². The area is not fenced, per the desires of the Maralinga Tjarutja who feared a fence would inhibit movement across the site. The signs are the only visible marker that you are entering the fields. The signs, whose design and language were approved by the Maralinga Tjarutja, warn people not to camp or dig into the ground, but also signal that hunting wildlife is acceptable.



[FW 3.2] Burns, David. *Trig point (Alice Springs)*. 2018



[FW 3.3] Burns, David. *Trig point (Cooper Pedy I)*. 2018



[FW 3.4] Burns, David. *Trig point (Coober Pedy II)*. 2018



[FW 3.5] Burns, David. *Trig point (Breakaways)*. 2018

There must be others around, or there were at some point, their functionality is dependent on being able to see at least two others. We scan the horizon looking for sibling trig points, but we don't find them. We're standing on the edge of the nuclear test fields which fan out to the north. Taranaki – home to the largest nuclear detonation and the most contaminating minor trials – along with Marcoo, Breakaway, Tadge, One Tree and the unused Tufi are all to the northwest, minor trials sites of Wewak, Kittens, Rodents, and Rats are to the northeast. We assume the missing markers must have been destroyed by the blasts or were taken down and interred in a burial pit during the remediation process. Maybe they've been knocked over by camels. Or maybe we just can't see them, obstructed by distance and the monotony of the site.

It's easy to imagine Beadell surveying the site, bulldozing temporary tracks into the soil⁷⁵, and then suddenly finding Tietkens Well. Maybe he decided to locate this trig point near his predecessor's intervention. This thought humanises Beadell, imagining his deference to Tietkens and his desire to be seen in the same light as an "explorer". But instead, his actions and those of the seemingly innocent trig point represent the first moments of the British efforts to regularise the foreign Australian bush: establish a grid, locate yourself, and build a resilient platform for modern wayfinding. The trig points are the opening salvo of Maralinga nuclear colonialism.

In his second book, bluntly titled *Blast the Bush*, Beadell wrote in great detail about the process of searching for and eventually identifying the permanent site for British nuclear weapons tests. In a short chapter near the end of the book, Beadell describes a moment that could have been the topic for an entire book, or series of books. It certainly should have ended all of the speculation about using Maralinga for nuclear weapons. He describes coming upon a formation that he and his mates nicknamed the "Aboriginal Stonehenge".⁷⁶ In a clearing of "about a hundred and twenty yards" he found a careful composition of slate markers, three feet high, buried in the ground a foot or two deep. The slate markers were uniform in their thickness and were perfectly rectangular. They were situated a few feet apart from one another along

⁷⁵ MMA #3.1.007-024

⁷⁶ MMA #3.1.025

a “perfectly straight long axis”. There were sixty of these slate “posts”, with additional three-foot diameter slate clusters marking the east and west end points. Another cluster was located a few yards past the southern-most point and the entire installation was only a “few degrees west of north”. After a detailed description of the deliberate, measured work, Beadell says, remarkably and without irony, “On closer inspection they seemed to be rather carefully placed.”⁷⁷ Beadell continues by describing the formation in greater detail remarking that he and his team took extensive photographs and even located and carefully packaged a piece of charcoal for carbon dating. He clearly understood the implications of his “discovery”, yet was quick to diminish its origination by stating:

Being in so isolated an area it was obviously an ancient Aboriginal ceremonial ground built by those primitive, stone-age nomads in some distant dreamtime.⁷⁸

Like Sturt, Tietkens, and so many other “explorers” before, Beadell was blind to the significance of the potentially extraordinary example of sophisticated Aboriginal engineering he had found. His discovery didn’t encourage him to question his ideas about the cultures and peoples that built the formation, instead, its value was based on the significance that other white people would affix to it. It didn’t cause him to abandon the expedition or to insist on finding another location for the permanent testing site. He mentions several times in other chapters that he is able to radio to the base at Woomera to arrange airborne shipments of food and supplies, but he didn’t use the same system to request an archaeologist. He didn’t enquire with the Aboriginal people he knew as to the site’s heritage. Instead, Beadell, with his British and Australian mates, gave it a colonial nickname – the *Aboriginal Stonehenge* – and then continued their work bulldozing new tracks in their search for a flat, open space for bombs. They erected a grid of aluminium trig points across the sacred land.

The trig points represent the earliest intervention in marking, measuring, and quantifying a land that had resisted similar attempts for hundreds of years. The trig point at Maralinga pierced the land to assign a western system of quantification on

⁷⁷ Beadell, Len. *Blast the Bush*. Angus and Robertson, 1967, P.174.

⁷⁸ Beadell 173.

a terrain that was actively opposing such incursions. It hid its water from Tietkens, it masked its location from railway surveyors with the Ooldea Range, and it successfully avoided white invasion. The trig point, delicate in its construction, was surprisingly resilient and steadfast in its work.

In this final chapter, I examine further issues pertaining to the material histories of the land in Maralinga, and beyond. The first chapter exposed the policies of terra nullius that enabled the dispossession of Indigenous cultures and communities. The second chapter focused on the imaging and optical technologies that define how and why we see what we see. My attention now turns to the land as a political medium both in the context of the ongoing struggles for Aboriginal land rights and self-determination, but also in the technologies of land remediation. The nuclear colonial trig points that facilitated the fate for Maralinga can be viewed alongside the sovereignty-piercing actions of Aboriginal activists in 1972 at the Aboriginal Embassy. Consequently, the chapter concludes with contrasting methods of engaging a damaged and disrupted land via the technical remediation of radioactive contamination and also the methods by which Aboriginal artists have interpreted the trauma produced by the Maralinga tests.

3.2: THE ABORIGINAL EMBASSY



[FIG. 31] The Aboriginal Embassy, 27 January 1972. Left to right: Michael Anderson, Billy Craigie, Bert Williams and Tony Coorey (Photograph: Noel Hazzard, State Library of New South Wales)

In the early hours of 27 January 1972, four young Aboriginal men erected a beach umbrella on the lawn of the Australia's Parliament House, claiming the land underneath for a new embassy, an *Aboriginal Embassy*.⁷⁹ The intervention occurred at the height of the struggle for Aboriginal land rights that had recently become frontpage news due to the Wave Hill Walkoff, but had been fought continuously since European colonisers arrived in 1788. The Embassy began as a one-night, tongue-in-cheek direct action, but grew into an international movement. The legacy of the Embassy persists in both the ongoing Aboriginal struggle for self-determination and also in popular culture. For this research, the Embassy is positioned as a spatial media apparatus that upends issues of invisibility. Specifically it confronts the lack of Aboriginal sovereignty through what I posit is an architectural act of resistance. The erection of the umbrella was a critical injunction into the fragile frontier of Australian nationhood. When seen in concert with similar sovereignty-challenging events, the Embassy dramatizes a convoluted history of Australian land rights in reverse.

Moreover, the Embassy was a significant demonstration of the power of photography in Australian politics. The four Aboriginal Embassy activists were driven to Canberra that night by their friend Noel Hazzard, a photographer from the Sydney-based communist newspaper *The Tribune*.⁸¹ The photograph above, taken by Hazzard immediately following the intervention, portrays the four men (Billy Craig, Toney Coorey, Michael Anderson, and Bertie Williams) sitting beneath a domestic umbrella, holding a few hastily made handwritten signs. Michael is smiling for the camera. The addition of Hazzard to the group reveals that the intention of the intervention was as much photographic as it was performative.

The activists had devised the plan around a kitchen table in Sydney's Redfern neighbourhood. Redfern is a place with deep ties to the Aboriginal community and the site of the very first resistance to the British invasion.⁸² The Embassy was a hasty response to a speech delivered by Prime Minister William McMahon the day

⁷⁹ The Aboriginal Embassy would eventually become known as the Aboriginal Tent Embassy.

⁸¹ Hazzard would later be a part of a national controversy involving Aboriginal activist and scholar Gary Foley. ASIO DESCRIBE had photographed Foley on several occasions entering and leaving the Communist Party headquarters in Sydney. The resulting press tried to smear Foley as a Communist, when in fact he was simply taking photography lessons from Hazard.

⁸² MMA #3.2.001

before. The date of the speech was 26 January 1972 – Australia Day. The speech was highly anticipated and promised to finally deliver the government’s decision on Aboriginal land rights. Both major Australian political parties – McMahon’s conservative Liberal Party and the left-leaning Labor Party – were beginning to give consideration to demands for expanded land rights for Aboriginal and Indigenous peoples. There was optimism that McMahon’s speech would signal a shift in mainstream Australian politics towards negotiations with Aboriginal leaders and communities. In a surprise, but not altogether unexpected, turn of events, McMahon instead announced that Aboriginal people would not get the land rights they vigorously sought. In fact, they would have to prove their ability to successfully work the land to qualify for new extended leases on land that they already occupied.

In Hazzard’s photograph⁸³ we see the protestors wearing street clothes and with no visible supplies, suggesting that the men did not expect the protest to last much longer than the first night. They likely assumed they’d be arrested immediately, Hazzard would take some photos, and they’d be back in Redfern in a couple of days. Instead, the umbrella became a tent, then a collection of tents, and eventually an international story. The simple umbrella would evolve into a months-long protest event attracting thousands of people from multiple groups of Aboriginal and Torres Strait Islander activists and non-Indigenous people as well. In the process, the Embassy alerted similar Indigenous groups from around the world to their cause and changed the national conversation about Aboriginal land rights.⁸⁴

While Hazzard’s photograph of the Embassy was the first, images by Sydney Morning Herald staff photographer Bill Errington also feature heavily in the media coverage at the time. In the two men’s photographs, the tone of the Embassy diverges in subtle, but critical ways. Hazzard’s photos feature placards with the slogans: “Aboriginal Embassy”, “Land Now Not Lease Tomorrow”, and “Land Rights Now Or Else!” The men are casual and are obviously comfortable with Hazzard and seem to be enjoying the wry wit of the event. In contrast, the photographs taken by

⁸³ Hazzard was present for much of the protests and a large selection of his photography is included in my archive. MMA #3.2.017-043

⁸⁴ Foley, Gary, and Andrew Schaap, editors. *The Aboriginal Tent Embassy: Sovereignty, Black Power, Land Rights and the State*. 1 edition, Routledge, 2016.

Errington included the slogans: “Destroy Arnhem Land, We Destroy Australia”, “Why Pay To Use Our Own Land”, and “Which Do You Choose?? Land Rights Or Bloodshed!!” The men’s expressions are more solemn. They look directly into the lens. Both sets of photographs were credited as being taken on 27 January 1972. The slogans displayed in the Errington photograph have a more aggressive tone and fall more closely in line with the mainstream news coverage of the growing Australian Black Power movement in Sydney. The Hazzard photos, by contrast, reflect the sentiment of non-violence that would dominate the discussion during the lifespan of the embassy’s initial presence from 26 January to 30 July 1972.



[FIG. 32] Mike Anderson, vice chairman of the Aboriginal Lands Board, with Billie Cragie of Moree and Bert Williams of Nowra, with signs protesting against the government's decision not to grant full land right to Aborigines, at the Aboriginal Tent Embassy on the lawns of Parliament House, Canberra, 27 November 1972. SMH Picture by Errington (Photo by Fairfax Media via Getty Images/Fairfax Media via Getty Images via Getty Images)

The discrepancy in the tone of the two groups of photographs mirrors the confusion and the turmoil in which the Aboriginal Embassy emerged in 1972. It also conveys the quickly evolving and adapting nature of the activists and their demands. The Embassy was able to mediate their message, engaging viewpoints from competing ideas within their own ranks, while confronting and being confronted by differing manifestations of colonialism.

When the activists forcefully pierced the Parliament House lawn with their umbrella, they also perforated Australia's fragile and fraught conceptions of its own sovereignty. This wasn't the first challenge to Australian state sovereignty, Australia's foundational imaginary is based on layers of contradictory historiographies. However, looking back at 1972 and charting the actors present in Canberra at the time of the Aboriginal Embassy, the conflicting international political forces, and the lingering omnipresence of the crown, the connections between the various perforations of sovereignty begin to align. The Embassy was intended to be a temporary spatial intervention to galvanise focus on another promise unkept. Instead it became a persistent reminder of the conversation around Aboriginal self-determination.

3.2.1: THE POLITICS OF THE EMBASSY

The Aboriginal Embassy was erected on the lawn of the Parliament House in Australia's capital city of Canberra in the Australian Capital Territory. From above, Canberra is organised by a series of concentric circles and diagonal lines. The primary axis begins in the centre of the largest circle, located in the city's southwest. The vector's trajectory – roughly forty-five degrees to the northeast – proceeds through a formal lawn, across a decorative lake, and terminates on the north bank in another series of circles. The form and scale of the main organisational circle is not so dissimilar to the patterns previously discussed at Tufi or Papunya.⁸⁵ However, these landforms aren't military or Indigenous, but the product of American architects.

In 1901, the newly federated Australia decided to build a capital city symbolically located one hundred miles (160km) from the traditional centre of politics in Sydney. Canberra was almost named Captain Cook, for the celebrated colonial invader.⁸⁶ The name Canberra was chosen and publicised as an Aboriginal word meaning “meeting place”, however this etymology is highly disputed.⁸⁷ A site was chosen and an international design competition was launched.⁸⁸ The winning scheme was designed by the relatively unknown husband and wife team of Walter Burley Griffin and Marion Mahony Griffin. It heavily referenced the distinct organic, garden city style of their former boss, legendary American architect Frank Lloyd Wright.⁸⁹ In 1972, the Aboriginal Embassy was sited on axis in the formal lawn between the white colonial Parliament House and Lake Burley Griffin, after the architects.

⁸⁵ The similarities in scale between the three sites is uncanny. Each is approximately 0.95km in diameter.

⁸⁶ Kangaremu, Olympus, and Aryan City were also suggestions. MMA #3.2.068-070

⁸⁷ Local Indigenous leaders dispute the translation of “meeting place”, claiming that the actual translation refers to geological features of the city: two symmetrical hills that frame the city.

⁸⁸ MMA #3.2.071-073

⁸⁹ MMA #3.2.072

Permission was neither sought nor granted, in an act that presumed the authority of a sovereign people to use their land as they saw fit, even as the sovereignty was denied by the laws of the settler society. In naming their camp an embassy, the activists drew attention to this disjuncture, pointing out that without land rights, they were aliens in their own land.⁹⁰

The umbrella referenced everyday life in suburban Australia, problematising a benign spatial device. As the protest grew and tents were erected, the ephemerality of the occupation persisted, supported by a legal loophole that allowed camping on the Parliament lawn. By deploying spatial media as the outward face of the protests, the activists in 1972 inadvertently created a precedent of spatial politics that has persisted to this day.

The group of Aboriginal Embassy protestors eventually reached more than two thousand, including hundreds of Aboriginal activists from across Australia and a large cadre of students from the nearby Australia National University. The ability of the Embassy to concentrate disparate Aboriginal activists from across the continent is seen by many as one of the most significant achievements of the Embassy.⁹¹ Prior to 1972, each group advocated a range of policies from a conservative reconciliation strategy to a stance of radical armed insurrection. While the Embassy was entirely peaceful, the presence of the activists was a constant point of agitation for Prime Minister McMahon and the conservative government. The Embassy expanded and contracted during its six-month existence, but the core group of activists maintained vigil, supported by students and staff of ANU. On 5 February, a set of demands was drafted by the delegates at the Embassy and included:

⁹⁰ Iveson, Kurt. "The Spatial Politics of the Aboriginal Tent Embassy, Canberra." *Aboriginal Tent Embassy: Sovereignty, Black Power, Land Rights and the State*, edited by Foley, Gary, and Andrew Schaap. Routledge, 2016.

⁹¹ Foley, Gary. Personal interview. 17 April 2018.

1. Control of the Northern Territory as a State within the Commonwealth of Australia; the parliament in the NT to be predominantly Aboriginal with title and mining rights to all land within the Territory.
2. Legal title and mining rights to all other presently existing reserve settlements throughout Australia.
3. The preservation of all sacred sites throughout Australia.
4. Legal title and mining rights to areas in and around all Australian capital cities.
5. Compensation monies for lands not returnable to take the form of a down-payment of six billion dollars and an annual percentage of gross national income.

In addition, Anderson created a “ministry” with various ministerial titles that mocked the structures of the current conservative government. The most obvious being the Minister for Arts, Environment and Caucasian Affairs, a take on the recently created Minister of Arts, Environment, and Aboriginal Affairs. The list of demands was soon scrapped by the Embassy when they acknowledged that recreating the policies and structures of the existing government oppressors was simply perpetuating the same structures of control.

On 8 February, Gough Whitlam, Labor member of parliament and leader of the opposition, visited the Embassy and participated in discussions about a variety of issues. The discussion, described to me by noted Aboriginal activist and Victoria University professor Gary Foley, forced Whitlam to confront the problematic positions held by government and by the Labor opposition. John Newfong, the first Aboriginal journalist to be employed by Australian mainstream media, was the chief spokesperson for the Embassy and following its removal in July 1972, wrote the following for the magazine *Identity*:

While the front lawn conference fell far short of gaining everything the Embassy has asked, it nevertheless went a great deal further than most people had expected. At a press conference immediately after the discussion, Mr Whitlam said that a Labor Government would be committed to a 'properly representative body in the Northern Territory with full legislative powers'; to a 'complete reversal of the present Government's land rights policy where it denies corporate title to reserve lands'; and to the 'protection of all those areas of spiritual significance to the original inhabitants of this country'.⁹²



[FIG. 33] Gough Whitlam meets activists from the Aboriginal Tent Embassy, 1972.

The Aboriginal Embassy was at the centre of multiple disparate, yet intimately related, movements for the expansion of land rights for Aboriginal people. The activists at the Embassy successfully influenced Whitlam, whose presence at the Embassy bolstered his campaign for prime minister accompanied with his progressive politics and catchy "It's time" campaign.⁹³ In the lead up to the federal elections in 1972, Whitlam had emerged as a progressive leader, complimented by his political

⁹² John Newfong, "The Aboriginal Embassy: its purposes and aims," *Identity*, July 1972, pp4-6.

⁹³ MMA #3.2.074-75

awakening on the lawn of Parliament House at the Aboriginal Embassy. Whitlam's election as prime minister in December 1972 would usher in a brief, yet highly productive, era of progressive change in Australian politics.⁹⁴ A key moment of Whitlam's legacy would be encapsulated in the Meryn Bishop photograph of he and Vincent Lingiari, which I discussed in the introductory chapter in relation to the strikingly similar photograph of the 2014 Section 400 Excision Event.

However, Whitlam's tenure as prime minister would last only three years, ending in an abrupt and scandalous dismissal of his government. The circumstances surrounding Whitlam's dismissal are murky. The primary reason, according to Australian historian and author Jenny Hocking, is directly related to two seemingly opposing issues of sovereignty: the American surveillance operations in Pine Gap and Whitlam's support of Aboriginal and Indigenous land rights and self-determination.⁹⁵ This complex navigation of historically conflicting ideologies made Whitlam the enemy of not only Australian conservatives, but also the British Crown and the American government. Whitlam was simultaneously standing up to the twentieth century American colonial efforts to establish and run secret surveillance military bases but was also acknowledging the colonial harm to Aboriginal subjectivity and advocating for the return of sovereign Australian land.

After a critical comment by Whitlam stating a military strike by the United States in Cambodia was "corrupt and barbaric", Australian journalist John Pilger reported that the Nixon White House was so angry that it declared Whitlam may well be a North Vietnamese collaborator. Whitlam brought Pine Gap into the conversation soon after with his famous statement to the US ambassador, "Try to screw us or bounce us [and Pine Gap] will become a matter of contention".

⁹⁴ Whitlam's tenure as prime minister would be one of the most productive periods in Australian history. His list of achievements is extensive, some highlights include: removing all Australian troops from Vietnam, ending conscription and excused deserters, the striking of tax on contraceptives, creation of welfare credit for single mothers, the first no fault divorce law, and university fees were abolished. In relation to the Embassy, Whitlam struck down the final traces of the White Australia Policy with the passage of the Australian Citizenship Act that removed legal discrimination based on ethnicity and the 1975 Racial Discrimination Act which overrode any state-based discrimination policies. In 1973 he earmarked \$500,000 for the creation of the Aboriginal Housing Company.

⁹⁵ Hocking, Jenny. *The Dismissal Dossier Updated Edition*. Updated ed edition, Melbourne University Press, 2016.

Gough Whitlam dared to challenge the invisible forces of colonial conceptions of sovereignty and the invisible forces poked back. In a series of events whose sequence and principle players are still largely unknown⁹⁶, Whitlam was removed from his post by Governor General John Kerr on 11 November 1975.⁹⁷ Hocking has argued that Kerr was more concerned about his status with the royal family than the sovereignty of the Australian state. It's safe to assume that Whitlam was fully aware of the enemies he had made with his progressive policies and extraordinary productivity. He was also aware of the enemies he was creating in the White House and the U.K. House of Parliament with his anti-war stance and his recognition of the communist People's Republic of China. He did not, however, correctly gauge the colonial loyalty that his Governor General had for Britain. As a result, Whitlam would become the first and only Australian prime minister to be dismissed by a Governor General.

⁹⁶ Jenny Hocking is in an ongoing legal battle for the release of the private letters of Governor General John Kerr. The letters are held in the Australian National Archive but are being kept from the public by an order from Queen Elizabeth. This bizarre intervention has only fuelled speculation about the influence of the British in Whitlam's dismissal. This story, and Gough Whitlam in general, has been the topic of several books by Hocking, including *The Dismissal Dossier* published in 2016.

⁹⁷ MMA #3.2.076-078

3.2.2: “WHITE AUSTRALIA HAS A BLACK HISTORY”

Invasion is a sustained process with no end in sight. In 1988, Australia’s bicentennial year, it was clear that Australian history is not so much a set of events or social relations as an arena or self-definition, and that the strategy of denial is not confined to the past. The indigenous people are the official losers, but when we step away from the fanfare of ideologies, we hear another story. The invaders focussed their options along the barrel of a gun, and their denial of the past constantly distorts their assertions of their own identity, and of their relationships to others.⁹⁸

The choice of the iconography of the umbrella as the manifestation of the Embassy was no mistake, neither was the day of the Embassy’s founding: 26 January – Australia Day. For white Australia, Australia Day is a day of celebration. Similar to Independence Day in the United States, Australia Day is a mid-summer national holiday known for fireworks and patriotism. Australia Day officially commemorates the day of the landing of the First Fleet on Australian soil in 1788; a moment whose historical significance is clear, but whose meaning is still up for debate. 26 January 1788 was not the first time that Europeans set foot on the continent that would become Australia, but it was the most significant in the future imaginary of the Europeans and Indigenous alike.

White Australia regularly references its Commonwealth pride and its British and white European past, often to the point of conflict and violence. This occurred in the Lambing Flat Riots in the 1860s, it was the basis for the official White Australia Policy⁹⁹, and it was present in the lack of debate surrounding the decision to cede land to the British to create Woomera. Australia Day is the contemporary manifestation of this impulse for European identification. The arrival of the First Fleet was clearly a moment of destruction, but many in Australia celebrate this as the birth

⁹⁸ Rose, Deborah. *Dingo Makes Us Human: Life and Land in an Australian Aboriginal Culture*. New Ed edition, Cambridge University Press, 2009, p2.

⁹⁹ Soon after federation in 1901, the government passed the Immigration Restriction Act that established the a strict set of guidelines for restricting non-white immigration into Australia. These policies remained up into the 1970s, the final remnants removed by Gough Whitlam. MMA #089-091

of the nation. By doing this they celebrate the forced removal and transportation of petty criminals from Britain to a land that was foreign to them in every way and whose Indigenous inhabitants did not want them.¹⁰⁰ They celebrate the genocide and loss of culture for hundreds of distinct Aboriginal and Torres Strait Islander countries. And in turn, they reinforce Australia's colonial and commonwealth status. The popular slogan, "white Australia has a black history" is self-evident and also violently rejected. The politics around the foundation and operation of Woomera and Maralinga illustrate the destructive forces that Australia's Commonwealth status still brings. This contradictory impulse that conjoins Australia's national day of celebration with the same day that the British invaded the continent evidences an acute disagreement around the nation's sovereignty.

Australia Day is not celebrated by all. Australia Day has become a significant day for national protests by Aboriginal, and increasingly non-indigenous, people. Perhaps the most significant protest took place just nine years before the establishment of the Woomera. On 26 January 1938, the Australian government mounted nationwide celebrations for the 150th anniversary of the arrival of the First Fleet. The event included a live-action re-enactment of the moment of James Cook's arrival in Botany Bay, replete with Aboriginal people forced to represent a subservient, primitive landing party. In response, Aboriginal Australians mounted their first major protest to the colonial presence of Europeans by staging a major event in Sydney called the *Day of Mourning*.¹⁰¹ Deliberately organised to conflict with the national celebration of the sesquicentennial anniversary of the "discovery" of the country, the success of this protest foreshadowed the heightened political activism by Aboriginal people in the coming decades.

¹⁰⁰ An estimated 22% of Australians are descendants from convicts transported to Australia from Britain between 1788-1868. 98% of 160,000 transported were guilty of minor property crimes.

¹⁰¹ MMA #3.2.092-094



[FIG. 34] Day of Mourning protest, 1938

Actions like the *Day of Mourning* foreshadowed the success and potency of the Aboriginal Embassy. Between the Day of Mourning in 1938 and the Embassy in 1972, there were, of course, many other significant moments of Aboriginal protest. The 1960s saw a marked increase in civil rights movements in Australia including the Australian Freedom Rides (1965)¹⁰², the Wave Hill Walk-Off (1966)¹⁰³, and the nationwide referendum on removing racist language from the constitution (1967). Known as the “Yes” campaign, the referendum was a vote on the Constitution Alteration (Aboriginals) 1967 Act, a decision on whether or not to edit two discriminatory references of Aboriginal people in the national constitution. The vote passed with 90% approval marking a clear signal that the national opinion about the rights and status of Aboriginal people in Australia was evolving. While the referendum did not bring sweeping changes to the everyday life of Aboriginal people, it was still generally received as a positive step forward. Bolstered by this vote, yet dismayed by the lack of real change, the years that followed witnessed an increased alignment with international civil rights movements in the United States.

While the 1967 Yes Campaign specifically addressed the removal of racist and dismissive language in the Australian constitution towards Aboriginal people, the debate since has centred around exactly what kind of relationship Aboriginal people should have with the Australian government. Before the Aboriginal Embassy, the policy of both major political parties in Australia was one of *assimilation*. This policy

¹⁰² In the early 1960s, the American Civil Rights Movement began to influence activists in Australia and led to similar acts of non-violent, direct action protest. The most directly related were the Australian Freedom Rides of 1965, led by Aboriginal student and activist Charlie Perkins. The group of protestors targeted specific moments of abject racism and exclusion towards Aboriginals, including swimming pools and social clubs. Photographer Noel Hazzard – discussed above in relation to the Embassy – accompanied the Freedom Rides and provided extensive documentation of the protests and their sometimes violent conclusions. Additionally, Hazzard followed Charlie Perkins as he moved through the small villages and towns that the Freedom Rides encountered, providing extensive ethnographic documentation of the living conditions of Aboriginal families in rural New South Wales. MMA #095-168

¹⁰³ The Wave Hill Walk-Off began in August 1966 when Vincent Lingiari led a strike of two hundred Gurindji stockmen, house servants, and their families from the Wave Hill cattle station; an immense 15,000 square kilometre station owned by British pastoral company Vestys and was the largest of its kind in the Northern Territory. Over the course of the nine-year strike, several offers were made to the group, including an option to sell the land to the Gurindji or to offer a long-term lease of the land. Soon after being elected prime minister, Gough Whitlam began the creation of a deal that would create a fund that would purchase the land from Vestys and in turn, give it back to the Gurindji. MMA #3.2.169-184

was based on the idea that if Aboriginal people would assimilate into white society, their issues would resolve themselves. Positions like this were the contemporary descendants of the White Australia Policy and the violent actions it engendered, including the Stolen Generations. In 2017, a convention of Australian First Nations peoples took place near Uluru to address the lack of recognition of Aboriginal and Torres Strait Islander people in the constitution. The *Uluru Statement from the Heart* is the result of this rare event.¹⁰⁴ Delivered to Prime Minister Malcolm Turnbull in June 2017 – and rejected soon after – the statement stands as a unique document articulating the past, present, and future of ideas of sovereignty among First Nations peoples of Australia.

However, the statement is not without controversy. The primary objection by the contemporary organisation of the Aboriginal Tent Embassy is that the Uluru statement cedes sovereignty to the colonising forces of the state, something that activists at the Embassy have never agreed to. The Embassy issued a terse bullet-pointed rejection of the Uluru statement and the process by which it was written and conceived, including the following sentence that aligns the Aboriginal struggle self-determination with similar Indigenous groups around the world.

The great First Nations chant of ‘Sovereignty Never Ceded’ is being challenged and betrayed by treasonous agents of the coloniser.¹⁰⁵

The challenge and betrayal that the Embassy reads in the Uluru statement is perhaps located in the following sentence:

Makarrata is the culmination of our agenda: the coming together after a struggle.¹⁰⁶

¹⁰⁴ MMA #3.2.185-186

¹⁰⁵ “Walkout Statement Aboriginal Embassy Statement from the Sacred Fire” nationalunitygovernment.org/content/walkout-statement-aboriginal-embassy-statement-sacred-fire accessed on 12 July 2019.

¹⁰⁶ “Uluru Statement From The Heart.” Referendum Council website. www.referendumcouncil.org.au/final-report.html#toc-anchor-ulurustatement-from-the-heart. accessed on 12 July 2019. MMA #3.2.186

Makarrata is an ancient Yolgnu word first introduced to mainstream Australia in the 1970s by the National Aboriginal Counsel. In the statement it's used to signify a treaty or truce, but the literal definition is much more descriptive.

Makarrata literally means a spear penetrating, usually the thigh, of a person that has done wrong... so that they cannot hunt anymore, that they cannot walk properly, that they cannot run properly; to maim them, to settle them down, to calm them — that's Makarrata.¹⁰⁷

The original action of the Aboriginal Embassy, the planting of a beach umbrella into the lawn of Parliament House, can be read as a *makarrata*: a ceremonial piercing into the heart of Australia's government. This, however, also reveals a marked separation in the thoughts of two distinct groups of thought around the position of the Indigenous person in the context of the contemporary Australian state. The group at Uluru sees a moment of reconciliation at hand, a time when Indigenous and white Australia will come together after a "struggle". The Aboriginal Embassy sees it quite differently, refusing to concede defeat, refusing to acknowledge the colonising state while continuing to assert Indigenous sovereignty.

¹⁰⁷ Pearson, Luke. "What is a Makarrata? The Yolgnu word is more than a synonym for treaty." ABC News, www.abc.net.au/news/2017-08-10/makarrata-explainer-yolgnu-word-more-than-synonym-for-treaty/8790452, accessed on 12 July 2019.

3.2.3: THE LEGACY OF THE EMBASSY



[FIG. 35] Bell, Richard. *Embassy*. 2016, Museum of Contemporary Art, Sydney. (Milani Gallery)

The Aboriginal Tent Embassy has experienced a continuing presence in Australia, in both the imaginary of the nation in terms of its Indigenous self-determination, but also as a highly recognisable icon. The original Embassy in Canberra has been in steady occupation since 1972. Further iterations of the Embassy have manifested in various cities, most notably in *The Block*¹⁰⁸ in the Sydney neighbourhood of Redfern in 2014.

¹⁰⁸ In 1973, Gough Whitlam allocated \$500,000 AUD for the creation of the Aboriginal Housing Company (AHC). The goal of the AHC was to create a zone of Aboriginal-managed housing that would empower the Aboriginal community. The AHC used the initial grant from the Whitlam government to buy houses in the inner city Sydney neighbourhood of Redfern, located on the traditional lands of the Gadigal People of the Eora Nation. This area soon became known as “The

The Embassy has also been influential in its successful manipulation of spatial politics. It has become an inspiration, both explicitly and implicitly, for contemporary Aboriginal artists as a model for the use of architectural space as a mode of political practice. For the 2016 Sydney Biennale, titled *The future is already here – it's just not evenly distributed*, curator Stephanie Rosenthal scattered the exhibition across Sydney in what she titled “embassies of thought”. The Museum of Contemporary Art (MCA) – a major institution located on the harbour and opposite the Sydney Opera House – was renamed the *Embassy of Translation*. In the forecourt of the MCA, Australian artist Richard Bell restaged the Aboriginal Embassy, titling his version *Embassy* and describing it as an “homage to the genius of the young black people”¹⁰⁹ who erected the original Embassy in 1972.¹¹⁰ A large green canvas tent represented the ad hoc assemblage of temporal architecture that existed in the original Embassy in 1972. Bell’s *Embassy* channels the history of the original Embassy in its status as a location of conversation and debate. In each manifestation of *Embassy*, Bell has hosted events that engage issues that were very present in the 1972 Aboriginal Embassy.¹¹¹

Within eyesight of Bell’s *Embassy*, Archie Moore also restaged a historical Aboriginal architectural space. Moore sited his work in the rarefied confines of the Royal Botanical Gardens overlooking Bennelong Point, the peninsula on which the Sydney Opera House now stands. Bennelong Point is named after Woollarawarre Bennelong (1764-1813), an Eora Aboriginal man who is best known for his problematic diplomatic and personal relationship with the captain of the First Fleet, Governor Arthur Phillip. Soon after landing in Sydney’s harbour, Phillip kidnapped Bennelong and other local Aboriginal people in a frustrated attempt to establish connections with

Block.” In recent years, the Block has been the site of a bitter dispute about a proposed development called the Pemulwuy Project, after the legendary Aboriginal warrior. The creation of the Redfern Aboriginal Tent Embassy was a direct protest of the development. Pictured in the Material-Media Appendix are two of principal figures – on opposite sides – in the debate, Mick Mundine and Jenny Munro.

MMA #3.2.189-190

¹⁰⁹ www.abc.net.au/news/2016-03-18/embassy-exhibition-an-important-reminder-of-indigenous-history/7258738

¹¹⁰ Bell has since restaged *Embassy* in Venice, Amsterdam, among many other locations.

¹¹¹ MMA #3.2.191-197

the Indigenous populations. Bennelong, for better or worse, served as the first official liaison between Aboriginal Australia and the colonising British.

Moore's work, titled *A Home Away from Home (Bennelong/Vera's Hut)*¹¹², is a simple twelve square meter brick building with a door, window, and chimney. The exterior of the artwork is a reconstruction of Bennelong's Hut, a house gifted to Bennelong by Phillip. According to Moore, Bennelong's Hut was the first western residential building built for an indigenous Australian and as such can be understood as an embassy.

This hut being the official residence of a diplomat, which is what Bennelong was then considered, and the idea of an embassy as being a sovereign state on foreign soil.¹¹³

The exterior of Moore's reconstruction resembles the original building as it was represented in colonial paintings and drawings produced at the time of its construction. The interior, however, is a recreation of Moore's memories of the building where his grandmother lived in rural Queensland. Its walls of corrugated metal and dirt floor act in opposition to the solidity of the brick construction and the bucolic site on which the work sits.

¹¹² MMA #3.2.201-207

¹¹³ Maunder, Tess. "Archie Moore in Conversation." Ocula, 01 March 2016, <https://ocula.com/magazine/conversations/archie-moore/>.



[Fig. 36] Moore, Archie. *A Home Away From Home (Bennelong/Vera's Hut)*. 2016. (The Commercial Gallery)

Both Moore's *A Home Away from Home (Bennelong/Vera's Hut)* and Bell's *Embassy* engage the history of Aboriginal sovereignty through the restaging of architectural spaces. Both works ask the viewer to place themselves in a critical historical moment and confront their knowledge of the status of Aboriginal people in Australia. Moore's work, however, manufactures multiple timelines and narratives, avoiding the nostalgia at risk in Bell's *Embassy*. By evoking the actual spatial conditions of his grandmother's hut, the viewer is placed directly into Moore's memory through the visceral realities inherent in the act of architectural experience. Moore's medium is equally spatial and temporal and his body of work features several projects in which he uses the familiarities of domestic architecture to fold disparate timelines onto one another and expose complex issues of structural violence and intergenerational trauma.¹¹⁴

¹¹⁴ MMA #3.2.212-220

The Aboriginal Tent Embassy, Bell's *Embassy*, and Moore's *A Home Away from Home (Bennelong/Vera's Hut)* are each architectural acts that restage, reimagine, or reconstitute ideas of what it means to be an Aboriginal person in contemporary Australia. The original Embassy used a common beach umbrella, a commodified symbol of suburban white Australia, an innocuous object repurposed with intelligence and wit to stand in for the rights excluded from Aboriginal people. Moore is referencing this unique engagement with spatial politics by subverting a symbol of colonial generosity and goodwill – the gifting of a house – by injecting it with the realities of contemporary living conditions for many Aboriginal people, in this case those of his own grandmother.

Within the context of this research, the micro suburban scale of the original beach umbrella or Moore's reconstructed domesticity may seem at odds with the territorial scale of the Woomera Prohibited Area. On the contrary, my research illustrates that media of all scales and formats has the potential for the creation of moments of resistance that challenge or disrupt sovereignty.

3.3: POISON COUNTRY



[FIG. 37] Brown, Jonathan Kumintjarra. *Poison Country*. 1995, Art Gallery of South Australia, Adelaide.

This nuclear colonialism fused thermonuclear sand and poisoned air, water, and soil, dispersing radioactive elements of strontium, caesium, and iodine across strata and into bone in brown bodies.¹¹⁵

Paintings of country in Aboriginal art are commonly understood to be representations of Dreamings or of places. But such paintings are at once far more intimate and layered with meaning than such terms convey.¹¹⁶

In the years following the decommissioning of Maralinga, and during the final remediation attempts and the subsequent “excision” of the land back to the Maralinga Tjarutja people, contemporary Aboriginal artists began incorporating the atomic tests into their practices. Nuclear iconography of mushrooms clouds, radiation symbols, and men in protective suits became juxtaposed with depictions of traditional themes and motifs of Aboriginal Western Desert painting. These works folded the nuclear histories of South Australia into new and old media, creating new connections between the ancient histories of Indigenous Australians and the deep futures of nuclear colonialism.

Jonathan Kumintjarra Brown¹¹⁷, a Pitjantjatjara man, has contributed some of the most striking and important works addressing the legacies of the tests. Brown was a survivor of the Stolen Generations. This was an era beginning with federation in 1901 and the White Australia Policy and lasting into the 1970s in which untold numbers of Aboriginal children were forcibly removed from their families and placed into white households or orphanages in communities far from their traditional homes and ways of living. This state-sanctioned practice of intergenerational violence continued for decades, with the explicit intent of breeding-out the Aboriginal race. Brown’s journey to understand his roots lead him to discover that his family originated in the lands around Maralinga. During a short but intensely productive few years before his premature death in 1997 at the age of thirty-seven, Brown painted a series of works

¹¹⁵ Yusoff, Kathryn. *A Billion Black Anthropocenes or None*. University of Minnesota Press, 2019.

¹¹⁶ Carty, John. “Painted country.” *Indigenous Australia: enduring civilisations*, Gail Sculthorpe, et al. The British Museum Press, 2015, p. 114.

¹¹⁷ MMA #3.3.001-014

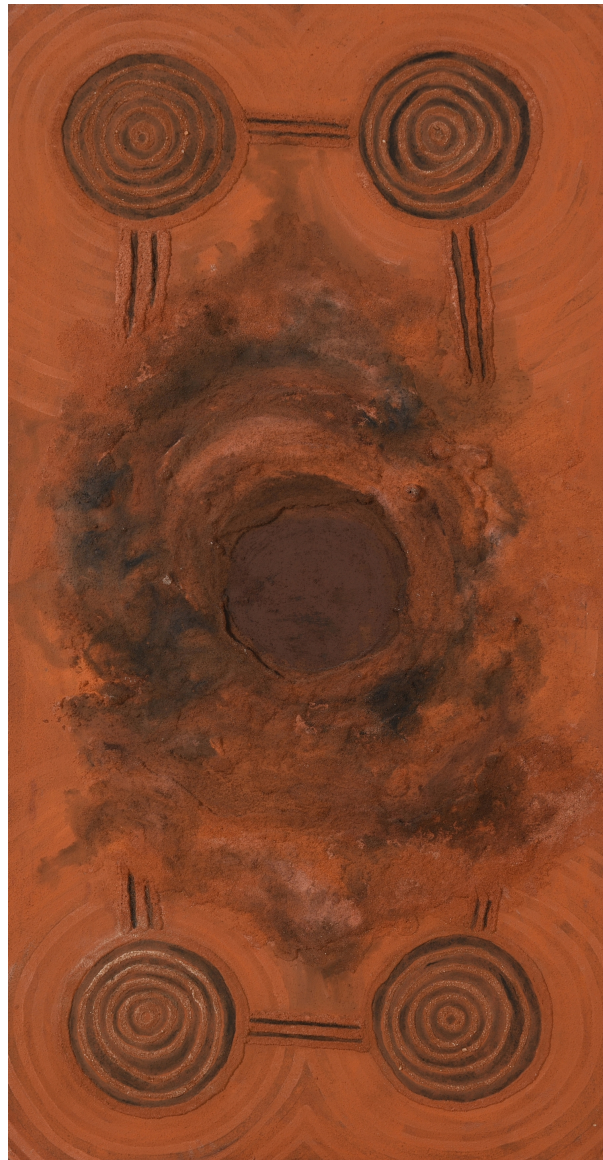
that conflated traditional histories of his ancestors with his own trauma of dislocation and the contemporary nuclear violence committed at Maralinga.

In *Poison Country* (1995), pictured above, Brown disrupts the familiar iconography of a Western Desert Aboriginal dot painting by rubbing red ochre into the composition. The orderly pattern of dots is destroyed, replaced with a near total overlay of red dirt. The patterns that remain visible in the edges of the large picture seem to reference the orderly grids of Maralinga and the contemporary British overlay of infrastructural logic now partially obscured in the soil. The white dots on the black background, a recognisable feature of paintings produced in the Western Desert tradition, can be read very differently in the context of Maralinga. Here they could represent the invisible radiation distributed across the site, microscopic pinpoints of pulsing, unseen poison.

This brilliant picture contributes to the ambiguity raised by the research questions of this dissertation. What is being returned? Is a land damaged by atomic blasts and botched remediation attempts still the land it once was? Additionally, we may ask: Is the red earth obscuring the pattern, or are the patterns being subsumed by the red dirt? Brown provides us with the opportunity to read the picture as a study of the resilience of the land *or* of the power of the “poison” to disrupt the patterns and modes of living that existed here for millennia before the British arrived. Regardless, the point is clear. Brown’s land is *poisoned* and neither the patterns nor the dirt have survived the atomic interventions.

In *Maralinga Aftermath Crater Where Four Bodies Were Found* red ochre is used again, but in this picture Brown has layered the red earth on the canvas creating a shallow pit in the centre. The pit is a reference to the crater left after the nuclear test at Marcoo and the Milpuddie family whose lives were destroyed by the radiation left there. Here, as in *Poison Country*, traditional patterning frames the edges of the canvas. In this work large concentric circles form the composition. However, the circles are not painted in contrasting white but are instead rendered in deep grooves in the red dirt and paint thereby revealing the black surface underneath. The paths between the concentric rings are disturbed by the violence of the crater in the centre and are cut off from one another in a relative north-south orientation. These are perhaps referencing the limestone concentric rings at Tufi and Taranaki. Knowledge that the Milpuddie family accidentally discovered the Marcoo crater because they were traveling along

the British roads is conflated with the broken dreamlines that once crisscrossed the site. Destruction of traditional modes of living becomes intertwined with the further destructive power of the new lines inscribed in the terrain by the movement of bombs and violence.



[FIG. 38] Brown, Jonathan Kumintjarra. *Maralinga Aftermath Crater Where Four Bodies Were Found*. 1996, Art Gallery of South Australia, Adelaide.

In 1996's *After the Test*, all references to pictorial representations of the land are gone and replaced with beige and white fields of colour flowing into each other in long irregular forms. Tendril-shaped paths rise from the lower left corner of the picture but are consumed by the wash of pale, sand-coloured paint in the middle. In this picture Brown has left behind any connection to the iconography that the colonial viewer is expecting or hoping to see. The "test" referenced in the title of the work has rendered the land an unrecognizable, formless composition of broken lines and open, foreign spaces.

In Australia, where ancestors either created the features of the earth or became those features, there is no coherent separation of the Dreaming ancestors and the land: they are country. Painted country, as the sedimentation of myth, history and personal experience into place, is perhaps better understood through an expanded idea of portraiture, of identity expressed through land, than it is through Western genres of abstraction or landscape.¹¹⁸

In this quote, Head of Humanities at the South Australian Museum John Carty contextualises the often misunderstood use of what appears as landscape in Aboriginal art. This is a helpful entry point into Brown's pictures as well. While Brown was obviously referencing features of the Maralinga landscape in his paintings, what is at stake here is the location of the destruction that was wrought by the nuclear tests. The land, as articulated by Carty, is not only the ground or the place where one lives, it is also the ancestors who came before and those that are yet to come. For Brown, the "identity expressed through land" is particularly poignant due to his personal history as a victim of the Stolen Generations. For Brown, his identity was destroyed very early in his life. One can imagine the overlays of trauma when he then discovered that his ancestral home, Maralinga, had also undergone such intensely destructive acts.

In Brown's nuclear oeuvre, we see a range of responses to the tests, from direct pictorial representations¹¹⁹, to a nuanced methodology of abstraction. Form

¹¹⁸ Carty 115.

¹¹⁹ Specifically *Frogman* from 1995 in which Brown paints realistic representations of men dressed in full body radiation suits, complete with gas masks. This work references Edie Milpuddie's Royal Commission testimony.

becomes formless. The direct connection to the destruction of the land, and to his own personal identity, can be seen. In the works described above, the many traumas of Aboriginal Australia at the hands of white colonisers is rendered three dimensionally in paint and earth. Brown expands the medium of painting by incorporating soil, ochre, animals, and physical depth. The overlays of violence experienced by Maralinga and by Brown manifest in a series of pictures that begin to provide an expanded insight into the process of trauma.



[FIG. 39] Brown, Jonathan Kumintjarra. *After the Test*. 1996, Art Gallery of South Australia, Adelaide.

3.3.1: MINOR TRIALS AND THE PLUTONIUM LEFT ON THE GROUND

Geology is an excavation into the earth and its secrets that affords a view not only to the now- moment that unfolds into a future potential of exploitation but also to the past buried under our feet. Depth becomes time.¹²⁰

The practice of Jonathan Kumintjarra Brown illustrates one man's struggle with reconciling traumatic historiographies. His work addresses his personal trauma of being a victim of the Stolen Generations and the collective trauma inflicted on his people by the atomic testing at Maralinga. Brown translates those events into the medium of painting by conflating traditional Aboriginal iconography with actions that destroy the pictorial intention of the painting. He is performing a method of *remediation* in which he is transforming the medium of memory (his and the cultural memory of his people) into the medium of painting. This act of remediation reconfigures our understanding of the histories of Maralinga via the artist's personal expression. His connection to the land is evidenced both in his adoption of the Western Desert tradition of rendering the terrain in dots and patterns and also his use of red ochre. The trauma of the tests and the continued presence of radioactive materials in the land becomes part of a body of work produced at a critical point in the history of Maralinga. Brown painted his Maralinga works between approximately 1992 and 1996. His final works were produced just as the extensive final remediation of Maralinga and Emu was set to begin. And while the context of much of his work and that of many other artists when working with Maralinga's legacy is the nuclear weapons explosions, the most radioactive materials on site were produced by a series of tests that were far less visually conspicuous.

Nuclear weapons testing in Maralinga lasted only thirteen months, but this relatively short duration witnessed seven nuclear detonations. Britain intended to use the site for thirty years, but several factors led to the premature end to the Maralinga

¹²⁰ Parikka, Jussi. *A Geology of Media*. University of Minnesota Press, 2015, p. 13.

tests. A shift in public opinion due to the continued indifference by the British towards ensuring environmental protections and the increasing calls for a test ban treaty led to the end of atmospheric nuclear weapons tests in Maralinga. Specifically, a temporary one-year moratorium on testing was agreed at the Conference on the Discontinuance of Nuclear Weapon Tests in Geneva in October 1958. However, highly dangerous and ultimately more detrimental tests continued for years that were titled innocuously *minor trials*.

As reported by Professor John Keane in the Melbourne newspaper *The Age*, the ban on weapons testing simply led to a redefinition of the tests and slight change in their scale and makeup. “The trials were not detectable by recording acoustic waves or radio or seismic signals, which was lucky because they were contrary to a memorandum of agreement.”¹²¹ Despite orders that all testing must stop, they did not. Chief scientist Sir William Penney responded that they would change the name of the tests and “by late 1959 they had become “the Maralinga Experimental Program””.¹²²

Minor trials predate the weapons detonations in Maralinga. Beginning in 1953 at Emu Field and later moving with the weapons tests to Maralinga in 1955, the minor trials lasted well into 1963. In 2003, the Maralinga Rehabilitation Technical Advisory Committee (known as MARTAC) issued a comprehensive report on the rehabilitation efforts conducted in the 1990s. In this report, titled “Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003”, the minor trials were described as:

... essentially developmental experiments designed to investigate the performance of various components of a nuclear device, both separately and in combination. Almost all involved radioactive materials in conjunction with conventional high explosives.¹²³

¹²¹ Keane, John. “Maralinga’s Afterlife.” *The Age*. 11 May 2003. www.theage.com.au/national/maralingas-afterlife-20030511-gdvoq4.html

¹²² Keane

¹²³ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019. MMA #3.3.021

The tests had unusual names including Tims, Rats, Kittens, and Vixen.¹²⁴ The Kittens tests were the first and were described as the “testing of initiating devices for nuclear weapons”, the Tims tests “investigated the flow and compression of materials”, and the Vixen B trials were a “series of safety experiments that were undertaken to ensure that nuclear weapons could not be accidentally triggered to produce a nuclear explosion while in storage or in transit”. The matter-of-fact language used to describe the tests belies the contamination and long term issues that they created. In all, the hundreds of minor trials exposed the site to dangerous levels of plutonium (^{239}Pu), uranium (^{238}U), polonium (^{210}Po), scandium (^{46}Sc), lead (^{212}Pb), actinium (^{227}Ac), and beryllium (Be).¹²⁵

In fact, the radioactivity and contamination of Maralinga by the minor trials significantly outpaced the weapons detonations. The Vixen B trials are considered some of the most dangerous and contaminating of all tests conducted at Maralinga and involved the direct explosion and dispersal of 22kg of plutonium, whose half-life is over 24,000 years. The trials took place at the Taranaki site, home of the final and largest nuclear weapon detonation at Maralinga on 9 October 1957.¹²⁶ One of the Vixen B tests involved placing a nuclear weapon on a structure called a *feather bed*.¹²⁷ The plutonium was heated until it ignited, creating an explosion of radioactive aerosol plumes one thousand metres into the air and covering kilometres of land northwest, north, and northeast of Taranaki. The highly radioactive remains of the featherbeds were then buried in place in shallow pits.

When the British ended the minor trials in Maralinga in 1963, a series of remediation projects were commenced in anticipation of the eventual British departure from the site. The first step was Operation Clean-up in 1963. This procedure and the following Operation Hercules (1964) did not attempt to perform widespread removal of radioactive materials, but instead were described as the removal of “major hazards so that entry to the areas, within the sense of a military operation, could be

¹²⁴ MMA #3.3.022

¹²⁵ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

¹²⁶ MMA #3.3.023

¹²⁷ This curiously named device consisted of a heavy steel structure with flat podium of concrete and thick steel plates.

MMA #3.3.024-027

made without direct health physics supervision.”¹²⁸ In 1966, Operation Radsur was begun to take a survey of the site in preparation for the larger and more definitive Operation Brumby. Operation Brumby (1967) was to be the final British remediation of Maralinga. Its intention was to restore the land to an adequate state for anticipated future pastoral use. But, as this research has detailed, there had never been pastoral use of Maralinga. This was only the first issue with Operation Brumby.

The scope of work for Operation Brumby included the removal of significant pieces of debris for burial in the open Marcoo crater¹²⁹, the placement of concrete caps on specific existing burial pits, covering certain contaminated areas with fresh soil, and ploughing others to a level of 100mm. The ploughed soil was then mixed and redistributed on the site in windrows. At the completion of Operation Brumby, Australian officials visited the site and after a short time agreed with the British that the remediation was sufficient and complete.¹³⁰ An agreement between the two countries was signed absolving Britain from any further responsibility for the site.

Operation Brumby did not address plutonium contamination on fragments, and it assumed that ploughing and other soil mixing techniques would reduce all the radiological hazards. The program made no allowance for the subsidence of burial and debris pits, and it assumed rapid natural revegetation of the areas. It was assumed that within a matter of years, it would not be possible to identify areas impacted by the tests from those that were not. This has not proven to be the case.¹³¹

¹²⁸ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

¹²⁹ Marcoo was the only surface detonation nuclear weapons test at Maralinga. It created a crater approximately forty metres in diameter and was the location of the Milpuddie family tragedy.

¹³⁰ The full details of the remediation and the subsequent Australian approval has been researched and written about extensively by Alan Parkinson (*Maralinga: Australia's Nuclear Waste Cover-Up*), Elizabeth Tynan (*Atomic Thunder: The Maralinga Story*), and others.

¹³¹ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

3.3.2: THE MARALINGA LAND RIGHTS ACT

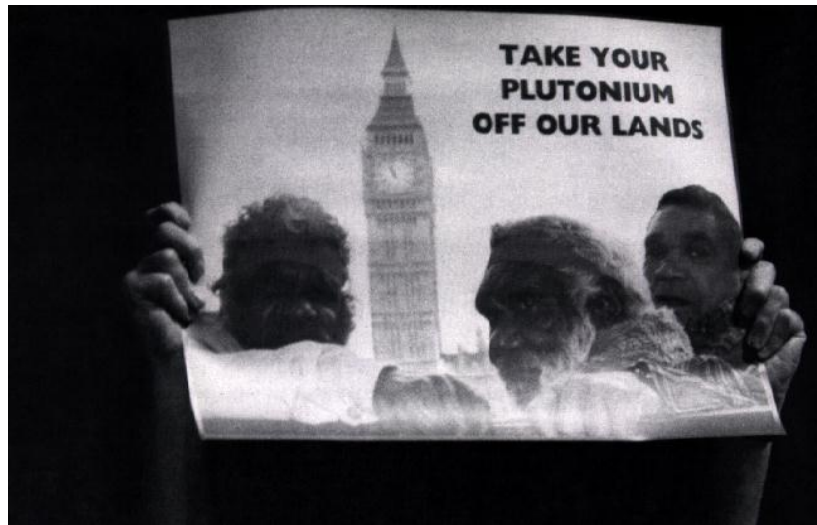
For decades, local Aboriginal communities had complained about skin diseases, blindness, and widespread cancer among their people, but these claims were given little to no attention. In fact, the scale of destruction on Aboriginal families and communities due to the tests at Maralinga is still largely undocumented or unknown. The 1984 visit by the Australian Radiation Laboratory (ARL) coincided with the 1984 Maralinga Tjarutja Land Rights Act¹³² which established the Maralinga Tjarutja as custodians of an area encompassing almost 78,000 km², an area that overlapped with the Woomera Prohibited Area but did not include Section 400.¹³³ The Act necessitated a confirmation of the current conditions of Maralinga and led to the visit by the ARL. Had it not been for the persistence of the Maralinga Tjarutja to reclaim the control of their lands, the actual conditions of the site may have never been discovered.

The analogy stretches far, but it has one limit: this time a dogged people with immense patience, a people who are not interested in finding their identity in a medal, have the power to keep the Maralinga story alive — even to convince those who have wronged them to say sorry.¹³⁴

¹³² Government of South Australia,
www.legislation.sa.gov.au/lz/c/a/maralinga%20tjarutja%20land%20rights%20act%201984.aspx
MMA #3.3.028

¹³³ In 2009 and 2014, the final restrictions for Section 400 were removed and the Maralinga Tjarutja were given complete control.

¹³⁴ <https://www.theage.com.au/national/maralingas-afterlife-20030511-gdvoq4.html>



[FIG. 40] Archie Barton holding up a poster at the World Uranium Hearing in Salzburg, 1992.

Dr Archie Barton, a senior member of the Tjarutja people, is a fine man of few words. Twenty years ago, he helped found a new and viable community called Oak Valley, 110 kilometres north-west of ground zero, as close as his people want to be. Ten years ago, he was part of a delegation that travelled to London to seek compensation from the government of John Major, and to pop a carefully wrapped gift from Maralinga upon the table of a parliamentary committee: a little bag of plutonium soil.

Barton was taken from Maralinga and from his parents 60 years ago. Recently, he met John Howard. "What are you after?" the Prime Minister asked. "Not much," replied Barton. "I just want back my mother. I want back my land, too. Clean."¹³⁵

Where is Maralinga? Who of our audience would know where it is? It is within the great Victoria Desert. In 1952, the Aboriginals who had inhabited the Maralinga Lands were placed in a mission at Yalata, several hundred miles South of their tribal land. They were kept at Yalata from the commencement of the British tests in 1953 until 1984. Some of the Pitjantjatjara brothers and sisters were injured as a result of these tests. I am sorry that Yami Lester could not come to this conference to tell you how he went blind and how his people were injured by the black mist of the fallout of the Emu test in 1953.¹³⁶

¹³⁵ Keane, John. "Maralinga's Afterlife." *The Age*. 11 May 2003. www.theage.com.au/national/maralingas-afterlife-20030511-gdvoq4.html

¹³⁶ Transcription of a speech by Archie Barton at the World Uranium Hearing in Salzburg in 1992. rational.org/radiation/WorldUraniumHearing/ArchieBarton.html

Operation Brumby was a failure in all regards and most likely made the conditions worse. The extent of the remaining radioactive materials at Maralinga was not known until decades after the British left South Australia. The minor trials, and specifically the Vixen B tests, played heavily in the eventual discovery of the actual contamination of the site. Following the Maralinga Land Rights Act, a radiological survey was commissioned by the Australian Radiation Laboratory in 1984. During the survey, scientists were astounded to discover plutonium and uranium fragments openly visible on the ground.¹³⁷ Geoff Williams was one of three scientists on the ground in 1984. His recollections about the condition of the site and the scientists' procedure for determining the extents of the contamination of the site were published by Ian Anderson in an infamous article for the *New Scientist* in 1993. In the article Anderson quotes Williams, "A lot of what we did at Maralinga was nuclear archaeology."¹³⁸ Anderson continues:

Except for an incident in 1978, in which Britain repatriated 0.5 kilograms of waste plutonium from a nearby site, this was how things remained until 1984, when the 3000 square kilometres of land around the test site were due to be returned to the Aborigines. A team of scientists, including Burns, Geoff Williams and Malcolm Cooper, all of the ARL, went to check the radioactivity at Maralinga. The group was stunned to find levels that were higher and spread more widely than Pearce had described. They also found the first of many fragments of contaminated equipment. One piece of steel contained 3 grams of plutonium.¹³⁹

Anderson is referencing the Pearce Report, which "provided the technical basis for the Australian Government in 1968 to release the UK from any further liability for the Maralinga lands."¹⁴⁰ This report, officially titled *Final report on residual*

¹³⁷ "Beyond the ploughed area, the plutonium contamination tends to be on or near the surface and includes many thousands of contaminated fragments large enough to attract attention as potential souvenirs." "An Aerial Radiological Survey of Maralinga and Emu, South Australia"

¹³⁸ Ian Anderson, *The New Scientist*, 12 June 1993 www.newscientist.com/article/mg13818772-700/

¹³⁹ Anderson

¹⁴⁰ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

*radioactive contamination of the Maralinga Range and the Emu site*¹⁴¹, outlined the location and contents of the burial pits in Maralinga, as they existed following Operation Brumby. The report “grossly underestimated the volume of these disposal pits.”¹⁴² The report claimed that approximately 20kg of plutonium was interred in various pits, but after the visit to the site in 1984, the ARL proved that this was impossible.

The Australians will argue that Britain is in the wrong, both factually and morally. ‘If they had been as far out in the design of their bomb as they were with measuring the contamination, they would never have been able to build the bomb in the first place,’ says Peter Burns of the Australian Radiation Laboratory (ARL) in Melbourne.¹⁴³

Following the realisation of the widespread contamination remaining on site, a survey by the United States Department of Energy (DOE)¹⁴⁴ was commissioned by the Australian Nuclear Science and Technology Organisation to determine the actual presence of radioactive materials at Maralinga and Emu. The 1987 report, titled “An Aerial Radiological Survey of Maralinga and Emu, South Australia”¹⁴⁵ detailed the continued effects in terms of radioactive contamination that the nuclear detonations and the minor trials had on the site. They determined that all of the nuclear weapons ground zero sites would be “safe for continuous occupancy” by the year 2030 with no further remediation. The minor trials sites, however, were discovered to be covered in highly radioactive materials.¹⁴⁶ The DOE report claimed that “Taranaki is the site at Maralinga which is most extensively contaminated with plutonium and, therefore, represents the major remaining potential hazard to health.”¹⁴⁷

The British erected a concrete plinth monument commemorating the completion of Operation Brumby located near Tietkens Well, 10km away from the

¹⁴¹ Pearce, N. *Final report on residual radioactive contamination of the Maralinga Range and the Emu site*.

Aldermaston: Atomic Weapons Research Establishment (Great Britain), 1984.

¹⁴² Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

¹⁴³ Ian Anderson, *The New Scientist*, 12 June 1993 // www.newscientist.com/article/mg13818772-700/

¹⁴⁴ MMA #3.3.029-087

¹⁴⁵ MMA #3.3.088

¹⁴⁶ “An Aerial Radiological Survey of Maralinga and Emu, South Australia”

¹⁴⁷ “An Aerial Radiological Survey of Maralinga and Emu, South Australia” p.13

nearest nuclear test site. It was likely intended to be a permanent marker, standing nearly two metres tall and constructed of concrete. Today, just fifty years on, the plinth is degrading, its letters disappearing. A complex monument to a detailed and deliberate betrayal.



[FW 3.6] Burns, David. *Monument (Operation Brumby)*. 2018.

3.3.3: MARALINGA REMEDIATION

The final remediation at Maralinga spanned most of the 1990s, involved a variety of government and private agencies, and witnessed a dramatic reconfiguring of the physical properties of the land.¹⁴⁸ A series of documents and recommendations for the process and scope of work on remediating Maralinga was prepared by the Technical Advisory Group (TAG). The primary operations would focus on areas with plutonium contamination and the areas ploughed during the botched British remediation attempt, Operation Brumby. Over the course of four years, huge sections of Maralinga would be scraped, hundreds of thousands of cubic metres of contaminated soil would be interred in vast burial trenches, and a dozen British pits would be melted into building-sized glass blocks via a process called *in situ vitrification*.

Maralinga (Section 400) is over 3000km², but the remediation activities were limited to specific areas including the Taranaki major and minor trials site, the Wewak minor trials site, the so-called Airfield Cemetery and Kuli sites, and TM 100/101, also known as Tietkens Plain Cemetery. Dozens of British burial pits containing plutonium and radioactive waste were identified¹⁴⁹, including twenty-one in the Taranaki site alone. Another seventy-six “informal British disposal pits” were discovered during the process. Most of these were determined to be non-radioactive and were not excavated. The pits containing radioactive materials were remediated in two ways. Some pits were excavated and re-interred in new trenches dug into the limestone plain.¹⁵⁰ The new pits varied in depth from eleven to sixteen metres and had a cap of fresh topsoil between three and five metres. They ranged in size from just a few cubic metres to almost 300,000m³. The largest pit is located at Taranaki and is called the *Taranaki soil burial trench*.¹⁵¹

¹⁴⁸ A large selection of photographs of the process of remediation and the daily life of the engineers and scientists is included in the material-media archive, supplied by Robin Matthews.

MMA #3.3.089-143

¹⁴⁹ MMA #3.3.144-145

¹⁵⁰ MMA #3.3.146-152

¹⁵¹ Detailed drawings and diagrams detailing the remediation process, burial pits, and locations of signs

We drove a new road, built by Robin as a shortcut, over to Taranaki. Unlike yesterday, and the way I expected knowing the satellite images, we arrived from the north, not the south. Suddenly we're there, at the base of the gigantic burial pits, driving along the long edge. Easily the size of multiple football fields and piled three metres (or more) high with dirt and rubble, I'm overwhelmed knowing what danger, death, and unknown futures lie inside. Everyone in the van is ooing and aaahing and I actually feel a slight tinge of terror.¹⁵²



[FW 3.7] Burns, David. *Monument (Taranaki Soil Burial Trench)*. 2018.

MMA #3.3.153-157

¹⁵² This passage is from my fieldwork notes.



[FW 3.8] Burns, David. *Soil (Taranaki)*. 2018.



[FW 3.9] Burns, David. *Monument (Taranaki Ground Zero)*. 2018.



[FW 3.10] Burns, David. *Monument (Taranaki Plinth)*. 2018.

This burial trench was one of the first dug at the site in 1996 and was capped on 3 October 1997.¹⁵³ Its dimensions are 206x141m at a depth of 15m with a cap of fresh soil that is 5m deep. Inside, 262,840 m³ of contaminated soil. On the ground, the pit is difficult to comprehend. The edges of the pit are angled perfectly at forty-five degrees and rise three to four metres. Robust reseeded is already showing results; there are small trees sprouting on top of the pit. At the southwest corner is a concrete plinth with the dates of its construction and a warning that the contents are radioactive. The other corners have metal signs. Compared with the longevity and resilience of the materials inearthed, the plinth and signs seem ridiculous. A small pipe protrudes from the middle of the western edge of the large trench used to periodically check the pit for evidence of leaching into the porous limestone.

Walking along the southern edge, the pit extends over 200m and becomes a long, massive barrier visually, in an otherwise flat terrain. Surrounding the main pit and the several smaller accompanying pits is almost 2km² of ploughed windrows. The land was scraped at an average of 100mm and new fresh soil was laid out in careful windrows. These have been seeded as well and are rapidly recovering.

One of the smallest pits lies about 700m northwest of the main trench. It doesn't contain contaminated soil, its contents are almost entirely vast blocks of a glass-like substance which was the product of *in situ vitrification* (ISV).¹⁵⁴ ISV was developed in the United States by the Department of Energy. According to the MARTAC remediation report, ISV

... involves electric joule heating to melt contaminated soil and/or other materials, to destroy, remove and/or immobilise toxic and radioactive contaminants. Typical melt temperatures of 1400–2000C were to be developed by passage of up to 4 MW of electrical power into the soil in a pit from a square array of four graphite electrodes.¹⁵⁵

¹⁵³ The Material-Media Archive contains dozens of photographs of the process of excavating the Soil Burial Trench
MMA #3.3.158-198

¹⁵⁴ MMA #3.3.200-222

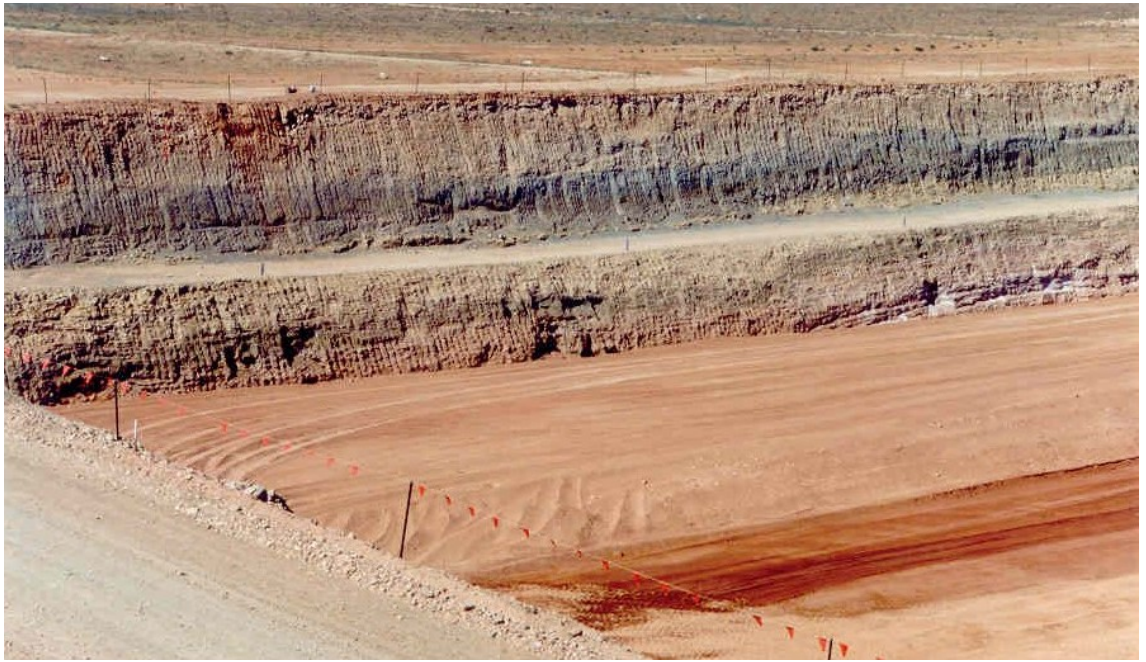
¹⁵⁵ Australian Government. Dept of Education, Science and Training. *Rehabilitation of Former Nuclear Test Sites at Emu and Maralinga (Australia) 2003*. Australian Govt, 2002. Web. 7 August 2019.

Once the melting is completed, the “molten mass” solidifies into a “vitreous/ceramic monolith” that is “five to ten times stronger than un-reinforced concrete”. Initially, the planning for the Maralinga remediation estimated that the melts would produce monoliths of up to “1000 tonne in mass”. ISV was used on eleven of the twenty-one British pits. During the eleventh melt, however, an explosion critically damaged the ISV machinery and launched materials 50m into the air. The official MARTAC report does not articulate what happened, but Robin and others have told me that a tank containing hydrogen was in the pit and exploded during the melt. Unsure of the contents of the remaining pits, no further ISV operations were conducted and all of the previously ISV pits were excavated, inspected, and reburied in the smaller pit at Taranaki, called the “debris burial trench”.

The vitrification method was abandoned by MARTAC three-quarters of the way through the project, in favour of the much cheaper trench-method. Most of the waste — including broken-up vitrified material — was then buried in unlined pits covered with just three metres of clean soil. The rest was left on the desert surface. As a result, an area the size of metropolitan London — 300 square kilometres — remains infected with lethal plutonium that will stay active for a quarter of a million years.¹⁵⁶

When the process finally completed in 2000, almost 400,000m³ of soil was interred in new pits around Maralinga. Other pits contained tonnes of discarded refuse with varying levels of contamination including building materials, cabling, towers, vehicles, etc. In Wewak, the remnants of the highly contaminated featherbeds were exhumed from their shallow graves and reburied in a trench measuring 130m x 90 m x 11m deep with five metres of clean fill on top. Finally, a new pit was built next to the main trench at Taranaki to dispose of the materials and machinery used in the remediation including heavy trucks, thousands of air filters, building materials, plus excavated radioactive materials from the Airfield Cemetery.

¹⁵⁶ Keane, John. “Maralinga’s Afterlife.” *The Age*. 11 May 2003. www.theage.com.au/national/maralingas-afterlife-20030511-gdvoq4.html



[FIG. 41] Excavation of the Soil Burial Trench, ca. 1996-1998 (Robin Matthews)



[FW 3.11] Burns, David. *Monument (Two Trenches)*. 2018.

The final, and ongoing, actions of the remediation are the efforts to replace the vegetation that was either destroyed by the original tests or stripped from the site in the first stages of the remediation process. New soil was brought in to replenish the areas denuded by the scraping of the soil. In many areas, the original depth of the soil was only 100mm, the exact depth specified in the TAG proposal for removal. The exposed bedrock is still visible today in some areas, but most of the site is recovering quickly with new plants, flowers, and even small trees growing in the new windrows and on top of the burial trenches.¹⁵⁸

In Part 2, I examined the unused nuclear weapons test site of Tufi, and described in detail the one kilometre landform that still exists. The enormous pinwheel that was constructed primarily by simply pushing aside the thin topsoil and then augmenting with limestone gravel. The edges of the “spokes”, with the slight mound of soil, has been collecting rainfall and seeds for almost twenty years and is now producing new vibrant growth. The new scrub is highlighting and enforcing the spokes, creating a permanent monument; a *nuclear futures false positive*. At Taranaki, Wewak, the Airfield Cemetery, TM100/101, and Kuli, the extensive operation to hide the material, to mitigate the damage done, is creating a new condition of invisibility.

And now, from above, commercial and governmental satellite imagery is methodically recording the process of Maralinga’s slow disappearance. The images online today in Google Maps or Bing Maps feature a Maralinga that is already mostly hidden. They show a land freshly scraped, recently interred, and clean. The regrowth that is so visible on the ground has not yet been recorded from above. The material-media histories – the material realities of the site as it exists today and the media archive of slightly dated commercial satellite imagery – are at odds, competing in real time.

¹⁵⁸ MMA #3.3.230-246

3.3.4: (RE)MEDIATE

Our relations with the earth are mediated through technologies and techniques of visualization, sonification, calculation, mapping, prediction, simulation, and so forth: it is through and in media that we grasp earth as an object for cognitive, practical, and affective relations¹⁵⁹

The previous section addressed remediation in Maralinga in terms of the process of removing and burying the soil to remove or mitigate the effects of the radioactivity in the aftermath of the tests. In this section I will expand the discussion of the term *remediation*, by examining the methods by which Maralinga mediates or has been mediated. The origination of Maralinga, and indeed Woomera, was predicated on the ease of the mediation of the activities taking place there. This is threefold. First, the remoteness and colonial conditions of terra nullius provided the British with a physical condition of anonymity. They could conduct their work in relative secrecy. Secondly, the geologic, topographic, and climatic conditions of the site provided the scientists and engineers with ideal visibility for the photographic documentation of the tests, a luxury they did not enjoy at Monte Bello or Emu and one that was demanded by Sir William Penney. Finally, the lack of proximity to major cities or easy transportation combined with the Australian government's complicity on media blockages ensured that the broadcast and promotion of the activities on site could be highly regulated. Maralinga's inception was based on mediation. Its present and future are remediation.

In Taranaki, remediation begins as the descriptor for the process of attempting to remove and dispose of radioactive by-product of the weapons tests. Seen through a broader lens, remediation describes the act of attempting to mediate the damage done to the land / country by literally changing or altering its medium. The physical processes of scraping the land, excavating burial pits, and digging trenches to re-inter the materials, are the methods by which the damage is hidden.

¹⁵⁹ Parikka, Jussi. *A Geology of Media*. University of Minnesota Press, 2015, p. 12.

The destruction of the land is mediated by burying the Earth inside the Earth. In this case, the medium of nuclear colonialism is of invisibility and obfuscation.

For decades following the tests and the hasty British Departure, Aboriginal activists were insisting that the site was not clean and that the damage wrought in the 1950s and 60s was still present and actively influencing the future. The eventual realisation that these claims were true led to a concerted effort on the part of the Maralinga Tjarutja and officials from the South Australian government to come together to insist on a proper clean up. For the most part this occurred, though people like Avon Hudson and Alan Parkinson would disagree. Regardless of the opinions surrounding the technical efficacy of the remediation efforts in the 1990s, the cultural and personal damage to the Aboriginal peoples from Maralinga and beyond has been done and continues to effect lives today. Taranaki was ground zero in 1957 of the largest nuclear detonation in South Australia, but it was also ground zero thirty years later in the mediation of what actually happened in Maralinga. The plutonium, uranium, cobalt, and all of the other foreign materials found scattered on the ground opened the site up to proper scrutiny. The radioactive deep futures were finally exposed.

Throughout this thesis, I have discussed issues of visibility and invisibility. I have examined the political conditions by which one is permitted to be visible or not. I have exposed the colonial condition of looking and recording, but not *seeing*. I have researched methods by which the process of visibility has played a major role in the transformation of ideas and political realities. Mediation is a condition of visibility. Mediation is the transformation of a condition into media. For example, a nuclear detonation is translated into cellulose photography; one analogue medium into another. The transformation – or transferal – of data is a process of mediation. The nuclear tests and the remediation of the land at Maralinga have been *mediated*. Mediated by the methods by which the tests were planned and organised. Mediated by how they were documented, reported, and disseminated. Mediated by how Maralinga (and Woomera, Pine Gap, etc.) interpret political actions and contradictory historiographies. Photographs (physical) are converted into analogue data and reconstituted at Island Lagoon. One media (physical photography) is seen through the medium of data, and vice versa. The presence of radio waves in communication technologies, the use of radar in object detection and tracking, and the radiation

present in the ground following the nuclear tests are factors that attempt to mediate the transition between different states. So how, and what, does Maralinga mediate?

The landscape of Maralinga is a colonial mediation. Successive waves of European interpretations of the land imbued an incorrect and damaging history into the land. In this action, Aboriginal culture was remediated by colonialism's push for a generic, western understanding of the land. *I am unable to locate an obvious water source, therefore the land is worthless. I don't see western architecture and farms, therefore there is no civilisation.* This remediation of Aboriginal land into a void provided the legitimisation for dispossession, violence, and destruction.

Maralinga mediates shifting conceptions of Australian sovereignty, first in the Australian acceptance of the British on their sovereign territory and then through the landmark 1984 Maralinga Tjarutja Land Rights Act. A land that had been the political focal point of a young country trying to appease its previous colonial power then becomes a pioneering place in the history of Aboriginal land rights. In this way one could say that Maralinga has endured a constant state of remediation in the manner in which the events that occurred are in a steady state of being rethought, recontextualized, and re-projected into the present and the future. These are the *material-media histories of Maralinga.*

PART 4: "SO OUR FUTURE WAS BROKEN."



[FIG. 42] Still from "Secrets in the Sands", BBC/Discovery Channel, 1991.

“Secrets in the Sands”, a 1991 BBC / Discovery Channel documentary about Maralinga, is situated in the combative interstitial years between the 1984 survey by the Australian Radiation Laboratory and the final remediation efforts that began in earnest in 1996. It explores the political tension in and between Australia and Britain following the decisive 1984-1985 “Royal Commission into British nuclear tests in Australia”¹ and the relative inaction of Britain to take responsibility for the contamination that remained. This era was defined by a series of high-profile confrontations between Aboriginal elders and British officials about the culpability of the British in the poisoning of Maralinga. Archie Barton, the first administrator of the Maralinga Tjarutja, Mervyn Day [FIG. 42] from Maralinga, and attorney Andrew Collett travelled to England to make their case for the British to fund the remediation. The group famously delivered a container of red Maralinga sand to the officials in London to expose the hypocrisy of British officials who claimed the area was safe.

“Secrets in the Sands” features interviews from the recently established Oak Valley community, located approximately 100km northeast of Maralinga within the boundaries of the Maralinga Tjarutja lands. Oak Valley was one of the direct results of the 1985 Maralinga Tjarutja Land Rights Act and was set up as an alternate to Yalata, the community on the Eyre Highway established in the 1950s for those forcibly displaced by the tests. In the documentary, Australian anthropologist Maggie Brady interviews Oak Valley residents and Maralinga elders. She asks the elders about the lasting effects of the nuclear tests on their ways of life on the land. In one specifically dramatic moment, Maralinga elder Mervyn Day looks squarely at Brady and states calmly, “The Dreaming was also on the land. So our future was broken.”²

The Dreaming was also on the land.

The Dreaming is the Aboriginal structure of stories and beliefs that describe the formation of the land, the rivers, the sky, and all of nature. The Dreaming takes physical form as well, manifesting in geological features that bestow physicality

¹ Now known as the “McClelland Royal Commission” for the presiding judge, Jim McClelland.

² “Secrets in the Sands”, BBC/Discovery Channel, 1991.

onto stories, while connecting the people to the land. The Dreaming can be simultaneously a story and a physical object or animal. The Dreaming was part of the origination of the land that is now Maralinga, it established the history of the place, and also the protocols for how the land should be maintained, used, and inhabited. In this quote, Day articulates the catastrophic effects the atomic tests had on his people by reminding Brady that “the Dreaming was *also on the land*.” He is enforcing the point that the Dreaming isn’t something intangible or impossible to manifest; it is also on the land, the land that he and his family can no longer inhabit. He continues by saying, “everything was closed”. One could assume that Day means that the land around the tests was closed, that he and his people were physically restricted from entering the land. However, Brady, clearly aware of the important point that he is making, clarifies by asking, “the *Dreaming* was closed? So that was why it was important, because the Dreamings went through from up north, down through Ooldea, and then on?” Day responds, simply saying “that’s right”, while looking down. A critical aspect of the way of life for Aboriginal people was closed. Songlines were disrupted, broken by radioactive violence. The land was the medium by which the people understood themselves, their history, and their future. The land is the archive that stores their knowledge and instructs them about their past. Closing the land meant closing the Dreaming.

So our future was broken.

In this statement, Day seems to place himself simultaneously in the past, present, and future. His careful language places himself in the past, at the moment that caused the breakage. The collective pronoun *our* reinforces his deep personal connections with the trauma that his people suffered, both directly and indirectly. He is speaking from the past, but he is clearly present and fully aware of the impact of nuclear testing on the contemporary condition. In the documentary he is located in Oak Valley, and while this community was the product of the Maralinga Tjarutja, it is still a compromise. It isn’t the way it once was. Finally, Day is also placing himself in the future, acknowledging not only the current rupture in the Dreaming on the land, but also the break in the progression of future time. The destruction wrought in a flash

of light was catastrophic for the Aboriginal way of life at Maralinga in 1956. It broke a tradition of inhabitation and harmony that had existed for thousands of years. The blasts contaminated the present, removing a territory, making it inaccessible, but the destruction was not contained in our current timeline. It also projected forward, to a future that Day clearly sees. Past, present, and future align in his statement, with more victims of the blasts situated in the damaged future. The medium of time is inextricably linked with the material medium of the land, the spiritual tangibility of the Dreaming, and the rupture caused by the nuclear tests.



Though caught in the interstitial space between present and future, while exceeding both the global and the local, nuclear weapons nonetheless have very exacting physical and cultural effects. A close analysis of where nuclear projects are situated and how they are executed ultimately reveals a hidden aspect of the nuclear age, namely, the nuclear state's equation of citizenship. For the entire production cycle for a nuclear weapon—from uranium mining, to plutonium production, to weapons testing, to nuclear waste storage—produces human and environmental costs that are borne by particular bodies in particular places. The social contexts informing nuclear projects therefore necessarily evoke questions about historical presence and identity, often of race and rights, always of citizenship and sacrifice. How individuals engage the nuclear complex puts them in a tactile experience not only with the technology of the bomb but also with the nation-state that controls it, making the interrelationship between the human body and nuclear technologies a powerful site of intersection in which to explore questions of national belonging, justice, and everyday life.³

In a lecture titled “What do Monuments Want?”⁴ presented at the Dia Art Foundation in 2014, W. J. T. Mitchell remarked that monuments have a singular intent, “... monuments have very simple desires...they just want to live forever.” The talk, given with anthropologist Michael Taussig, was delivered within the context of the

³ Masco, Joseph. *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico*. Princeton University Press, 2006.

⁴ Dia Art Foundation. “Discussions in Contemporary Culture – W.J.T. Mitchell and Michael Taussig.” *YouTube*, lecture by W.J.T. Mitchell, 1 August 2016, youtu.be/caGhQQT9WYY.

ongoing debate in the United States about the presence of monuments to confederates, many of which were built during the 1960s. Mitchell was examining the intent of the monument in relation to its perceived meaning. A few minutes into the talk, he referenced a quote from Alois Riegl's "The Modern Cult of Monuments: Its Essence and Developments" from 1903:

In its oldest and most original sense a monument is a work of man erected for the specific purpose of keeping particular human deeds or destinies ... alive and present in the consciousness of future generations.

Here we see the power of the monument as a material-media object in the context of political struggle. The monument's sole purpose is to project into the future the politics of the person depicted or of the people who erected the monument. The physicality of the object, often in bronze or stone, gives the appearance that the object was always there and that the ideas that it stood for are important and worth preserving. The medium of sculpture, especially heroic men on horses placed on top of columns, places those depicted in a lineage of historic figures that were also depicted in a similar manner. As a cultural marker, the material-media of the monument conflates inaccurate and exaggerated historical significance with a physicality of presumed permanence.

In the previous chapter, I remarked that the plinth for Operation Brumby, erected by the British with full awareness that the clean-up it commemorated had not taken place, was a monument to a "detailed and deliberate betrayal". I noted that after only fifty years the concrete pyramid was in a state of severe decomposition that suggests that the builders' intent was not for the plinth to be a permanent marker of potential dangers. No, the Brumby plinth is a monument whose sole intention was to further the ideologies of the British nuclear colonialists and to place a formal and metaphorical cap on the tests. The plinth needed only be present as a temporary placation to assuage Australia's concern about the condition of the land in the hasty British exit.

Between 1996-2000, just a few kilometres away at Taranaki, Australian remediation efforts were also commemorated with the erection of concrete monuments. Each of the major burial trenches has a corner plinth. They are a wedge-

shaped, two-sided concrete warning sign. The plinths measure 2m x 2m, and 0.7m in height. The side facing away from the trench has a radiation symbol and the words “WARNING BURIED RADIOACTIVE MATERIALS”, plus the date of burial and the warning of “NO CAMPING / NGURA WIYA”. The opposite side has a plan drawing of the burial trench with coordinates of the corners of the trench. The words on each side of the plinth are cast into the concrete, but only into a thin veneer of precast concrete. The panels are then attached to a wedge-shaped concrete block poured on site. Remarkably, the plinths have no foundation, they are simply resting on the ground.⁵ Accompanying the plinths are metal signs with more information, erected at each corner of the main trenches. After seeing the dilapidated state of the Operation Brumby plinth from only thirty years prior, the new markers feel short-sighted at best, wilfully manipulative at worst.

While these plinths and signs have a limited lifespan, there are other monuments at Maralinga. Monuments that will last. They are currently inearthed under metres of foreign soil, interred in vast granite and limestone crypts. They are the material evidence of not only the tests, but also of the petty political bickering between a fading colonial power and her confused, subservient protégé. Future nuclear archaeologists may find material-media evidence that Maralinga had undergone several remediation attempts, each only slightly more comprehensive than the prior.

The nuclear tests in Maralinga created unintentional and distinctly material-media monuments that despite their relative isolation and recent interment will manufacture a steady beacon of remembrance, limited only by the 24,000-year half-life of plutonium. The hundreds of thousands of cubic meters of soil and radioactive materials create a timeless connection between generations and an uncertain and deadly discovery for future generations. The burial trench embodies a permanence that the mushroom cloud never could achieve: a permanent monument, a horizontal earth work at the scale of the cloud. Now, what once was atmospheric is subterranean.

⁵ MMA #4.003

In the introductory chapter, I asked *what was actually being returned? What land was being returned by the Australian military in 2014 at the Maralinga Airfield? What did the red line on the colonial map of the Woomera Prohibited Area really encompass?* In the subsequent chapters, I have argued that the British viewed the land that they temporarily possessed as simply a place to contaminate. It had already been conquered by prior claims of terra nullius. When they were finished, once the damage was done and a more convenient test site became available in Nevada, they viewed the land as a place that was no longer their responsibility. Maralinga became the most recent entry in a long list of colonial territories to be invaded, re-invaded, destroyed, and abandoned. To top it off, their faithful colonial subjects didn't even question them when they decided to leave, they simply signed the agreement. Absolution, it turned out, was as easy as their decision to come to Australia in the first place. No barriers, no restrictions, no conflict.

And while the British saw Maralinga as disposable, the Australian government, and specifically the Australian Defence Force, viewed Maralinga as a holdover. It was a remnant of another time. It was one multi-national extraterritorial state of exception among many others scattered throughout the continent. The land they were returning was a blank territory whose political value had run its course. Their late and relatively modest⁶ response to the damage was to try to fix the land, to clean the contamination to an acceptable level, and to literally bury the problem. When they thought that was complete, they only needed one more thing from the land: a photograph. The government in 2014 was desperate for a photo opportunity, so they assembled their officials, flew to Maralinga, and did their best Gough Whitlam.[Fig. 43]

⁶ The final budget for the remediation was just over \$100m AUD, and approximately one-third of that was covered by Britain. For comparison, the defence budget for 1996 was \$10b AUD.
https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/Publications_Archive/CIB/CIB9697/97cib6



[FIG. 43] Section 400 Excision Event, 5 November 2014.
 Left to right: Keith Peters, David Johnson, Nigel Scullion (Australian Defence Force)

In 2014, almost twenty years after the Maralinga Tjarutja Land Rights Act and fifteen years after the end of remediation, the Australian government finally agreed to grant full control of Maralinga to the Maralinga Tjarutja. But they chose their words very carefully. The return of Section 400 would not be a recognition of sovereignty. It would not be an acknowledgement of country. This would be an *excision*. This was an excision from a prohibited area. The moment was consecrated by the presentation of a gift of a framed map of a vast military-colonial state of exception. The same infrastructural intervention that caused the damage. An act that could have embodied awareness and compassion and contrition was instead just another moment of colonial condescension.

Despite this, the Maralinga Tjarutja response was humble and measured. Their response to *what was actually being returned* differed in every way. While the British and Australian militaries erected fences, created rules and regulations, and shielded the land from sight and inspection, the Maralinga Tjarutja immediately opened the land. While the military slowly phased out the use of the land from the military to the civilian, the Maralinga Tjarutja did not hesitate. They assumed the responsibility for the broken land despite their lack of complicity in what had occurred

there. They assumed the burden of telling and maintaining the story by welcoming visitors and patiently explaining what happened there.

When I visited Maralinga, I was part a group of about ten people, many of whom had served at Maralinga. They were *grey nomads*, carving their way across the bush in expensive off-road vehicles. Their trip to Maralinga was for nostalgia and to relive old memories. They viewed my presence with a curious but dismissive grin. Robin took us on day trips around the site, generously sharing all of his knowledge and memories, peppering it with subtle jabs at the British and detailed knowledge of Indigenous history.

I was busy photographing, filming, and recording. Slowly, the other visitors began to ask me questions, wondering why I had come so far to see nothing. I showed them some raw aerial footage I had just captured and they were astonished. The questions immediately shifted. They wanted to know how I knew so much, how I knew where to shoot, and what else could I show them. Eventually, one of the veterans asked me if I would present my work in progress to the group. We found a television in one of the remaining British buildings in the village.⁸ I plugged in my laptop and began flipping through the thousands of photos and hours of footage I had captured. There was disbelief. No one knew the site. No one knew that the site had been so structured and that the extents of damage and remediation were so vast. No one knew that they had stood at the centre of a vast pinwheel at Tufi. Questions were flying and suddenly I was educating people that had lived and worked in Maralinga about their own history. They were either incapable, or were never allowed, to see.

The *Material-Media Histories of Maralinga* are embedded within the blindness of the white veterans huddled around the television, finally seeing the land they had inhabited for years for the first time. They are present in the Maralinga Tjarutja subverting white traditions of control and invisibility by immediately opening the site to the public, another act of generosity that began with the conscious embracing of the colonial name *Maralinga*. The histories are lying in wait in the toxic burial trenches. The Material-Media Histories of Maralinga are in the land; a land that

⁸ The building is full of pieces of equipment, photographs, and memorabilia that Robin is meticulously compiling. He mentioned that it's the beginning of a collection that he hopes will one day constitute a museum at Maralinga.

is now in stasis. The destruction known, understood, and accepted; a place where *mamu* has visited, and whose shadow remains.



ACKNOWLEDGMENTS

A week after I began this research, I received a call from my sister, Laura, she had just been diagnosed with cancer. I asked her if I should come to Atlanta, she said no, in a way that sounded like “of course not!”. In the following months she would get good news, then bad. She would endure regular hospital stays and endless chemotherapy. I often asked her if I should postpone my PhD and she was always adamant: I should not. Throughout my life Laura guided me. She was a devoted and loving sister, even when I was not a good brother. On 14 July 2016, Laura died in Nashville. This, and everything else, is dedicated to her. Laura, thank you. I love you and miss you every day.

My mother suffers from dementia and will not be able to share this achievement with me, but if it were not for her fearlessness in 1957 to imagine herself in a university classroom and not in a hot Tennessee field, I would not be where I am today. Even in the cruel fog of Alzheimer’s, when I tell her that I’ve finished my PhD her face glows and she tells me how proud she is of me. My father has encouraged me at every step of my education and career, constantly raising the bar and challenging me to improve. However, his transition from successful businessperson to full time carer for Laura and my Mom is the achievement that will be his lasting legacy and something that I will never forget. Thank you Mom and Dad.

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