



BLACK MIST BURNT COUNTRY

BLACK MIST BURNT COUNTRY

BURRINJA TOURING EXHIBITION

PARTICIPATING ARTISTS

ADi	Chips Mackinolty
Lance Atkinson	Belinda Mason
Kim Bowman	Hilda Moodoo
Arthur Boyd	Trevor Nickolls
Jessie Boylan	Sidney Nolan
Mick Broderick	Susan Norrie
Luke Cornish (ELK)	Adam Norton
Pam Debenham	Paul Ogier
Linda Dement	Warren 'Ebay' Paul
Blak Douglas	Jeffrey Queama
Kate Downhill	Hugh Ramage
Terence Edwards	Toni Robertson
Yvonne Edwards	Reginald Rowed
Merilyn Fairskye	Kate Shaw
Weaver Hawkins	Mima Smart
Ian Howard	Karen Standke
Jonathan Kumintjarra	Tjariya Stanley
Brown	Albert Tucker
Rosemary Laing	Judy Watson
Craig MacDonald	

YALATA COLLABORATING ARTISTS

Rita Bryant	Teresa Peters
Cynthia Charra	Mima Smart
Polly Charra	Carmel Windlass
Verna Gibson	Mellissa Windlass
Edwina Ingomar	Natasha Woods
Glenda Ken	Ann Marie Woods
Margaret May	

**BLACK MIST
BURNT COUNTRY**



Karen Standke
(Australia; Germany, b.1973)
Road to Maralinga II 2007
oil on canvas
3 x 85 x 112 cm
Courtesy of the artist
© Karen Standke and Tim Gresham

BLACK MIST BURNT COUNTRY

TESTING THE BOMB MARALINGA AND AUSTRALIAN ART



burrinja

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burrinja.org.au

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Burrinja Cultural Centre

**Burrinja respectfully acknowledges the Traditional
Owners of the land on which Burrinja Cultural Centre
is built, the Wurundjeri of the Kulin Nations, its Elders
past, present and future. Burrinja also acknowledges
the Traditional Owners of the Maralinga/Emu Field
lands, as well as those of all lands to which the
exhibition *Black Mist Burnt Country* will travel.**

Indigenous readers should be aware that this book
contains names, words and images of people who
have passed away.

**For *Black Mist Burnt Country* national exhibition tour
dates see page 10.**

Dedicated to Japanese hibakusha, displaced
First Australians and to all global victims and
survivors of nuclear explosions and atomic tests.

*For Bella;
in the hope
that you will live in a world
free of nuclear threats.*



Cover illustration
– using the image by

Paul Ogier
(USA/Australia; New Zealand, b.1974)

***One Tree (former Emu Field atomic
test site)* 2010**

carbon pigment on rag paper

72 x 90 cm

94 x 117 cm framed

Courtesy of the artist

© Paul Ogier

Opposite page:
Rehabilitated Taranaki
test site.

© Google Earth.



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Hugh Ramage
(Australia; New Zealand,
b.1958)
Taranaki 2014
oil on canvas
40 x 35 cm
Private Collection
© Hugh Ramage

FOREWORD PETER GARRETT AM

Atomic testing by the British government in the Australian desert in the 1950s and 60s has been almost buried by the sweep of time, overrun by the stream of events that populate the march of local history.

It is all but impossible to imagine that split second when, unheralded, the southern sky was rent with flame and clouds of radioactive smoke and ash drifted across the arid lands of remote Australia.

The first gathering of works of art and scholarly reflection of this nuclear history is welcome – albeit soberly.

The creative outpourings and the detailed analysis on display here present a crucial marker of understanding of what happened, which in turn reveals a deeper expression of Australian identity, one born of the suffering and destruction that accompanied the tests.

Black Mist Burnt Country is an important exhibition; an act of remembering and bearing witness to a momentous series of calculated acts that shattered lives, especially the communities of the Pitjantjatjara and Yankunytjatjara lands.

The fact that a foreign nuclear device could explode in the desert at Maralinga, with little public knowledge and even less understanding of the consequences, is a reminder of the fatal complacency of the colonial mindset, which characterised the era of Prime Minister and Liberal leader Sir Robert Menzies.

Black Mist Burnt Country references several notable non-Indigenous artists' works in painting, photography, poster art and song as creative responses and protest against the British tests. Yet, it is the works by Aboriginal artists that carry greater weight, for the burden fell heavily on First Nation's people. It was their country

where the explosions happened, and, along with the Australian and British servicemen present for the tests, it was their lives that were immediately and irrevocably altered from that time on.

A brighter future where people are not sacrificed on the altar of national vanity, and where respect for the people of the land and the land itself goes hand in hand is only possible if we know something of the past.

Black Mist Burnt Country provides the inspiration and the testimony to enable that future.

The Hon Peter Garrett AM

Peter Garrett is one of the most prominent living Australians. A renowned activist, the former politician and lead singer of Midnight Oil has been a long-time advocate and campaigner on a range of local and global issues. He served as president of the Australian Conservation Foundation for two terms, which saw significant additions to natural protected areas, and the ACF grow into Australia's leading national environment organisation.

As Minister for the Environment he spearheaded the successful historic International Court of Justice case against Japanese whaling. As Minister for School Education he was responsible for legislating a new needs based funding system for all Australian schools.

He is the only Australian politician to receive the 'Leaders for a Living Planet' award from the World Wildlife Fund and is a Member of the Order of Australia for his contributions to the music industry and environment.



Adam Norton
(Australia, b.1973)
Prohibited Area 2010
acrylic on board, wooden
poles and bolts
240 x 120 x 7 cm
Courtesy of the artist and
Gallerysmith, Melbourne
© the artist



Mima Smart
(Pitjantjatjara, b.1955)
Untitled 2009
acrylic on canvas
30 x 40 cm
Produced for *Maralinga,*
The Anangu Story
by Yalata and Oak Valley
Communities with
Christobel Mattingley,
first published by
Allen & Unwin in 2009
© Maralinga Tjarutja Inc.
representing the Oak Valley
and Yalata Communities,
2009

INTRODUCTION DR ROSS FARNELL

Black Mist Burnt Country marks an important milestone in bringing into the public arena and consciousness the story of Australia's significant historical role in atomic testing and the ongoing 'fallout' from this nuclear complicity and colonisation. It marks also the fruition of many years work and a considerable achievement for Burrinja. I am pleased to welcome the many who are now given the opportunity to explore the multi-faceted themes unearthed through the project as this national touring exhibition traverses the breadth of the country over the coming three years.

Choosing the 60th anniversary of the British atomic test series at Maralinga as its launching point, *Black Mist Burnt Country* is the first survey exhibition of works dealing with the testing of nuclear weapons and materials in Australia, along with the myriad of interconnected events and repercussions arising from those tests: locally, regionally and globally. The exhibition brings together artworks spanning five decades by Indigenous and non-Indigenous contemporary artists across the mediums of painting, print-making, sculpture, installation, photography and new media. In doing so, it creates a powerful and accessible narrative hitherto largely hidden from the popular public gaze.

The importance of telling those stories has been a driving force in the development of this exhibition. As Mima Smart OAM and former Yalata Community Chairperson writes in her catalogue contribution, "because of the poison from the bombs being tested at Maralinga the country is no good", arguing that: "It is important that these stories are told." Mick Broderick's essay *Atomic Pop* observes how "the utopian promise and apocalyptic threat of atomic energy has never been far from the Australian cultural imagination". This 'paradoxical

nuclear binary' continues to manifest its fascination for popular culture today in digital gaming platforms, with post-apocalyptic role-playing games such as *Fallout 4* presenting a vision of possible 'atomic age retro-futuristic utopia' and the aftermath of nuclear Armageddon. Yet for all of the many and varied appearances and tropes of the nuclear in popular culture, including protest-era posters and Peter Garrett's powerful lyrics in Midnight Oil songs, Australia's negligent complicity in the atomic testing regime of the mid-twentieth century remains relatively unknown within our own country.

There are numerous sub-texts within this larger story, and we are grateful to have been granted the resources to explore and develop these narratives in-depth for *Black Mist Burnt Country* through the insightful essay contributions to this catalogue as well as the education resources available for students, and the interactive timeline developed as an integral part of the exhibition. As Dr Elizabeth Tynan writes in her essay *Thunder on the Plain*: "The British nuclear tests in Australia touched the lives of many people. There were the Indigenous people who were cast off their lands ... the service personnel who worked at the three Australian atomic tests sites ... the whistleblowers and politicians who fought to bring this issue to light, and the scientists, scholars and artists who have attempted to understand just what happened there and what it meant to this country."

In his contribution, *An alarming willingness to do harm*, Dr Tilman Ruff AM explores the devastating health impact that the tests had on so many of those different peoples, from the Indigenous population to the serviceman, and even his own personal experience as a toddler exposed to the nuclear dust storms that blew over Adelaide in 1956.

It is chilling to learn that: "Every human being alive carries in their body radioisotopes from nuclear test explosions."

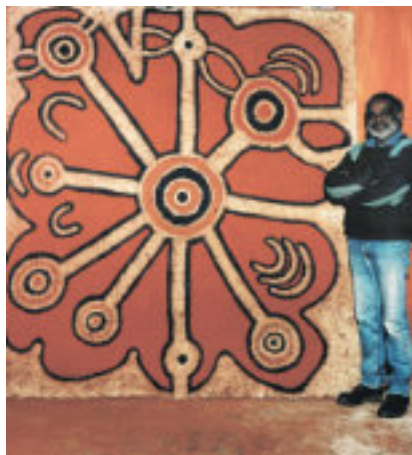
Clearly those most directly affected by the atomic testing in Australia have been the Indigenous populations of those communities. As exhibition curator JD Mittmann states in his curatorial essay *Atomic Testing in Australian Art*: "The story of atomic testing at Maralinga is the dislocation of Anangu Pitjantjatjara people from their lands in the Great Victoria Desert and from the United Aborigines Mission station at Ooldea."

AUSTRALIA'S NEGLIGENT COMPLICITY IN THE ATOMIC TESTING REGIME OF THE MID-TWENTIETH CENTURY REMAINS RELATIVELY UNKNOWN WITHIN OUR OWN COUNTRY.

The continuing devastation caused by this dislocation is brought to light through the artwork selected for the exhibition and the contributions to this catalogue. The *Black Mist Burnt Country* project has been developed from initial concept to final program in continuous consultation with the Anangu Pitjantjatjara through Yalata Anangu Aboriginal Corporation and Maralinga Tjarutja/Oak Valley Maralinga, including many trips to those communities as the project has unfolded, and we are pleased to be supporting members of those communities to actively participate in the programs accompanying the exhibition across the country.

The historical, artistic and cultural threads interwoven around this exhibition are strongly connected through and with Burrinja. Located in the urban-rural interface to the east of Melbourne, Burrinja is the place name for the Dandenong Ranges Community Cultural Centre,

INTRODUCTION DR ROSS FARNELL



Jonathan
Kumintjarra Brown
with his painting
*Maralinga before
the Atomic Test*
Photograph by
Neil McLeod

a not-for-profit arts organisation born out of community and arts activism in the late 1990s. At its heart, Burrinja exists because of community and for the creativity of that community. Created through protest and a determination to establish a hub for arts and culture in the Dandenong Ranges, the organisation draws on a resilient history entwined with activism.

This historical narrative laid the foundation for the centre's engagement with Indigenous culture: from the involvement of Yorta Yorta artist Lin Onus ('burrinja') in the initial community activism, to the gifting in 2001 of the nationally significant McLeod Gift Collection of Aboriginal and Oceanic works. A direct lineage then is created from Burrinja to the Maralinga story through Lin Onus and the works of Jonathan Kumintjara Brown held in the Collection, (detailed in JD Mittmann's essay), and it is the work of Jonathan that sits at the inspirational

and conceptual core of this exhibition. At another level too is the connection of activism through art and Burrinja's mission, *building community through art*. While Burrinja's has been a story of local engagement and development, it is also one of emerging national significance. Burrinja has a vision to contribute positively to the creative, social and economic outcomes that build and strengthen the region's and the nation's cultural ecology.

The scope and scale of this exhibition have only been made possible by the contributions and enthusiastic support of many. While it is not possible to acknowledge all of them here, I take this opportunity to thank in particular our Curator and Manager of Collections JD Mittmann for his tireless dedication to this project from inception to fulfilment; to the members of the Maralinga Tjarutja/Oak Valley communities for their support; to the many contributors to the exhibition development, design and logistical elements; to those who have contributed their research and insights to this catalogue; and to the funding partners who have made the entire project possible: the Australian Government's Visions of Australia program; NETS Victoria's Exhibition Development Fund Grant, supported by the Victorian Government through Creative Victoria; the Gordon Darling Foundation; and to Burrinja's key partner Yarra Ranges Council.

Burrinja looks forward to the positive outcomes and impact that *Black Mist Burnt Country* will have for many years to come, and to the telling of stories old and new to younger generations about our atomic past, so that we may be better informed as we contemplate and deliberate on any potential nuclear futures.

Dr Ross Farnell

Executive Director, Burrinja

TOUR VENUES

**National Trust S.H. Ervin Gallery,
The Rocks, Sydney, NSW**

24 Sep – 30 Oct 2016

Art Gallery of Ballarat, VIC

3 Dec 2016 – 5 Feb 2017

Swan Hill Regional Gallery, VIC

25 Feb – 23 Apr 2017

Gold Coast City Gallery, Surfers Paradise, QLD

6 May – 18 Jun 2017

Pinnacles Gallery, Townsville, QLD

22 Jul – 3 Sep 2017

**Glasshouse Regional Gallery,
Port Macquarie, NSW**

16 Sep – 26 Nov 2017

Western Plains Cultural Centre, Dubbo, NSW

9 Dec 2017 – 25 Mar 2018

Penrith Regional Gallery, NSW

26 May – 29 July 2018

National Museum of Australia, Canberra, ACT

23 Aug – 18 Nov 2018

**Burrinja Dandenong Ranges Cultural Centre,
Upwey, VIC**

1 Dec 2018 – 10 Feb 2019

Terence Edwards
(Pitjantjatjara, b.1982)
End of Ooldea Mission 2009
acrylic on canvas
40 x 50 cm
Produced for *Maralinga*,
The Anangu Story by Yalata
and Oak Valley Communities
with Christobel Mattingley,
first published by Allen & Unwin
in 2009
© Maralinga Tjarutja Inc.
representing the Oak Valley and
Yalata Communities, 2009





Cynthia Charra, Polly Charra,
Verna Gibson, Edwina
Ingomar, Glenda Ken, Teresa
Peters, Carmel Windlass,
Mellissa Windlass, Ann Marie
Woods, Natasha Woods with
assistance of Mima Smart,
Margaret May and Rita Bryant
(Pitjantjatjara Anangu)
Maralinga Tjurkurpa 2016
acrylic on canvas
174 x 139 cm
Facilitated by Pam Diment
Courtesy of the artists
© Yalata Community



THE COUNTRY IS NO GOOD MIMA SMART OAM

Before the bombs, our families were still in the desert and were travelling south to a place which was Ooldea Mission. In Ooldea, a missionary was looking after our families there. They were all happy. Kids were put in homes ... a girls' home and a boys' home. People were happy. They were given their new names plus their native name, by the lady named Daisy Bates. They lived there for a long time.

After many years, the British Army sent men to Ooldea Mission, to have a meeting about what was going to happen in a few months or weeks time. After that the white missionary had a meeting with the other white people who were living there, before they passed the message to the Anangu people.

Then next day that missionary brought everybody together, sat in a circle, and told them about what is going to happen. When the message was given to all the people, they felt angry. They all got upset. Some were hitting their heads with sticks and stones. Others were putting sand all over their bodies. They were all crying sadly, saying, "Where are we going? We are going to a place we have never been to."

The Ooldea Mission was closing up and everybody was given rations of food to take with them for their children. People were taken on trucks to Kooniba, while others walked towards south. They were putting tracks on the sand so that others could follow them. When they didn't come we thought "maybe they have gone hunting". They went on different tracks. Maybe the wind blew the footprints away. Some were lost. A lot of families are still wandering around out there in the desert today.

Our people were divided into four groups. Some went south to Yalata. Some went to Western Australia, others



This page: Photos by JD Mittmann

to Northern Territory, and across east South Australia. It was a very sad day for our families to leave Ooldea. They enjoyed living there. But that was gone. Our families were lost and didn't know what place they were going to. Just like they were the people who were taken out to the desert by Moses, as it says in the Bible.

Because of the poison from the bombs being tested at Maralinga the country is no good. No good at all. That poison has killed so many of our people. Through that atomic bomb. And radiation on everything ... sand, trees, animals, buildings and other things. Our families are upset by all this mess.

I am glad that this book and the exhibition are telling our stories. It is important that these stories are told for our next generation.

Mima Smart OAM

Former Yalata Community Chairperson

Rev Russell Bryant

Yalata Community Chairperson

Deputy Chair Maralinga Tjarutja Community Council

TJUKUTPA OLDEA-NYA PATJINTJAR

Iriti anagu tjuta pukulpa nyinangi ngura ini Oldea Missionta. Anangu kutjupa tjuta kawripartu putingka pitjangi waltjara tjut-kutu.

Ka tjintu kutjupanka British Army tjutanku ngura Oldea Mission takutu pitjala wangkangu, ngura nyangaka, anangu tjuta nyinanytjaku wiya.

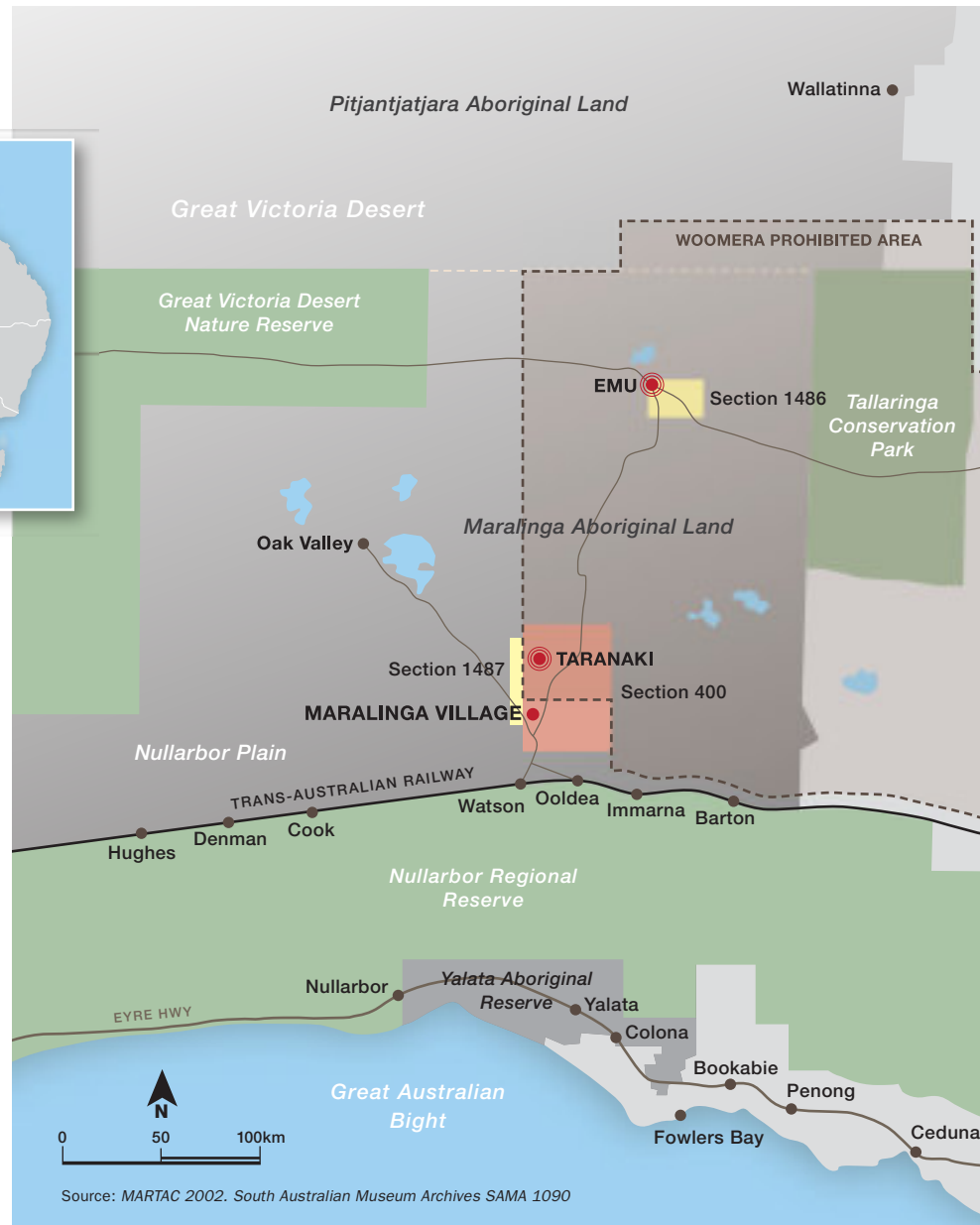
Nanana Atom Bomb-pa tjununayi ka wati Missionary-ku anangu tjutanka wangkangu, pankantjargu ngura Mission-ngkuru.

Paluru tjana tjituru-tjituru pulkara mirpanariku. Paluru tjana pitjangu ngura ini Koonibba Missionta kutu, tjitji tjuta home mangka tjarpap-tjunu. Wati-minyma tjuta pukulpa nyinayi.

Truck-tjuta-nku pitjala manyintjara katingu kutjupa tjuta Oldea Tankala, ngura pulkanya tjunkula pukulpa nyianyi kapi pulka-ka.



EMU AND MARALINGA ATOMIC TEST AREAS IN SOUTH AUSTRALIA



Far right, top:
Fourth atomic bomb test at
Maralinga, 22 October 1956,
codenamed Breakaway.
Photo by News Ltd/Newspix

Far right, bottom:
Tommy Queama and
Jack Baker hold the Maralinga
land grant documents,
18 December 1984.
The deeds returned to
its Traditional Owners.
Photo by Milton Wordley/
Newspix

TIMELINE

DATE	EVENT
c400 BC	The ancient Greek philosopher Democritus formulates the theory that everything in the universe consists of <i>atomos</i> , "solid, indivisible, unchanging particles".
1770	Captain James Cook claims Australia as British possession.
1789	German chemist Martin Klaproth completes the analysis of pitchblende and names the new element uranium.
1895	Wilhelm Conrad Röntgen discovers X-rays at the in Germany and takes an image of his wife's hand.
1897–1907	New Zealand scientist Ernest Rutherford investigates radioactivity at Cambridge, Massachusetts, and finds distinct types of radiation emitted from uranium.
1903	French scientists Pierre and Marie Curie receive Nobel Prize in Physics for research on the "radiation phenomenon".
1905	Albert Einstein publishes theory of the equivalence of matter and energy (the theory of special relativity), which is later used in the development of the atomic bomb.
1906–60	Radium Hill (SA) operates as Australia's first uranium mine. Mined ore is processed at Hunter's Hill (NSW) and sold to pioneering researchers Rutherford and Curie.
1911	Hans Geiger and Rutherford discover that the mass of an atom is concentrated in its nucleus, a particle 1,000 times smaller than the atom, surrounded by orbiting electrons.
1919	Ernest Rutherford splits the atom in Manchester.
1930s	
March 1933	Hungarian scientist Leo Szilard produces a laboratory-scale chain reaction using uranium in Chicago.
December 1938	German scientists Otto Hahn and Fritz Strassmann split the atom in Nazi Germany.
September 1939	Germany attacks Poland which starts World War II.
October 1939	Szilard convinces Einstein to sign a letter to US President Roosevelt warning of Germany's atomic research.

1940s	
April 1940	Britain's <i>MAUD Committee</i> investigates development of an atomic weapon after recent discovery of nuclear fission.
September 1940	Japan joins Germany and Italy in the Tripartite Pact.
December 1941	Roosevelt appoints <i>S1 Committee</i> to investigate whether and at what cost the US can produce an atomic bomb. Japanese forces conduct a surprise attack on the US navy base at Pearl Harbor, Hawaii. US enters war.
February 1942	Singapore surrenders to Japan.
April 1942	US B-25 bombers for the first time raid Japanese cities.
September 1942	US General Leslie Groves assigned to command secret <i>Manhattan Project</i> . Groves hires Robert Oppenheimer to run the scientific development of the atom bomb. The project which eventually employs 130,000 people and costs more than US\$ 25 billions in 2012 dollars
December 1942	Italian Enrico Fermi and his team at University of Chicago achieve the first self-sustaining nuclear chain reaction.
1942–45	Manhattan Project includes secret research facilities in Los Alamos, Chicago, Oak Ridge. Plutonium production at Hanford is under strict radiation safety standards.
July 1943	Hamburg firestorm caused by incendiary bombs.
August 1943	US and Britain sign <i>Quebec Agreement</i> committing allies to not sharing any atomic information, technology or materials with third parties.
February 1944	British scientist William Penney employed at Los Alamos to study physics of hydrodynamic and shock waves.
June 1944	D-day. Allied troops land in Normandy, France.
September 1944	<i>Hyde Park Agreement</i> : Roosevelt and Churchill commit to collaboration in atomic research for military and civilian purposes after war.
13–15 February 1945	Allied air raid drop over 300t incendiaries and explosives on Dresden which shelters 300,000 refugees at the time. Over 20,000 are killed.
February 1945	US/British and Russian relations deteriorate at <i>Yalta Conference</i> over dispute about future of Germany and Europe, which lead to Cold War.

Tens of thousands of people within a 2 kilometre radius were burned, decapitated, disemboweled, crushed and irradiated. The sudden drop in air pressure blew their eyes from the sockets and ruptured their eardrums; the shock wave cleaved their bodies apart. They were the lucky ones.

Paul Ham

Hiroshima Nagasaki, 2011

March 1945	Fire-bombing of Tokyo causes over 100,000 casualties, displacing 1 million. Largest bombing event of WWII.
8 May 1945	V-Day in Europe. German's unconditional surrender.
June 1945	Leading scientists of <i>Manhattan Project</i> voice concerns about use of atomic weapon and warn of arms race. The <i>Charter of United Nations</i> is signed in San Francisco. Divine Emperor Hirohito calls on Japan's military leaders to end the war by diplomatic means.
July 1945	First atomic test is carried out at Alamogordo, New Mexico, codenamed <i>Trinity</i> . The explosion's force is estimated the equivalent of 20,000 tons of TNT. <i>Potsdam Declaration</i> calls on the Japanese Government's unconditional surrender.
6 August 1945	<i>Enola Gay</i> drops <i>Little Boy</i> . 70,000 are killed immediately.
8 August 1945	Soviet Union declares war on Japan, pouring more than one million soldiers into Japanese-occupied Manchuria.
9 August 1945	<i>Bockscar</i> on mission to drop plutonium bomb <i>Fat Man</i> . Smoke from fire-bombing prevents targeting of Kokura. <i>Bockscar</i> is diverted to Nagasaki but misses target. 40,000 die instantly. William Penney witnesses the bombing in observation plane.
15 August 1945	Japan accepts terms of unconditional surrender.
August 1945	Harry Daghlion becomes the first victim to die of radioactive poisoning at Los Alamos.

TIMELINE

September 1945	Wilfred Burchett, an Australian journalist, is the first Western reporter to visit Hiroshima.
October 1945	US Occupation Forces ban press from photography at Hiroshima and Nagasaki.
January 1946	UN Assembly calls for the elimination of atomic weapons.
June 1946	<i>Baruch Plan</i> proposes an international authority to inspect and control nuclear projects.
July 1946	US military detonates a Nagasaki-type plutonium bomb at Bikini Atoll in Operation Crossroads.
August 1946	US <i>McMahon (Atomic Energy Act)</i> monopolises know-how and closes door on former allies such as Britain. John Hersey publishes landmark report on the bombing at Hiroshima and its aftermath in <i>The New Yorker</i> magazine.
January 1947	<i>Manhattan Project</i> is transferred to the newly created Atomic Energy Commission, moving the program from military to civilian control.
1947	William Penney assembles a team to work on the atomic bomb in the UK. Albert Tucker and American poet Harry Roskolenko visit Hiroshima.
August 1949	USSR tests atomic bomb in Semipalatinsk, Kazakhstan.
1949	Uranium discovered at Rum Jungle, NT. Until 1971, it produced uranium for US and British nuclear weapons.
1950s	
September 1950	Australian PM Robert Menzies receives request from British PM Clement Attlee to test atomic weapons in Australia. Menzies agrees.
March 1951	British seek to use Monte Bello Islands (WA) for tests.
1952	Ooldea Aboriginal Reserve closed to move people away from weapons tests. Anangu Pitjantjatjara are displaced and re-settled at Yalata on the Great Australian Bight.
June 1952	Liberal government passes <i>Defense (Special Undertakings) Act</i> , which allows the British Government access to remote parts of Australia to undertake atomic weapons tests. The general public is largely unaware of the nature and risks of testing program.

I regarded the bomb as a military weapon and never had any doubt that it should be used."

US President Harry Truman

Harry S. Truman, *Memoirs*, 1955

October 1952	First UK atomic test in Australia, codenamed <i>Hurricane</i> . Bomb is exploded inside the hull of frigate HMS <i>Plym</i> , which is mostly vapourised in the blast. William Penney supervises test.
November 1952	US test the first hydrogen bomb at Enewetak Atoll. Bomb is 500 times more powerful than the Nagasaki bomb.
August 1953	USSR test first hydrogen bomb.
October 1953	<i>Totem 1</i> and <i>Totem 2</i> atomic tests at Emu Field (SA). 'Black mist' incident affects the health of Aboriginal people in the area.
March 1954	A massive 15-megaton hydrogen bomb code-named <i>Castle Bravo</i> is detonated at Bikini Atoll. Radioactive fallout severely affects islanders and fishermen.
1955	UN establishes Scientific Committee on the Effects of Atomic Radiation (UNSCEAR).
July 1955	Philosopher Bertrand Russell, Albert Einstein and leading scientists urge leaders to renounce nuclear weapons.
May 1955	British and Australian governments announce permanent test site at Maralinga, South Australia.
May-June 1956	<i>Operation Mosaic</i> : UK conducts atomic test on Monte Bello Islands, which spreads fallout across mainland. Australian Labor Party withdraws political support for the British tests in the wake of Mosaic G2 test.
September -October 1956	Four atomic devices are trialed at Maralinga codenamed <i>Operation Buffalo</i> . Himsworth and Bronk reports on hazards of radioactive fallout and strontium-90.
May 1957	The Milpuddie family incident. Artists demand immediate end of nuclear tests from Australian government Signatories include Dargie, Waller, Counihan, Howley, French, Perceval and Blackman.

September 1957	Britain commences <i>Operation Antler</i> , which includes three precursory tests for British hydrogen bombs.
October 1957	The Soviet Union launches satellite <i>Sputnik 1</i> , proof of its capability to built intercontinental missiles.
October 1957	Fire at Windscale nuclear reactor in Cumbria, England, which burns for two days and releases radioactive material that spreads across northern Europe and Scandinavia.
November 1957	UK test of hydrogen bomb (<i>Operation Grapple</i>) at Christmas Island. Britain pushes to finalise test series before a moratorium of atomic tests comes into life.
January 1958	Australia's first nuclear reactor goes critical in Lucas Heights, south of Sydney, which is built for research and production of medical radioisotopes.
February 1958	<i>Campaign for Nuclear Disarmament</i> is launched in London. Thousands join protest march to Aldermaston.
1960s	
February 1960	France explodes its first atomic bomb in the Sahara desert, Algeria, with a yield of 60-70 kilotons.
January 1961	Two <i>Mark 39</i> hydrogen bombs are accidentally dropped in US after a B-52 bomber breaks up in mid-air.
October 1961	The Soviet Union tests the world's most powerful bomb, 58-megaton <i>Tsar Bomba</i> at Novaya Zembyla.
October 1962	<i>Cuban Missile Crisis</i> : World to the brink of nuclear war.
1962-63	Yirrkala bark petition against bauxite mining becomes the first statement of land rights by Aboriginal people.
1963	Kurt Vonnegut Jr. publishes <i>Cat's Cradle</i> .
April 1963	Britain concludes 'minor' trials program at Maralinga in time before Test Ban Treaty comes into place.
August 1963	US, UK and USSR sign Partial Test Ban Treaty in attempt to minimize radioactive fall-out in the world's atmosphere.
1964	Partial cleanup of Emu Field and Maralinga commences.
January 1964	<i>Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb</i> (dir. by Stanley Kubrick) released.
October 1964	China explodes its first atomic bomb at Lop Nor.

1965	PM Menzies commissions report into a possibility for a nuclear weapons program in Australia.
July 1966	France begins nuclear testing in the South Pacific in Mururoa and Fangataufa.
February 1967	Latin America declares itself a 'nuclear-free zone', committing signatories not to manufacture, test or acquire nuclear weapons.
May 1967	PM Harold Holt commissions study to assess the possibility of domestic manufacture of nuclear weapons.
August 1967	Britain completes clean-up operation at Maralinga, <i>Operation Brumby</i> , and vacates the site.
1967	A Federal referendum on allowing the Commonwealth to make laws in respect of Indigenous people, and for Indigenous people to be counted in the census, succeeds with a "Yes" vote of over 90 per cent.
1968	<i>Pearce Report</i> reveals that 20kg of highly toxic plutonium are buried at Maralinga's <i>Taranaki</i> site. Most of the plutonium is later found to be scattered around the site.
July 1968	<i>Non-Proliferation of Nuclear Weapons Treaty</i> (NPT) commits states to non-proliferation, disarmament and peaceful uses of nuclear energy.
1969	Cabinet approves plan to build nuclear reactor at Jervis Bay (NSW).
1970s	
1972	Gough Whitlam elected PM who drops Jervis Bay project.
1973	Australia ratifies NPT.
January 1974	Australia and New Zealand ask the International Court of Justice to halt continuing French atmospheric tests in Polynesia and send naval vessels to signal opposition.
May 1974	India conducts atomic bomb test in the Rajasthan Desert. Bowing to international pressure, France announces all of its future nuclear tests will be conducted underground.
November 1975	Governor-General Sir John Kerr dismisses PM Whitlam. Malcolm Fraser is appointed as caretaker PM.
1976	Liberal Federal Government approves licenses for Ranger and Narbarlek (NT) and Olympic Dam (SA) uranium mines.



Crew of a Valiant bomber aircraft which dropped an atomic device at Maralinga on Thursday, 11 October 1956 (Operation Buffalo, codenamed Kite).
Photo by News Ltd/Newspix

TIMELINE

December 1976	Avon Hudson, RAAF veteran, reveals on TV that he had “helped bury 26 boxes of radioactive plutonium waste at Maralinga under just three meters of sand”.
December 1976	Tom Uren questions the Minister for Defence, James Killen, about Maralinga and demands a royal commission.
August 1977	Fraser government allows uranium mining and export. 50,000 marchers protest in Hiroshima Day rallies.
June 1978	Australia joins UN Committee on Disarmament.
October 1978	Journalist Brian Toohey’s article raises question about security and proper disposal of plutonium at Maralinga.
1979	Nuclear arms race escalates with NATO decision to deploy Cruise and Pershing missiles in Britain, Germany and Italy. USSR installs SS-20 in Eastern Europe. Protest marches are held throughout Western Europe and Britain.
1980s	
May 1980	<i>The Advertiser</i> in Adelaide runs a story about Yami Lester.
1981	<i>Backs to the Blast</i> an independent documentary film helps trigger Royal Commission into the British Atomic Tests.
June 1982	Over a million people gather in New York’s Central Park in support of UN Session on Disarmament, the largest anti-war demonstration in history.
1982	Midnight Oil album <i>10, 9, 8, 7, 6, 5, 4, 3, 2, 1</i> , with the track <i>Maralinga</i> reaches top of Australian charts.
March 1983	Reagan unveils <i>Strategic Defense Initiative</i> program.
April 1983	Palm Sunday rallies call for the end of the arms race. More than 150,000 protest in Australian major cities.
November 1983	First US missiles arrive in Germany; Soviets walk out of disarmament talks.
May 1984	A scientific mission to Maralinga exposes a hitherto unknown distribution of plutonium contamination at Maralinga.
1984	The South Australian Government passes <i>Maralinga Tjarutja Land Rights Act</i> , which grants traditional owners freehold title to an area of 81,000 sqkm.
August 1984	Royal Commission into British Nuclear Tests established.

Australia co-operated with the British on conducting secret atomic trigger tests at Maralinga and that waste and debris from these tests were buried at Maralinga?

Tom Uren, Labour MP

House of Representatives, 9 December 1976

1984	French nuclear tests continue in the Pacific. New Zealand declares herself a nuclear-free zone.
1984	In federal elections, Peter Garrett, President of the Australian Conservation Foundation and lead-singer of Midnight Oil, records 9.7% of the vote for the Nuclear Disarmament Party (NDP). Due to the preferential voting system he was not elected to the Senate. Peace activist Jo Vallentine is elected to the Senate for the NDP in WA.
July 1985	French secret agents sink the Greenpeace ship <i>Rainbow Warrior</i> in Auckland. One crew member, photographer Fernando Pereira, drowns.
August 1985	The <i>South Pacific Nuclear Free Zone Treaty</i> is signed at Rarotonga in the Cook Islands.
November 1985	Royal Commission hands its findings to the Federal Government, including recommendations amounting to compensation for victims (servicemen, Aboriginal people and civilians) and full cleanup of test sites.
December 1985	<i>International Physicians for the Prevention of Nuclear War</i> receives the Nobel Prize in Oslo for its efforts of focusing on the human costs of nuclear war.
April 1986	Chernobyl catastrophe. An explosion at the nuclear power plant sends radioactive cloud across northern Europe.
October 1986	US President Reagan and Soviet President Mikhail Gorbachev meet at Reykjavik, Iceland, where the possibility of achieving nuclear abolition is discussed.

December 1987	Intermediate-range missiles banned. USSR and US sign the <i>Intermediate-Range Nuclear Forces Treaty</i> to eliminate all land-based missiles held by the two states with ranges between 300 and 3,400 miles.
March 1989	TAG (Technical Assessment Group) reports to Australian government on options for rehabilitation of the Maralinga atomic bomb test site.
1990s	
1990	Lin Onus creates sculpture <i>Maralinga</i> , the first artwork by an Indigenous artist inspired by the nuclear tests in Australia.
June 1993	Australian journalist Ian Anderson publishes landmark article in <i>New Scientist</i> about Maralinga contamination.
July 1993	<i>Nuclear (R)Age – The Bomb in Australian Art</i> is exhibited at Monash University Gallery.
December 1993	UK government agrees to pay £20m on an ex gratia basis towards the cost of the Maralinga site rehabilitation.
November 1995	PM Paul Keating establishes the Canberra Commission on the Elimination of Nuclear Weapons, an independent international forum to deliberate issues of nuclear proliferation and propose practical steps on abolishment.
December 1995	Southeast Asia declares a nuclear-free zone.
March 1996	Jonathan Kumintjarra Brown presents <i>Maralinga Nullius</i> , the first exhibition themed around Maralinga as part of <i>Native Title Now</i> at Tandanya during Adelaide Festival.
April 1996	Africa becomes a nuclear-free zone.
July 1996	The International Court of Justice issues an advisor opinion on legality of the threat or use of nuclear weapons reminding states of their duty to negotiate in good faith and accomplish nuclear disarmament.
July 1996	Soil excavation starts at Maralinga’s Taranaki site.
September 1996	UN General Assembly adopts the <i>Comprehensive Nuclear-Test-Ban Treaty</i> . As of 2015 eight states have not ratified (incl. US, China), three have not signed it: India, Pakistan, and North Korea, which prevents the treaty from coming into force.

September 1997	The Federal Government announces replacement reactor in Lucas Heights costing in excess of \$500m.
May 1998	India and Pakistan conduct a series of nuclear tests.
1998	Pangea's plan to establish nuclear waste dump in Australia for 20% of world's spent nuclear fuel is leaked to the media, but dropped after public condemnation.
1998	Proposed Jabiluka uranium mine site attracts continued protest making it one of Australia's largest environmental campaigns. It draws criticism from UNESCO due to its location in Kakadu National Park World Heritage Area.
2000s	
March 2000	<i>Maralinga Rehabilitation Project</i> declared completed which Science Minister Nick Minchin declares as "world's best practice" and announces the site "clean and safe".
April 2000	ABC airs program that reveals concerns about the effectiveness of the Maralinga cleanup operation.
July 2004	The Federal Government abandons plans for a national radioactive waste repository in South Australia after protests of Indigenous elders.
August 2006	OPAL replacement reactor in Lucas Heights goes critical. Decommissioning of existing reactor commences in 2007 and expected to be completed by 2025.
October 2006	North Korea conducts nuclear tests.
April 2007	ICAN (International Campaign to Abolish Nuclear Weapons) is launched in Vienna.
2007	The Australian Labor Party scraps 'three-mine policy', opening up Australia to uranium exploration and mining.
2009	Australia adopts the <i>United Nations Declaration on the Rights of Indigenous Peoples</i> .
April 2009	US President Barack Obama calls for nuclear abolition before a crowd of 20,000 in Prague.
2009	Christobel Mattingley publishes <i>Maralinga – The Anangu Story</i> co-authored with Oak Valley/Yalata communities.
2009	Section 400 at Maralinga is handed back to traditional owners encompassing 3000 sq km, including the 'forward area' where seven nuclear devices were exploded and almost 600 so-called 'minor tests' were conducted.

2010s

2010	Victorian artist Lance Atkinson (Yorta Yorta) conducts art workshop in Oak Valley. Works are presented at Adelaide Festival the following year.
8 April 2010	US and Russia sign the <i>New START (Strategic Arms Reduction Treaty)</i> promising to reduce by half the number of strategic nuclear missile launchers.
March 2011	A massive earthquake and resulting tsunami cause a devastating nuclear accident at the Fukushima Daiichi nuclear power plant in Japan.
March 2012	British supreme court rules that 1,000 British veterans involved with the British atomic tests are unable to file for compensation.
November 2014	Maralinga-Tjarutja people receive unrestricted access to Maralinga. The site was limited because it was part of the Woomera restricted area.
February 2015	SA Premier Jay Weatherill announces a Royal Commission into the Nuclear Fuel Cycle inquiring into the state's potential for uranium mining, enrichment, energy generation and nuclear waste storage industries.
June 2015	Russia's president Putin announces increase of intercontinental ballistic missiles by 40.
November 2015	The Australian Government announces six new private properties for a potential national radioactive waste repository.
December 2015	The first shipment of Australian nuclear waste processed in France for long-term storage arrives back in Australia. Greenpeace activists protest at Port Kembla in NSW.
January 2016	North Korea claims to have conducted a nuclear hydrogen bomb test.
January 2016	The <i>Bulletin of Atomic Scientists</i> leave <i>Doomsday Clock</i> at three minutes to midnight due to ongoing nuclear threat and climate change.
April 2016	Representatives of Yalata Aboriginal Community meet <i>hibakusha</i> in Japan and gift a sculpture to the Nagasaki Peace Park.
May 2016	President Obama is the first US President to visit Hiroshima. He calls for an end of nuclear weapons.



Judy Watson
(Waanyi, b.1959)
bomb drawing 1 1995
ink and water colour on paper
50 x 40 cm
Courtesy of the artist and
Milani Gallery, Brisbane
© the artist



Kate Downhill
 (Australia, UK, b.1955)
Operation Hurricane 2013
 acrylic on dress fabric
 laid on canvas
 91 x 122 cm
 Courtesy of the artist
 © the artist

THUNDER ON THE PLAIN DR ELIZABETH TYNAN

In the now-extinct Garik language of the Northern Territory the word “Maralinga” means thunder.¹ When the United Kingdom strove to join the ‘club’ of nuclear-armed nations by conducting an extensive program of nuclear tests on Australian sovereign territory, thunder soon echoed across pristine desert lands. As it rolled away, it left behind intractable radioactive contamination.

The British nuclear tests in Australia touched the lives of many people: Indigenous people were cast off their lands, in some cases having been exposed to radioactivity; service personnel from the test sites have had to deal with the physical and emotional consequences ever since; whistleblowers and politicians fought to bring this issue to light; scientists, scholars and artists have attempted to understand just what happened there and what it meant to this country. The story of the ‘thunder on the plain’ is a remarkable one, and it resonates still.

This is a tale of nuclear colonialism, in which a non-nuclear nation handed over part of its territory to an emerging nuclear nation to test the most destructive weapons ever invented. Remnants of the toxic physical and political legacy endure to this day. The Australian Government had little effective say in the conduct of the tests and, shamefully, no knowledge of the contamination at the site until many years later. The Australian public knew even less than their government and therefore could not grant informed consent for weapons tests and experiments that thoroughly polluted the land. This was partly the result of strict official secrecy enforced by both governments and partly the inability of the contemporary Australian media to investigate events at Maralinga.

The British called all the shots, and secrecy reigned.

The notorious UK Official Secrets Act placed strict limits on what any British participant, military or civilian, could say about the events at Maralinga, and promised lengthy prison terms for breaches. Australia’s equivalent, the Crimes Act, was likewise highly proscriptive for all Australian participants, though perhaps not as terrifying as the UK law.

The relationship between the British and the Australians in this project was always essentially that of master and servant. The UK test authorities never fully included Australia in their decision-making, nor did they share their scientific data. The Australian Government had little other than British assurances and unjustified hope that everything would be okay. In ceding part of its territory to another nation for secretive and dangerous activities, Australia’s responsibilities as a sovereign nation were compromised during the eleven years of the British atomic weapons test programs in Australia.

Monte Bello, Emu Field and Maralinga

The test program ran from 1952 to 1963, and took place at three locations: the Monte Bello Islands (also known as the Montebello Islands) off the Western Australian coast, and Emu Field and Maralinga in the South Australian desert. The early stages of the nuclear trials in Australia were directed by Sir William Penney, a brilliant mathematical physicist who played a central role in the Manhattan Project. A total of 12 ‘mushroom cloud’ atomic devices were exploded: three at Monte Bello (Operations Hurricane and Mosaic in 1952 and 1956, respectively), two at Emu Field (Operation Totem, 1953) and seven at Maralinga (Operations Buffalo and Antler, 1956 and 1957). The ‘major trials’, as the

mushroom cloud tests were called, investigated a diverse range of atomic weapon designs and explosive yields. They resulted in the creation of the first operational British nuclear weapons, known as Blue Danube, and the smaller tactical nuclear weapon, known as Red Beard.

From fission to fusion

Nuclear weapons proliferation and escalating Cold War tensions were inevitably ramped up as Britain entered the arms race with the success of Operation Hurricane in October 1952. Britain was attempting to catch up to the first nuclear-armed nations, the United States and the Soviet Union, but was a few years behind. An international moratorium on atmospheric nuclear weapons testing was expected to come into effect in 1958, and this added to the rush to finalise bomb designs and to support the Operation Grapple hydrogen (fusion) bomb tests at Kiritimati (then called Christmas Island, part of the Kiribati group) in the Pacific.

Hydrogen bombs are significantly more destructive than the fission weapons tested in Australia. Grapple had to be completed before the moratorium began.² The final Grapple test took place in September 1958, and the moratorium began at the end of the following month and lasted until 1961. There was then a brief interlude before the Partial Test Ban Treaty was enacted in October 1963, prohibiting all but underground nuclear weapons testing and effectively ending all testing in Australia. Several devices tested in Australia, during Operation Mosaic and Operation Antler, were components of the hydrogen device, although no hydrogen bomb explosions took place on Australian soil at the express wish of the Australian Government. Some of the most secretive



Rosemary Laing
(Australia, b.1959)
***One Dozen Considerations:
Totem I – Emu***
2013
c-type photograph
49 x 76 cm
Courtesy of the artist and
Tolarno Galleries, Melbourne
© the artist

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radiological tests in Australia, Vixen B at Maralinga held in 1960, 1961 and 1963, may well have contravened the moratorium and the test ban treaty, although exactly whether they did remains a mystery as the full technical details of these tests have never been revealed.

Britain and Australia in the atomic era

Britain had made a commitment to build its own A-bomb in 1947³ and pursued its secret plans in a succession of government and scientific committees. After being barred from developing atomic weapons with the Americans, and trying but failing to establish an agreement to test in Canada, Britain decided to approach Australia. British Prime Minister Clement Attlee wrote to his Australian counterpart Robert Menzies on 16 September 1950,⁴ seeking permission to use the remote Monte Bello islands off the northwest coast of Western Australia for atomic testing. Menzies was eager – far too eager – and readily agreed without consulting his colleagues. Menzies did not say yes simply to be sycophantic. Evidence suggests that Australia at that time had aspirations to become a nuclear armed and powered nation in its own right.⁵ Co-operating with British atomic weapons developers was thought to be a way to gain access to the necessary know-how. Australia already had some of the required resources.

In 1949, extensive uranium deposits had been discovered in the Northern Territory, at Rum Jungle. There would later be further discoveries in South Australia.⁶ These discoveries prompted speculation among Australian politicians about the prospects for future nuclear energy production, since uranium is essential for both nuclear weaponry and power generation. In 1953, the Australian Parliament passed

the Atomic Energy Act that established the Australian Atomic Energy Commission (AAEC), which was responsible for overseeing the development of atomic power, indicating a commitment to an atomic future. Also, agreeing to assist Britain with its nuclear program was assumed to help guarantee protection by at least Britain and possibly the United States if nuclear war loomed.

BRITAIN HAD TO DEVELOP ITS WEAPONRY WITHOUT WORKING WITH THE AMERICANS. AUSTRALIA WAS CHOSEN, AND PRIME MINISTER MENZIES COULD NOT HAVE BEEN MORE ACCOMMODATING.

In the end, the push for Australia to be nuclear-armed and powered came to nothing. Various Australian governments have toyed with the idea of nuclear energy, including a well-developed proposal in the late 1960s, championed by then-Prime Minister John Gorton, to build a nuclear power station at Jervis Bay, part of the Australian Capital Territory on the New South Wales south coast. For a variety of reasons, including Gorton's replacement as PM by a less-keen William McMahon, the plan did not proceed.

The High Flux Australian Reactor (HIFAR) at Lucas Heights, 30km south of Sydney, was Australia's first nuclear reactor, and went critical in 1958. It was used for research and for creating medical and industrial radioisotopes. The process to decommission HIFAR began in 2007 and will continue well into the 2020s. A new reactor commissioned by the Howard Government at the same site is currently the only operational nuclear reactor in Australia. Recently, and in the light of the 2015 Royal Commission into the Nuclear Fuel Cycle,

proposals have been put forward for Australia to host a nuclear waste storage facility. All nuclear-related projects, including uranium mining, usually face fierce local opposition these days, and the latest proposals are no exception. Australia is not truly a nuclear nation, and may never be. The politics have proven difficult, and may have been made more so by the damage done at Maralinga.

At the time Britain approached Australia, this country had no nuclear energy or weapons research and development of any kind. Britain for its part didn't really want to work with Australia at all. The country had been forced to seek another place to test nuclear weapons after the United States enacted the so-called McMahon Act in 1946, barring nuclear research and development co-operation between the two allies. The combined efforts of Britain and the US had helped to create nuclear weaponry in the first place, bringing it to fruition as part of the secretive wartime Manhattan Project. However, nuclear espionage by several Manhattan Project physicists that had led to the Soviet Union developing its own atomic bomb in the post-war years and testing it in 1949 had made the US jumpy, and it shut down any further co-operation for a decade. Britain had to develop its weaponry without working with the Americans. Australia was chosen, and Prime Minister Menzies could not have been more accommodating.

D-notices and the media

Most of what Menzies agreed to was not publicised at the time, and he and his senior officials actively limited or denied media access to information, as the British requested. Indeed, Menzies created a new apparatus of media information control that limited how much the

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Australian public would know about the tests while they were underway: D-notices, short for Defence notices.⁷ This system, unlegislated but still compelling, amounted to media self-censorship that helped ensure that the Australian population knew virtually nothing about what was being done at all three nuclear weapons test sites other than officially vetted information. Although the test program continued until April 1963, media coverage effectively ended with the last of the major weapons trials at Maralinga in October 1957.

Australian media responded willingly to the new D-notices put in place in 1952 (just before the first British atomic test) by the Australian Government, based on the long-standing British D-notice system. The remarkable compliance of contemporary Australian media to the secrecy requirements of the British and Australian governments contrasts sharply with the investigative journalism that began in the mid-1970s. Royal Australian Air Force (RAAF) Maralinga veteran Avon Hudson started going public in 1976, detailing incendiary allegations in the media about the secretive British operations at the desert test site. He went on to become one of the most prominent of all Maralinga whistleblowers. Journalists began to pick up on these stories, and Maralinga became front page news from 1976 onwards. The public pressure instigated by whistleblowers, media and politicians such as the ALP's Tom Uren started to chip away at the secrecy that surrounded the British tests, until finally most of the story came out.

Australia's "Dr Strangelove": Ernest Titterton

One of the factors that seemed to guarantee greater than necessary secrecy was the involvement of the

British nuclear physicist Ernest Titterton. He was an Australian employee at the time of the British tests, professor of nuclear physics at the Australian National University and member and later chair of the contentious Australian Atomic Weapons Tests Safety Committee (AWTSC) that was supposed to ensure that the tests from 1956 onwards were safe. As a Manhattan Project veteran he was also part of the "nuclear establishment" of inner sanctum nuclear weapons pioneers, and he put their secrecy and expediency requirements first. The 1985 Royal Commission into the British Nuclear Tests in Australia concluded that Titterton was responsible for keeping the flow of information between the British Atomic Weapons Research Establishment (AWRE) that ran the tests and the Australian Government to a minimum during the tests at Maralinga. Royal Commission chair, Justice James McClelland, called Titterton a "Dr Strangelove" figure, referencing the fictional cinematic nuclear maniac from Stanley Kubrick's film of the same name.⁸

Before Maralinga: Monte Bello and Emu Field

While Maralinga has the most recognisable name, the other sites have important places in this saga. Monte Bello and Emu Field were not left as severely contaminated as Maralinga, although lasting damage was caused at both places. Monte Bello is an archipelago of 174 small islands, many of which have high natural values and biodiversity. The islands are not, and never have been, inhabited. However, they are only about 130km off the Pilbara coast of Western Australia where thousands of Indigenous and non-Indigenous people were living at the time of the tests (and still do).

The three nuclear weapons tests conducted at Monte

Bello all sent radioactive fallout to the mainland to various degrees. The most damaging Monte Bello test of all was called Mosaic G2, held in June 1956. The explosive yield of the nuclear device, said by some to be equivalent to 98 kilotons of TNT (nearly four times the size of the next-largest British test in Australia, and six times the yield of the Hiroshima bomb), was initially concealed from the Australian government. The actual yield figure is disputed, with some scholars asserting that it was 98kt and others maintaining that there is no reason to think it was any more than the 60kt that was noted by the Royal Commission.⁹ Whatever it was, it was a large device and by far the biggest tested in Australia. G2 sent a fallout cloud across most of the continent.

Little was done during this or any other Monte Bello test to properly gauge the extent of airborne radioactive contamination, and the test authorities did not factor in the traditional lifestyle of the local Indigenous people when making their plans. That lifestyle often included living close to the earth, hunting local animals, eating plants growing wild and walking barefoot. All of these activities potentially increased the chance of receiving more radioactivity than non-Indigenous people, whose Western lifestyle

Opposite page:

Jessie Boylan

(Australia, b.1986)

**Avon Hudson in his room
of archives, Balaklava,**

South Australia 2006

digital inkjet print

71 x 85 cm

Courtesy of the artist

© the artist





Hugh Ramage
(Australia; New Zealand,
b.1958)
Antler 2014
oil on canvas
40 x 35 cm
Courtesy of the artist
© Hugh Ramage

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could provide more protection. In fact, the prevailing attitude during the entire British nuclear test series in Australia was the Indigenous population in the path of the radioactive fallout were little more than an inconvenience.

Even a fairly complacent Australian civilian population was concerned about G2, and many thought either that a hydrogen (fusion) bomb had been tested (in fact, a component of a hydrogen device had been trialled) or that a nuclear accident had occurred. The Australian Government had to act quickly to calm public fears.¹⁰ Although the immediate panic was allayed, grave doubts started building in the Australian community, and G2 marked a distinct shift in public and media attitudes. Earlier patriotic acceptance of the British tests in Australia gave way to increasing concern during 1956, just as the new test range at Maralinga was about to begin operations.

Emu Field, an extremely remote location in the South Australian desert that was found and set up by the legendary Australian surveyor Len Beadell, was used only in 1953. It hosted the Operation Totem major tests and for some 'minor trials' known by the codename Kittens. This short-lived site was logistically impossible owing to water and access problems, and was soon replaced by the new 'permanent' site 150km south at Maralinga.¹¹ Emu Field is notorious for the "black mist" that enveloped the landscape in the aftermath of the first Totem atomic test in October 1953.¹² A black, greasy, unsettling miasma swirled around the communities of Wallatinna and Mintabie, covering hundreds of Aboriginal people in its path. It left behind a black deposit, described by witnesses as akin to "frost".¹³ While this remains a contested event and the exact nature of the black mist

has never been fully scientifically elucidated, the fact that it occurred has not been seriously disputed by most of those in the know.

The Royal Commission documented the black mist in some detail and took evidence from about 20 Indigenous people from the areas around Emu.¹⁴ Also, British scientific experts (W T Roach and D G Ballis) confirmed that the stories about the black mist were consistent and credible. Ernest Titterton poured scorn, however, calling the allegations a "scare campaign" when he was questioned by the Royal Commission.

Sir William Penney gave evidence that he was unaware of any reports of black mist at the time of Operation Totem. Penney's evidence, like that of many other AWRE insiders, often suggested a lack of knowledge of or interest in matters related to Indigenous people affected by the tests. Their indifference is striking, given the harm they caused. The black mist killed or sickened many.

A BLACK, GREASY, UNSETTLING MIASMA SWIRLED AROUND THE COMMUNITIES OF WALLATINNA AND MINTABIE, COVERING HUNDREDS OF ABORIGINAL PEOPLE IN ITS PATH.

A young child called Yami Lester lost his eyesight. Later, as an adult, he became a whistleblower and campaigner for those affected. Lallie Lennon was also affected. Her haunting descriptions of the event are vivid and moving. She said: "It rumbled, the ground shook, it was frightening ... We thought we were going to die. We reckon it was poison."¹⁵ Having dirtied the environment, the British departed Emu Field, only returning briefly in 1967 to undertake a cursory clean-up.

By the end of the Totem series, the British nuclear weapons authorities had turned their eyes to the new 3000 square kilometre 'permanent' site that would greatly expand their test program. Subsequently, the name Maralinga became synonymous with some of the most contaminated country in the Western world.

Displacement and dispossession of Indigenous populations

All three weapons test sites disrupted the lives of the Indigenous populations in their vicinity to various extents, but the longest-lasting harm was caused by the creation of the weapons test range at Maralinga. In 1952, as British plans for testing in Australia took shape, the Australian Government gave the order to shut down the Ooldea Aboriginal reserve, 40km south of Maralinga, and move Indigenous people away from the future weapons test area. Ooldea reserve covered nearly one thousand square miles and was home to hundreds of people. With a stroke of the pen, the lives of these people were set on a new and wrenching trajectory.

While the Native Patrol Officer Walter MacDougall, and his later colleague Robert Macaulay, did what they could in their limited power to protect Indigenous people in the area and argue their case to the authorities, in the end their efforts had little impact. The Anangu Pitjantjatjara people of the Maralinga lands were displaced, and many moved to Yalata, a further 100km south on the Great Australian Bight.

Throughout the time Maralinga was operational, Aboriginal people still traversed the lands, in one case even camping near a highly radioactive nuclear bomb crater at the site. The McClelland Royal Commission

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famously detailed the case of the Milpuddie family – husband Charlie (Tjanyindi), wife Edie and two children, with four hunting dogs – who were found in May 1957 camped on the edge of the crater gouged from the earth eight months earlier by one of the Operation Buffalo bombs (Marcoo).¹⁶ The story came to be known as the Pom Pom incident after the place where Charlie had been found by a military patrol, the morning after the family arrived at the Marcoo crater. They are likely to have been exposed to the radiation at the site for at least 12 hours.

Edie Milpuddie overcame her reticence and her pain to give evidence in 1985 to the Royal Commission. She told the Commission that at the time she and her family were found at Marcoo, that she had been pregnant, but lost her baby soon after. The four hunting dogs, initially allowed to leave the area, were later shot in front of the shocked family. The family continued to suffer severe health problems, and Edie had other miscarriages in the early 1960s. Many other Indigenous people are likely to have been exposed to a greater or lesser extent too, although no other case is as well-documented.

The “minor” trials

The mushroom clouds provide the distinctive imagery associated with Maralinga, and these major tests certainly wrought significant destruction and contamination. However, the big bombs were not the only tests carried out at Emu and Maralinga.

Over 500 so-called ‘minor trials’ were also held, five at Emu and the rest at Maralinga, between 1953 and 1963. These diverse tests were designed to investigate aspects of atomic bomb design and safety. The minor trials with the most lasting detrimental effects were the radiological

experiments known as Vixen B. In these experiments simulated nuclear warheads were blown up to determine what might happen if a nuclear-bomb-laden plane crashed or burned. Explosions of the longest-lived isotope of the deadly artificially-created heavy element plutonium (plutonium-239) using TNT spread most of the residue across the open range. The Royal Commission concluded that the Vixen B series of experiments should never have been conducted, and the fact that they were points to the recklessness of the test officials and extremely inadequate controls implemented by the Australian Government.

Vixen B scattered 22.2kg of plutonium-239 around the Taranaki test site in the northern reaches of the Maralinga range. The British officially claimed that 20kg of this material had been buried in huge pits at Taranaki and about 2kg dispersed evenly across the test range, although almost certainly they knew that this was incorrect. In fact, the 20kg was later found to be spread around the site in particles of widely divergent size. Plutonium-239 has a half-life of 24,400 years, which means that it takes 24,400 years for half of the radioactivity to disappear, then another 24,400 years for another half, and so on. The extreme persistence of radiation and the threat of cancer posed by inhaling or ingesting small particles make this substance especially dangerous. Leaving it on the open range was monumentally foolhardy.

The 12 Vixen B experiments took place amid total secrecy in 1960, 1961 and 1963 and received no media coverage at all until the late-1970s. The Royal Commission revealed many frightening facts about the Vixen B tests. More were revealed later by the media.

However, a number of Vixen B records are still retained by the British Government and may never be made public.

The Vixen B experiments did not produce “fallout” in the same way that the mushroom clouds did. The major trials sent clouds of minute particles of debris into the stratosphere (more than 10km above the ground) and spread fallout of relatively short-lived radionuclides over most of the continent of Australia, with some isotopes detected as far away as Townsville in the Queensland tropics. The effect of the minor trials, on the other hand, was more concentrated and geographically contained. Vixen B sent plutonium oxide between 800 and 1,000 metres into the air, where it was picked up by the wind and carried in plumes that fanned outwards, northeast, north and northwest, from the Taranaki firing pads. Those plumes were about 150km long and many metres wide.

The structures and earth in the immediate vicinity of Taranaki also became contaminated with plutonium. Anyone in that geographical area, principally service personnel and scientific staff who were conducting the tests, Indigenous people who either during or after the trials walked over the land around Taranaki, or later visitors to the site who may have unknowingly picked up radioactive materials or inhaled dust containing plutonium, potentially were exposed.

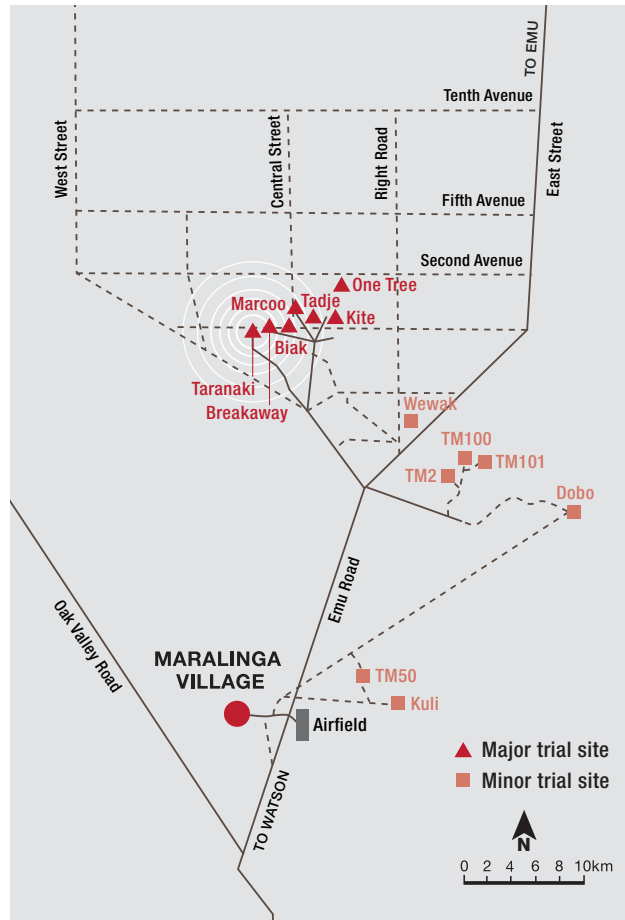
Clean-ups and the Pearce Report

The mess at Maralinga stayed hidden for so long partly because of a now-infamous document called the *Pearce Report*.¹⁷ The AWRE physicist Noah Pearce prepared a report that enabled the British to be absolved of any responsibility for the contamination resulting from their nuclear tests. Both the Maralinga/Emu clean-up



Blak Douglas
(Dharug, b.1970)
Tjarutja Tragedy 2016
synthetic polymer on canvas
120 x 200 cm
Courtesy of the artist
© the artist

THUNDER ON THE PLAIN DR ELIZABETH TYNAN



MARALINGA RANGE

Location of major and minor trial sites at Maralinga.

operations, first Operation Hercules V in 1964 and later the more extensive Operation Brumby in 1967, were poorly designed and executed, and created more problems than they solved. Both were overseen by Pearce, as was the 1966 survey of radiation known as RADSUR that formed the basis of Operation Brumby.

The Maralinga Rehabilitation Technical Advisory Committee (MARTAC), set up in 1993 to oversee the most recent clean-up operation held in the late 1990s, confirmed that the plutonium contamination at Taranaki, as described by the Pearce report, was wrong by a factor of 10: there was 10 times more contamination at the site than the British had asserted. By any measure, this was a disaster. Plutonium not only poses a serious health threat to anyone exposed to it, its presence at Maralinga potentially could have compromised Australia's international obligations under the Non-Proliferation Treaty of 1968, to which Australia was a signatory. That agreement required signatories to account for all fissionable material on their territory.

The era of uncovering

By the late 1970s a marked change in how the Australian media covered the British nuclear tests was apparent. The relevant laws had not changed and the D-notice system was still (notionally) in place. However, as investigative journalism strengthened in this country, the Australian media no longer felt inclined to follow the official line. Momentum to uncover the aftermath of Maralinga grew when the left-wing ALP politician and then deputy leader of the opposition Tom Uren asked a question of the Minister for Defence, James Killen, in Parliament on 9 December 1976.¹⁸ Killen was a senior

minister in the Coalition government led by Malcolm Fraser. Uren's question challenged ongoing secrecy around Maralinga. Killen was wrong-footed and gave a misleading reply, hinting at the vast chasm of ignorance on the part of the Australian Government.

During 1977 and 1978, the topic was raised periodically in Parliament, and each time more journalistic noses twitched. Killen eventually asked his Department to prepare a top secret Cabinet briefing paper.¹⁹ It revealed serious concerns about the Maralinga plutonium contamination, including the risk of the loose plutonium being stolen to create a radiological "dirty bomb". When this submission was leaked to the investigative journalist Brian Toohey and made public through a series of articles in the *Australian Financial Review* in October 1978,²⁰ the Maralinga story became a major political headache for the Government.

Toohey's investigation sparked major controversy and some angry accusations from Defence Minister Killen. He accused Toohey and his newspaper of inviting terrorists to help themselves to the dangerous material at Maralinga. Soon after, Killen had responsibility for Maralinga removed from his portfolio as the political fallout started to claim victims. Maralinga was serious unresolved business, and the Australian Government could no longer just ignore it. Political and media pressure resulted in the British removing a small amount of plutonium in 1979. However, most of it remained on the ground for some time to come.

A new Federal Government came to office on 5 March 1983 under the ALP's Bob Hawke. The minister responsible for dealing with the Maralinga aftermath was Senator Peter Walsh in his role as Minister for Mines and Energy. Walsh was forced to act, despite his reluctance to set up

a Royal Commission. A scientific mission to Maralinga in May 1984 exposed a hitherto unknown distribution of plutonium contamination, in direct contradiction of the then-still classified *Pearce Report*.

Scientists from the Australian Radiation Laboratory (ARL, now the Australian Radiation Protection and Nuclear Safety Agency, ARPANSA) eventually estimated that about three million fragments of plutonium were loose on the site, some as small lumps in the topsoil, some imbued into metallic debris from the explosions. Once he was presented with the 1984 scientific data, as well as the outcome of a non-judicial enquiry that produced the damning *Kerr Report*,²¹ Walsh agreed that there was a case to answer, saying later in his autobiography: “What the British Government did at Maralinga was irresponsible to say the least. The Australian Government, which eagerly invited the British to do it, was even more culpable.”²²

Royal Commission

The McClelland Royal Commission, which began in Sydney in August 1984, came to be described as ‘a spectacle of national revenge’.²³ McClelland and other members of the Royal Commission travelled to the South Australian outback and to Karratha in Western Australia to question a total of 48 Indigenous people. They also went to London. In London, the leader of the test series in Australia for much of its length, William Penney (by then Lord Penney) gave extensive evidence, as did Noah Pearce and many other British scientists and former military personnel.

During the 116 sitting days, in numerous locations, the Royal Commission assembled for the first time a detailed and indeed disturbing story. The British had

Jeffrey Queama
(Pitjantjatjara, b.1947,
d.2009)
Hilda Moodoo
(Pitjantjatjara, b.1952)
Destruction II 2002,
Oak Valley, SA
synthetic polymer paint
on canvas
122.0 x 101.2 cm
Santos Fund for Aboriginal
Art 2002. Art Gallery of
South Australia, Adelaide
Courtesy of Hilda Moodoo
20025P25





Jonathan Kumintjarra Brown
(Pitjantjatjara, b.1960, d.1997)
Frogmen 1996
acrylic and sand on canvas
117 x 92 cm
Private Collection
© artist estate

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swept into Australia with big plans for their country's nuclear armaments and a succession of increasingly sophisticated nuclear devices to test. Then when international conditions changed and their relations with the United States thawed, they left without properly cleaning up their mess.

Extraordinarily, successive Australian governments had no idea of the detail of the British nuclear tests in Australia. The Menzies government had put far too much faith in the now-discredited AWTSC and had not asked many questions. Once operations ceased at Maralinga and it receded into the background, a string of Australian governments chose not to look too closely and continued to place undue trust in the assurances of the British, backed by the flawed *Pearce Report*. There was plenty of blame to go around, and the McClelland Royal Commission assigned a good portion of it. As the British were not too forthcoming with information about details of their test program the Royal Commission was not able to uncover the full extent of the plutonium contamination. That revelation took a few more years.

The revelations of Roller Coaster

The former secretary of the AWTSC, John Moroney, once a loyal servant of the British test program in Australia, unlocked the long-hidden truth about the Maralinga plutonium. When he teamed up with the *New Scientist* journalist Ian Anderson, the result was explosive. The landmark *New Scientist* story by Ian Anderson in June 1993 titled *Britain's dirty deeds at Maralinga*²⁴ revealed how much plutonium contamination remained at the site and that the British authorities knew about it but had covered it up. The story's sub-heading, *Fresh evidence*

suggests that Britain knew in the 1960s that radioactivity at its former nuclear test site in Australia was worse than first thought. But it did not tell the Australians, provides a concise summary of the contents.

Moroney, who was not named in the story itself but acknowledged by Anderson elsewhere, obtained and analysed 2,500 pages of declassified nuclear contamination data from the US/UK Roller Coaster tests in the US and concluded that the atomic test authorities had knowingly left substantial amounts of plutonium at or near the surface of parts of the Maralinga range.²⁵

THE FINAL OUTCOME WAS AN AGREEMENT FOR THE UK TO PAY FOR PART OF THE COST OF A PROPER CLEAN-UP. IN THE END, THEY PAID JUST UNDER HALF OF THE \$101 MILLION BILL.

Roller Coaster was a series of experiments similar to Vixen B, jointly carried out by the British and the Americans in the early 1960s, around the same time as Vixen B. The American records from these tests were meticulous, and they revealed some disturbing facts to the knowledgeable John Moroney: similar tests in the US had distributed contamination in a particular way that must have been replicated in Australia. What he found shocked and angered him. He channelled the outcome of this analysis to the Australian Government in the early 1990s and then to the media via Ian Anderson in 1993.

The Roller Coaster analysis enabled Moroney to convince the Australian Government to place pressure on the British Government for compensation. The British had been resisting calls to pay up since the late 1970s when the damage caused by their tests started to become a major

media story. They endlessly invoked the *Pearce Report* and the agreement signed in 1968 by both governments that absolved Britain of any further responsibility.

Moroney briefed Anderson on the main points of his analysis, and Anderson then used the information as the basis for his *New Scientist* story. This story said in part: "[Australian radiation scientists] now believe that contamination at Maralinga is much worse than Britain has admitted. They say 21 pits, which were dug to hold radioactive waste, contain far less plutonium than Britain maintains. The remaining plutonium – ten times more than Britain has acknowledged – was spread over the land. The Australians will say that if they had known the full extent of the pollution, they would never have signed the agreement releasing Britain from its responsibilities over the clean-up ..."²⁶ This story had wide ramifications, and was at least helpful (if not instrumental) in the conduct of bilateral talks then underway between Australian government ministers and their British counterparts. The final outcome was an agreement for Britain to pay for part of the cost of a proper clean-up. In the end, they paid just under half of the \$101 million bill.

The final clean-up

That clean-up operation itself has not been without its controversies and critics. Operations commenced in 1996 and were completed in 2000. The Minister for Science at the time, Peter McGowan, declared in Parliament when he tabled the final *MARTAC Report* that it had been "world's best practice".²⁷ Alan Parkinson, a nuclear engineer who oversaw the clean-up but was sacked before it was completed, disagreed and became a vocal critic. A book he published in 2007²⁸ cast

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aspersions on the efficacy of the operation and claimed that its ineffectiveness was covered up.

The process certainly did not go to plan, and expensive equipment brought in to immobilise the radioactive waste blew up part way through and was not replaced. The original clean-up plan was scrapped and a compromise solution drawn up on the run. Nevertheless, after the operation finished the site was deemed safe to hand back to the Indigenous owners.

While parts of the desert test range had been returned since 1984, the clean-up of the worst-affected parts took a lot longer than originally envisaged. Unrestricted access to the final piece of land was finally granted to the Maralinga Tjarutja people in 2014. Since then, Maralinga Tours, which is owned by the traditional owners, has taken paying customers on tours of the weapons test range, with considerable success.

Looking back at the British nuclear tests in Australia

How should we view the clandestine events at Monte Bello, Emu Field and Maralinga in the 1950s and 1960s? Australia was not a nuclear-armed or powered nation and had no technical expertise or deep understanding of what was involved. Instead, it was simply fulfilling the wishes of another country, its original coloniser, Britain. The Australian Government seemed unable to work out how to deal with this unique set of circumstances, and its ineptness and complacency were to have severe consequences.

Nuclear colonialism claimed part of our territory, but the nation's leaders at the time seemed remarkably unconcerned, particularly at first. Prime Minister Robert Menzies was almost unbelievably acquiescent. Australian

journalists were ill-equipped to deal with the complexities of a difficult scientific and technological story with security implications, and they made a poor job of covering the British tests, thus denying the Australian public any useful information on which to base informed consent.

The nuclear tests in Australia were essentially secret history, unknown to everyone except a few insiders. That was to remain the case for decades, until whistleblowers, politicians and journalists opened the issue for public discussion. It is as well that they did, because the risks associated with the radioactive contamination at Maralinga and elsewhere were substantial, and without public pressure there would have been no further clean-up. The Maralinga plutonium would still be sitting on the ground or swirling with the dust if the story had never been uncovered. Australians should never forget that its one-time government was prepared to let that happen, and very nearly got away with it.

Dr Elizabeth (Liz) Tynan is senior lecturer at the James Cook University Graduate Research School, and teaches academic writing to postgraduates. Her PhD from the Australian National University examined aspects of the British nuclear tests in Australia in the 1950s and 1960s. Her book on Maralinga, titled *Atomic Thunder: The Maralinga Story*, has been published by NewSouth Publishing in 2016, the 60th anniversary of the first atomic weapons test at the site. She also publishes textbooks with Oxford University Press.

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Judy Watson
(Waanyi, b.1959)
bomb drawing 5 1995
ink and water colour on paper
50 x 40 cm
Courtesy of the artist and
Milani Gallery, Brisbane
© the artist



Reginald Rowed
(Australia, b.1916, d.1990)
Hiroshima 1946
watercolour on paper
48 x 63 cm
© Australian War Memorial
AWM26374

ATOMIC TESTING IN AUSTRALIAN ART JD MITTMANN

Around the world artists have been concerned with nuclear issues, from the first application of atomic bombs at Hiroshima and Nagasaki, to atomic testing, uranium mining, nuclear waste transport and storage, and scenarios of nuclear Armageddon. The Australian artistic response to British atomic testing in the 1950s is less well-known, as is the story of the tests.

Cloaked in secrecy, the British atomic testing program and its consequences remained out of public sight until the late 1970s. A generation later, it seems much of that knowledge has been forgotten. A younger generation of Australians have practically no idea atom bombs were exploded in their country, why, and what the long-term legacies are.

Black Mist Burnt Country is a survey exhibition curated to form an overview of Australian artists' creations and considerations, with focus on the British atomic tests in Australia. Artworks have kindly been made available by private and public lenders, and by the artists themselves. This essay explores these works, their creators and their relation to each other.

Hearteningly, more than 70 years after Hiroshima, the issues and concerns arising from the nuclear Pandora's Box feature strongly among contemporary artists; because as Japanese photographer Hiromi Tsuchida points out, "we can never pretend that what happened in Hiroshima has nothing to do with us."¹

Dawn of a new age – art of the Australian modernists
6 August 1945. A new aeon dawns on humanity: nuclear age. At 8.15am local time the *Enola Gay*, a United States B52 bomber, drops 'Little Boy', the first uranium bomb, onto the unsuspecting Japanese city of Hiroshima.

Within a radius of 800m the destruction is complete. Over 70,000 die instantly.

A person stands lost amongst the ruins of a house. We don't see the child's expression, but it can only be one of shock and suffering. A charred tree towers over the rubble. Nature has withered in the onslaught of heat and shock waves. Simply titled *Hiroshima*, Albert Tucker's small watercolour is quiet and contemplative. Painted in 1947 in Hiroshima, the Melbourne modernist painter presents a lone survivor, a *hibakusha* in Japanese.

A YOUNGER GENERATION OF AUSTRALIANS HAS PRACTICALLY NO IDEA THAT ATOM BOMBS WERE DEVELOPED AND EXPLODED IN THEIR COUNTRY.

In stark contrast to Albert Tucker's work, the pale monochrome colourwash paintings by Reg Rowed feature a vast, devastated and deserted cityscape: the skeleton structure of the dome of the city's Exhibition Hall and the blasted Aioi Bridge overshadowed by a thunderous sky. The dome, or its remains, have become an iconic image for the instant wipe-out of Hiroshima. The ruin, as we will see later, appears time and time again in other artworks, has been kept. Now as the Hiroshima Peace Memorial (Genbaku Domu), it serves as a warning and constant reminder to humankind of the terror of one bomb.

Lieutenant Reginald Rowed came to Japan at the age of 30, as an official artist for the Military History Section of the Australian War Memorial. He was a trained artist and had studied painting and drawing at Melbourne Technical College from 1934 to 1938 under John Rowell and Napier Waller. In 1940 he enlisted in the army, but became a war artist on the urging of his sister

and Waller. He documented the Australian New Guinea campaign and its aftermath.

In 1946 he was sent to Japan where he witnessed the effects of the atomic bomb. He documented the vast destruction from a distant viewpoint, sparing the viewer the horrific details. His sketch *Rebuilding Hiroshima* shows civilians clearing away the rubble. Life has returned to the city, in the new age: Life *after* the bomb.

Albert Tucker arrived in Japan with the Australian Army as an art correspondent in 1947, a year after Lt Rowed. He travelled on suggestion and in the company of American poet Harry Roskolenko, who he met through John Reed and the *Angry Penguins* at Heide, a 15-acre property, in Melbourne. John and Sunday Reed nurtured a circle of like-minded modernist artists, writers and intellectuals, which included John Perceval, Joy Hester and Sidney Nolan, and of which Tucker was a central figure. Tucker and Roskolenko flew in a military DC-3. Tucker had never been in a plane before. Among the various stops was Morotai in the Philippines, which provided a sobering experience and a preparation for scenes to come. On Okinawa beach Tucker walked into a literal minefield, a harrowing experience as he later admitted. The scale of destruction he encountered in Japan left a deep impression on him.

Most Australian male artists served in the armed forces, unless they were rejected for health reasons like Drysdale was, but only few experienced active service. Affected by the events of WWII, either as active participants or as witnesses, the Heide artists created a number of works decrying the tragedy and lamenting the human condition. Arthur Boyd, John Perceval, Albert Tucker and Joy Hester "were all afflicted by the

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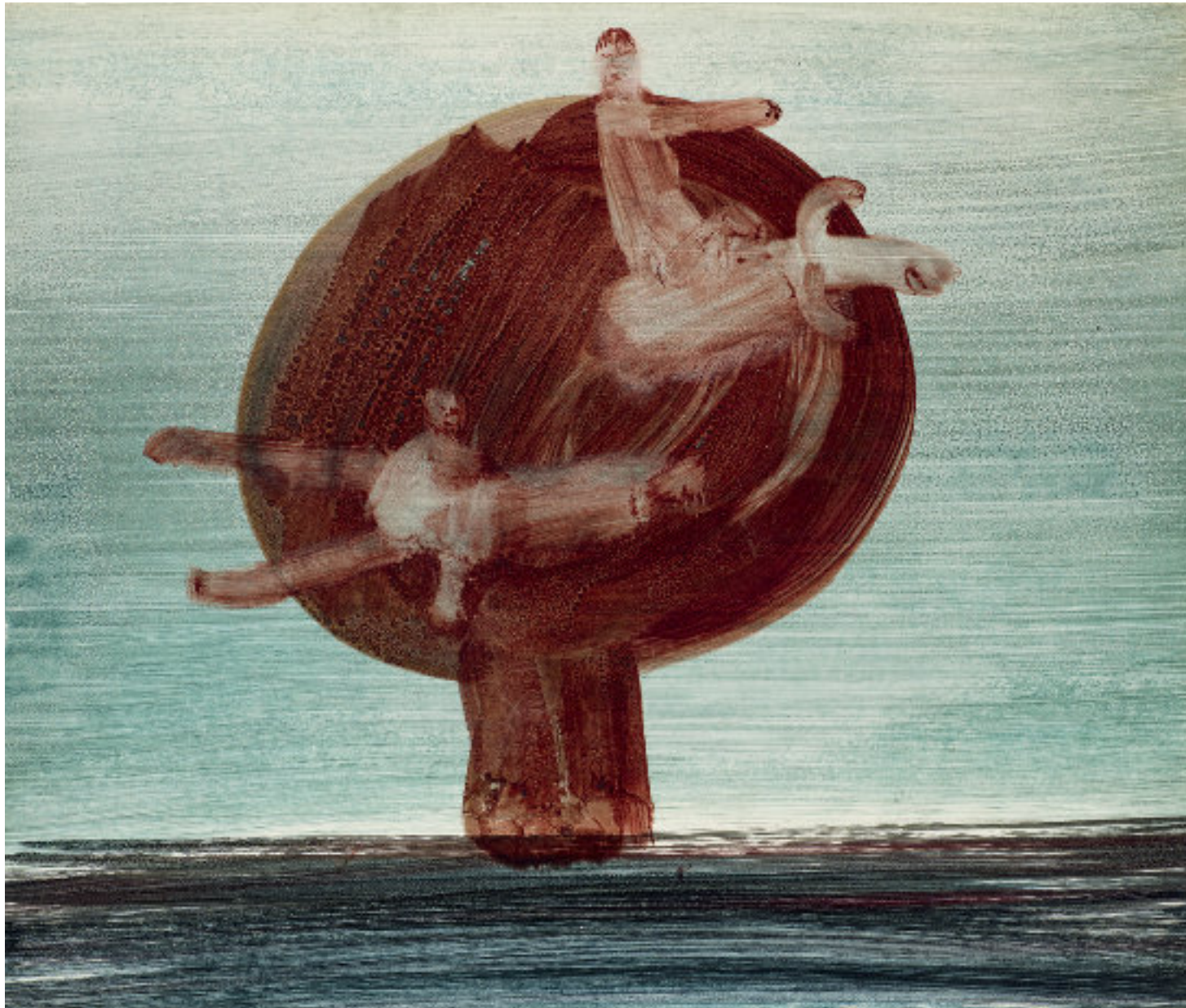
Albert Tucker
(Australia, b.1914, d.1999)
Hiroshima 1947
watercolour on paper
26 x 35 cm
Australian War Memorial
© The Estate of Barbara
Tucker
Courtesy of Sotheby's
Australia

Sidney Nolan
(Australia; England, b.1917,
d.1992)

Central Desert: Atomic Test
1952–57

oil and enamel on hardboard
121.7 x 91.1 cm
Collection Museum of Old
and New Art (MONA), Hobart
© The Sidney Nolan Trust/
Bridgeman Images





Sidney Nolan
(Australia; England, b.1917,
d.1992)

***Untitled (Moonboy and
atom blast)*** 1974

water-based fabric dye
on hardboard

25.5 x 30.5 cm

Art Gallery of
New South Wales

Gift of the artist 1985

Photo: AGNSW

© The Sidney Nolan Trust/
Bridgeman Images

24.1985

ATOMIC TESTING IN AUSTRALIAN ART JD MITTMANN

times, the threat and encroachment of war”, wrote Patrick McCaughey.² “Out of that they produced an art that was new to Australian consciousness, which both accepted and railed against the tragic element in human existence.” Danila Vassilieff, Noel Counihan, Stellar Dilger and James Cant were other artists to focus on the human cost of (nuclear) war.

The nuclear age, and British atomic testing in Australia in the 1950s in particular, were rarely addressed directly in art. In part, the reason might be found in the secrecy surrounding the atomic trials program and in the generally positive attitude towards the tests among the Australian public. The Australian media responded indeed enthusiastically to news of the tests. Polls in the mid-1950s showed broad majority support hoping for Australia’s ascent into the nuclear age and for a future as a ‘middle power’.

Only after the United States dropped the first hydrogen bomb at Bikini Atoll in March 1954 did public support slowly wane. Strong public protest evolved in the UK and resulted in the Campaign for Nuclear Disarmament (CND) in 1957. Living in London at the time, Sidney Nolan became alarmed, and retrospectively added a mushroom cloud, as a reference to the British atomic tests in Australia, to a painting in his seminal Central Desert series.

Nolan had painted the series after extensive travels in outback Australia, and 47 paintings were shown to great acclaim at David Jones Gallery in March 1950, which Jane Clarke described as “one of the most important events in the history of Australian painting”.³ At the time, James Gleeson wrote admiringly about Nolan’s Central Desert paintings in *The Sun* newspaper.⁴ He commented:



Arthur Boyd
(Australia, b.1920, d.1999)
Jonah on the Shoalhaven
– **Outside the City**
1976
oil on canvas
158 x 127 cm
Bundanon Trust Collection
© Bundanon Trust

“He makes us feel the oppressive fascination of these stark unpeopled immensities of windworn rock and bitter soil. And through them all runs the central theme of grinding heat.” *Central Desert: Atomic Test* is no exception. But unlike the rest of the paintings in the series, in this an ominous mushroom cloud rises into a blue sky filled with toxic fall-out.

The painting, a bold statement by an otherwise politically detached artist, ironically was not seen by the public until 2001 when it appeared in an exhibition *Sidney Nolan: Landscapes and Legends* at Gould Galleries in Melbourne.⁵ An impressed Geoffrey Smith commented: “*Central Australia* reflects an image of disruption, an intense explosion on the horizon that reverberates throughout the composition.” The mushroom cloud and mountain ranges appear to be later additions that Nolan imposed on a previously painted landscape. The new painting was “his immediate response to the news coverage of the nuclear testing in the remote ‘uninhabited’ Australian landscape, a presumption of the Australian Government and British authorities,” he concluded.⁶

Additionally, a smaller drawing of Nolan’s Moonboy series also depicts a mushroom cloud. In his untitled 1974 drawing (*Moonboy and atom blast*) a simplified, dark, round shape dominates the centre of the drawing. Two figures on horses, possibly Burke and Wills taken from his iconic painting of the doomed explorers, fly across the face of it. Nolan painted the first ‘moonboy’ in 1939-40, titled *boy and the moon* and returned to the moon-boy motif throughout his career. The title of this drawing lends the work an additional meaning and dimension.

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Arthur Boyd, another Australian modernist painter, included the mushroom cloud in several works. It appears as a tiny and distant phenomenon on the horizon in two paintings of the *Shoalhaven* series from the late 1970s, as a subtle and general reminder of the horrors of war and total destruction.

Boyd was conscripted into the army in 1941 and later became a pacifist. He participated in protest marches to Aldermaston, the nuclear research facility in England, and in exhibitions commemorating Hiroshima, and protesting against the Vietnam War. He said about himself: “For a long time I was obsessed by war, all those dark thoughts about the individual slaughter in the First World War, people with their legs hacked off and throats cut. Then war got more mechanical and more scientific and more awful.”⁷

Harold Frederick Weaver Hawkins (1893–1977) was educated at Camberwell School of Arts and Crafts but WWI put an end to his plans to become an art teacher. He was seriously wounded in the Battle of the Somme at Gommecourt in 1916 and almost lost his right arm. Despite many operations he never regained full movement and had to retrain himself to paint with his left hand.

After extensive travels with his wife and three children through Europe and the Pacific, he migrated from the UK to Australia in 1935, where he exhibited widely. “Hawkins’s ambitious, sometimes mural-sized, modernist allegories of morality for an age of atomic warfare and global over-population had been so uncommon in Australia when painted that most of his fellow artists were embarrassed by his art,” Daniel Thomas remarked.⁸

In his 1947 painting *Atomic Power* a fighter pilot stands lost amidst a complex field of ruins casting a long shadow.

Multiple plumes of smoke rise as two human survivors drag themselves from an area of intense white light while another mushroom cloud grows into the blue sky. The pilot appears in a phase shift, which gives the painting a surreal impression. It’s as if the shockwave has become visible. The foreground is burned with shadows of men, women and children, reminiscent of Picasso’s *Guernica*. A human skull, a widely used symbol in art for mortality and death, lays aside, discarded, replaced perhaps by the powerful dark matter, uranium, the pilot now holds visibly in awe.

FOR A LONG TIME I WAS OBSESSED BY WAR, ALL THOSE DARK THOUGHTS ABOUT THE INDIVIDUAL SLAUGHTER IN THE FIRST WORLD WAR, PEOPLE WITH THEIR LEGS HACKED OFF AND THROATS CUT.

Warfare became a recurrent theme to which Hawkins returned in a number of murals. He brought to Australia an educated and sophisticated artistic practice. “*Atomic Power* exposes war as the consequence of irrationality and man’s intolerance. With its confronting ‘end-of-the-world’ symbols it makes for interesting study against the background of Australian surrealist painting in the 1940s. It shares with those works strong and resonant imagery and a sense of disintegration and dislocation. Yet Weaver was not out of sympathy with the spirit of Australian Surrealism. He believed that surrealism could too quickly deteriorate into an escapist reverie,” commented Eileen Channin.⁹

While the trauma of both world wars preoccupied a number of artists, direct references to the threats of the atomic age, the looming arms race and more

specifically the British atomic tests in Australia of the 1950s were rare. Australia of the 1950s was closely aligned to the British mother country. Robert Menzies a conservative and anglophile Prime Minister, single-handedly allowed the British to test atomic devices for weapons development in Australia. While the British worked feverishly to join the nuclear ‘megaton club’ of the US and USSR, a worldwide protest movement against atomic weapons slowly formed.

Hope and fear – going nuclear in the 1970s and 80s

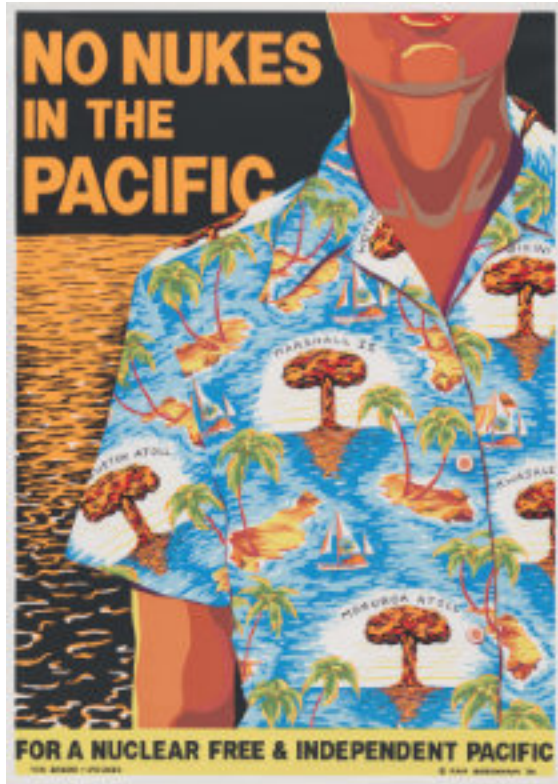
Inspired by anti-Vietnam War protests, and feminist and land rights movements, in the late 1960s and early 1970s a new generation of artists voiced its concerns and political opposition. In several screen printing workshops across the country students and artists produced protest posters concerned with a variety of topics: Pam Debenham, Toni Robertson, Dianna Wells, Bob Clutterbuck, Chips Mackinolty, Colin Russell and Wendy Black among these.

At the time, the general perception of a nuclear future was positive. Toni Robertson reflects on this in a series of poster prints titled *Royal Nuclear Show – an exercise for the resensitised consumer*, which was exhibited at the Experimental Art Foundation in 1981. The poster serves as a propaganda tool, ‘selling’ the nuclear mythology as progress, well-being and social harmony. But Robertson questions the positive message: *Nuclear Power – What will it be like?* (no.6) depicting a world of nuclear militarisation (no.3); life is lived among fall-out shelters in the shadow of a Harrisburg theme-park (no.4); and in a police state (no.5).¹⁰ But, “potential dangers and contradictions of the nuclear power industry are

Weaver Hawkins
(UK; Australia,
b.1893, d.1977)
Atomic Power 1947
oil on hardboard
61 x 78.5 cm
Art Gallery of
New South Wales
Photo: Brenton
McGeachie/AGNSW
© Estate of
HF Weaver Hawkins
92.1976



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Pam Debenham
(Australia, b.1955)
No Nukes in the Pacific 1984
screen print on paper
88 x 62 cm
Courtesy of the artist
© the artist
Image courtesy of National
Gallery of Australia, Canberra

neutralised (naturalised) by the pleasures of consumption and the slickness of presentation”.¹¹

With *Daddy, What did YOU do in the Nuclear War* (1977), a collaboration of Robertson with Chips Mackinolty, the artists re-appropriated a WWI recruitment poster by British book designer and illustrator Savile Lumley (1876–1969). Before 1916 the UK had no conscription and only a small standing army. At the onset of WWI the government found itself confronted with the enormous task of gathering large numbers of able-bodied men. Through staged events, leaflets and posters like Lumley’s, considerable social pressure was brought on men to enlist. As suggested in Lumley’s original poster, in the future children would hold their fathers to account for the service they performed for their country.

In this version Robertson and Mackinolty amend the original print. Sitting in an armchair, the father faces the viewer with a pensive look across his face. His son playing with toy soldiers is depicted with a hump on his back and a stunted right arm. His sister features a third leg. She sits on her father’s knees and points to a page in her book, which shows a picture of the iconic mushroom cloud, crossed out with a large red cross. She innocently asks the question, “Daddy, what did *You* do in the Nuclear War?” Obviously taking her clues from the book’s graphic and seemingly unaware of her own abnormalities, she questions the parents’ generation’s responsibility, or lack thereof, to prevent nuclear war. The unusual physical features of the children point to long-term genetic defects as a result of exposure to radiation and atmospheric fall-out. What did we do to stop nuclear weapons?

Pam Debenham turns the message into a simple yet powerful and timeless graphic with *No Nukes No*

Tests. Debenham (b.1955) produced a variety of screen prints, among these the iconic *No Nukes in the Pacific*, which features mushrooms clouds and palm trees on a Hawaiian-style shirt and refers to the continued French atomic tests in the Pacific at Mururoa which fuelled fears of radioactive fallout in Australia.

PROTESTS AND DEMONSTRATIONS WERE RAMPANT IN THE 1980S; EASTER SUNDAY MARCHES ATTRACTED HUNDREDS OF THOUSANDS ACROSS EUROPE.

While these works document the political climate of the 1980s, the depressing anxiety of those years is hardly reflected. NATO strategies of ‘Mutually Agreed Destruction’ (MAD), ‘Nuclear Deterrence’ and ‘Flexible Response’ as preventers of WWII hung like Damocles’ proverbial sword above of the heads of humankind. I was in high-school in ‘West-Germany’ when mid-range Pershing II missiles were stationed in Mutlangen, Neu-Ulm and Neckarsulm, and hundreds of cruise missiles were positioned in Western Europe. While trying to move on par with the USSR and Warsaw Pact’s nuclear capabilities (in particular the superior SS-20 medium range missiles), this was NATO’s strategic attempt to trade for the reduction or elimination of those weapons.¹² It made Europe an immediate and central theatre in case of nuclear war, and reduced the response time down to minutes. Protests and demonstrations were rampant in the 1980s; Easter Sunday marches attracted hundreds of thousands across Europe.

Nuclear Armageddon seemed unavoidable. The predictable howl of air raid sirens at midday every

Saturday and the existence of fall-out shelters at high schools and public buildings were grim reminders of imminent danger. This zeitgeist was also reflected in literature, film and music of the era, as Mick Broderick illustrates in another part of this book. From Nena's *99 Red Balloons* to Sting's *Russians*, and in Australia Midnight Oil's 1982 album *10, 9, 8, 7, 6, 5, 4, 3, 2, 1* many were concerned with nuclear (dis)armament.

The arms race was in full swing, and Australians had played their part in it – the trials programs in Australia had led directly to the production of the British nuclear weapons Blue Danube and Red Beard. Australians, for the most part, were either unaware or oblivious to this reality. Singer-songwriter Paul Kelly (b.1955) wrote in his 2010 biography that he had never heard about the tests until the Royal Commission into the British Atomic Tests was launched in 1984.¹³

A series of investigative media articles, as well as a 1981 television documentary titled *Backs to the Blast* directed by Harry Bardwell, triggered the Royal Commission investigation. As Liz Tynan illustrates in her essay earlier in this publication, these media reports raised concerns about unaccounted amounts of highly toxic plutonium that had contaminated large parts of the test range at Taranaki as part of the so-called Vixen B 'minor trials' from 1960 to 1963. Additionally, an increasing number of veterans, originally bound to secrecy through the Crimes Act, came forward and reported health issues allegedly connected to exposure to radiation and radioactive debris during and after the tests.

Avon Hudson was one of those who blew the whistle on the neglectful treatment of service personnel. Jessie Boylan (b.1986) portrays him at his Balaclava home



Above:
Savile Lumley
(UK, b.1876, d.1960)
Daddy, What did YOU do in the Great War? c.1914–1915
Colour lithograph on paper
76.3 x 51 cm
© Victoria & Albert Museum, London

Right:
Toni Robertson
(Australia, b.1953)
Chips Mackinoly
(Australia, b.1954)
Daddy, What did YOU do in the Nuclear War? 1977
screen print on paper
76 x 50 cm
© the artists
Image courtesy of National Gallery of Australia, Canberra



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Hilda Moodoo
(Pitjantjatjara, b.1952)
Maralinga Bomb 2009
acrylic on canvas
40 x 50 cm
Produced for *Maralinga, The Anangu Story* by Yalata and Oak Valley Communities with Christobel Mattingley, first published by Allen & Unwin in 2009.
Courtesy of Hilda Moodoo
© Maralinga Tjarutja Inc.
representing the Oak Valley and Yalata Communities,
2009

among research papers for his book *Beyond Belief: Australia's Veterans Speak Out*, which he co-authored with Roger Cross. She interviewed Hudson, a RAAF veteran and witness of the Vixen B trials, and extensively documented his life in photo and video.

Under increasing political pressure, the Labor Government under Prime Minister Bob Hawke set up a Royal Commission to unearth the full story of the British atomic tests. Led by Justice James McClelland, the Commission set out to lift the veil of secrecy the British had placed on the program, to find out about the true nature of the test program at Maralinga and Emu, and to address issues of responsibility. The findings were scathing and emphatically criticised the lack of concern for the health and safety of service personnel and Aboriginal people in particular. The Report made a number of significant recommendations, among others, requesting compensation to be paid and urging the return of Aboriginal lands to the Traditional Owners after a thorough clean-up of the test sites.

Mamu tjuta, evil spirits are coming – the Aboriginal experience

The story of atomic testing at Maralinga is the dislocation of Anangu Pitjantjatjara and Kokatha people from their lands in the Great Victoria Desert and from the United Aborigines Mission station at Ooldea. Alongside the actual nuclear explosion, both events feature prominently in a number of paintings by Indigenous artists from the 1990s onward. Four paintings were selected for this exhibition from a group of over 40 works, which had been produced for the book *Maralinga – the Anangu Story*, a collaboration of Adelaide author Christobel Mattingley and the Anangu

Pitjantjatjara in Yalata and Oak Valley in 2009. Paintings by Hilda Moodoo, Maureen Smart, Yvonne Edwards and her son Terence tell the story of dispossession, illness and death: Anangu are pictured being gathered by authorities and driven away on trucks; men in white protective suits appear while a fierce atom bomb goes off in the distance.

The dislocation from country and its subsequent destruction are dominant and recurring themes in the Anangu narrative. While a younger generation know the traditional lands only from stories and occasional visits, the trauma of forced removal from sand dunes country to the lime stone coast remains a vivid memory among an older generation. In May 2016 a painting project at Yalata provided an opportunity for an inter-generational exchange. Numerous paintings were produced, and the collaborative canvas *Maralinga Tjulkurpa* has been included in the exhibition. Cynthia Charra, Polly Charra, Verna Gibson, Edwina Ingomar, Glenda Ken, Teresa Peters, Carmel Windlass, Mellissa Windlass, Ann Marie Woods and Natasha Woods worked on it, guided by Elders Mima Smart, Margaret May and Rita Bryant.

Few Anangu remain who experienced the tests 60 years ago. Yvonne Edwards (who sadly passed away in 2012) was six years old at the time of the Buffalo series. "Grandfather and Grandmother telling lots of stories. They had to live at Yalata. Their home was bombed. That was their home where the bomb went off. Really frightened. They thought it was *mamu tjutja*, evil spirits coming."¹⁴ While Anangu witnessed the bombs go off on their land from a distance, many returned and traversed the land in subsequent years, especially when the Yalata community was commissioned to dismantle some of the remaining infrastructure at Maralinga. Mabel Queama

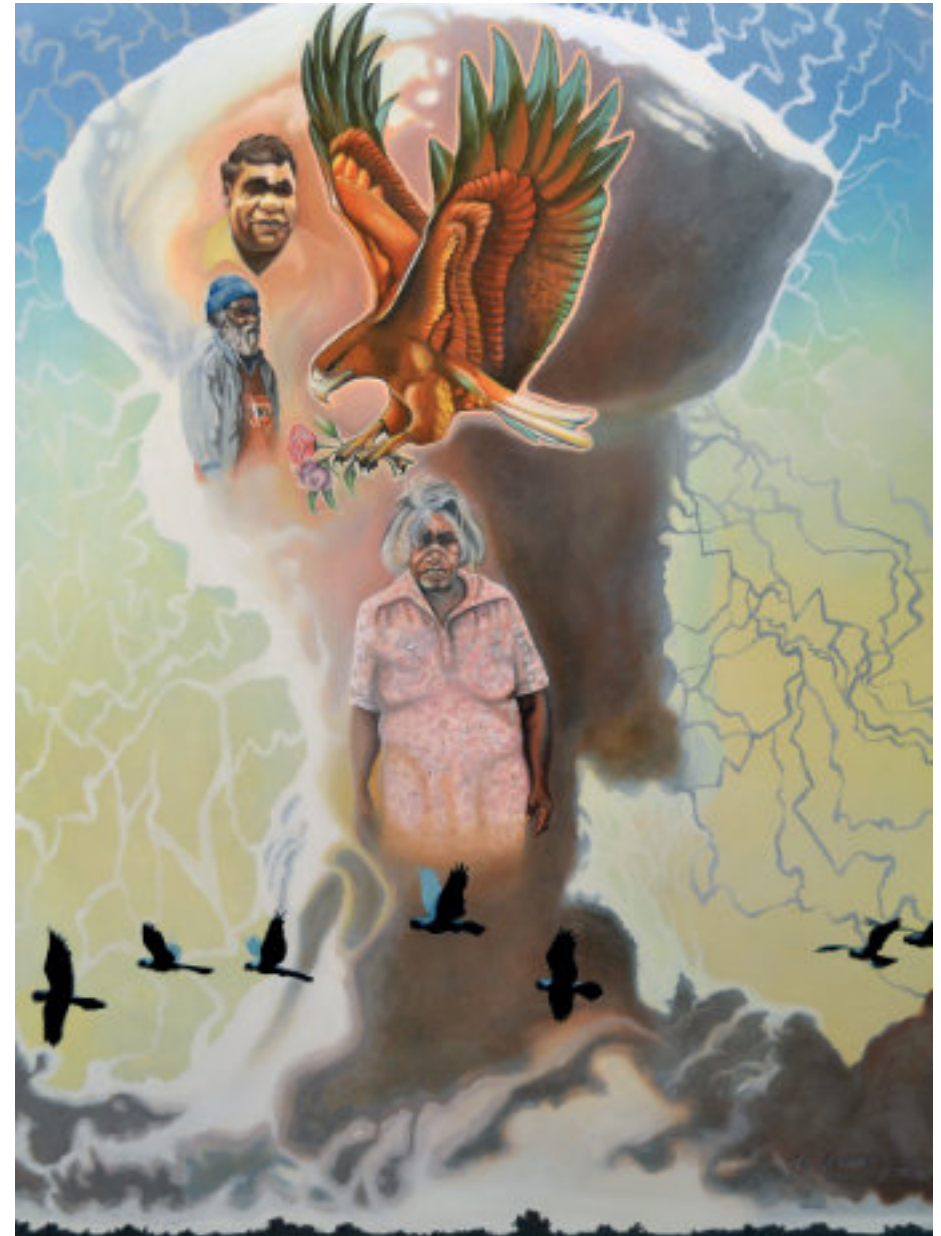
said: “We walked to Taranaki. We been there. Couldn’t sleep that night. Coughing all night. Coughing, coughing, coughing. Couldn’t walk much. Now everyone at Oak Valley has breathing problems.”¹⁵

Yvonne Edwards recalled: “I don’t know why I am still alive. I went everywhere at Maralinga. Everywhere I shouldn’t have. Nobody told us. ... We didn’t know the place was dangerous, poisoned. One of our sons, Teddy, got very sick. He was just a baby. He was taken back to Yalata and later to Adelaide because he was still sick. My husband got sick later, couldn’t see properly. His eyes. Died of lung cancer, spreading fast. Cancer all over his lungs. ... All Anangu men who worked at Maralinga are finished now. Lost a sister too from cancer. In her 20s. And an uncle in his 40s from cancer. And an auntie from cancer. Two of my sons died in their 40s from cancer. Sometimes I cry at night.”¹⁶

First attempts to capture the story visually were undertaken by Lance Atkinson when he conducted a creative arts workshop at Oak Valley. Atkinson (1971–2014), a Kamilaroi/Yorta Yorta artist from Mildura, Victoria, had established a close relationship with the small community northwest of Maralinga in the late 1990s and continued to visit for several years. Paintings resulting from the workshop were subsequently presented in an exhibition at the Adelaide Festival in 2002. Atkinson’s own renditions present the viewer with an intriguing mix of Western-style realism and symbolism.

As Heather Lee observes: “Atkinson’s belief that his paintings should raise awareness rather than being politically charged, or offending, continues in his *Maralinga* series ... the *Maralinga* series seeks to inform the viewer of a devastating historical event, in this case

Lance Atkinson
(Kamilaroi/Yorta Yorta;
b.1971, d.2014)
Maralinga Fields of Thunder
2009
acrylic on canvas
173 x 130 cm
Maralinga Piling Trust
Courtesy of Chris Guille
and Jack Kirby
© Maralinga Piling Trust



Jeffrey Queama
(Pitjantjatjara, b.1947, d. 2009)
Hilda Moodoo
(Pitjantjatjara, b.1952)
Destruction I 2002, Oak Valley, SA
synthetic polymer paint on canvas
119 x 98 cm
Santos Fund for Aboriginal Art 2002
Art Gallery of South Australia,
Adelaide
Courtesy of Hilda Moodoo
20025P24



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the 1950s nuclear tests and their aftermath ... Atkinson does not despair at the destruction and desolation the nuclear testing has caused the people and their land. Through his works, Atkinson celebrates the persistence and continuance of the Ancestral teachings and traditions of the Oak Valley people, which he has witnessed; the community's spirit safeguarded by the strength of the Eagle Spirit."¹⁷

A central mushroom cloud dominates the background of *Maralinga Fields of Thunder*. A powerful (wedge-tail) eagle carrying violet and red roses in his claws soars above, while a flock of Black Galahs cross over the lower end of the canvas taking flight from a darkened landscape. The exact shape of the mushroom cloud is repeated in a number of Atkinson's paintings, including *Maralinga IV Purple Dreaming* (2001), *Maralinga Vision of Hope* (2003) and *Maralinga* (2009); the identical outline is also recognisable in Hilda Moodoo and Jeffrey Queama's collaborative paintings *Destruction I and II*. Hilda Moodoo (b.1952) was a participant of Atkinson's workshop. She and her husband Jeffrey Queama (1947–2009) painted in traditional style, yet Atkinson's influence on the work is clearly visible.

Queama, a Pitjantjatjara man born in the United Aborigines Mission (UAM) at Ooldea on the eastern edge of the Nullabor Plain, was instrumental in setting up the small Oak Valley community in 1984. With the dispersal of residents after the closure of the mission in 1952, depicted by other Anangu artists as we have seen, he was sent to the Lutheran mission school at Koonibba, near Ceduna. For many years he lobbied tirelessly for the return of the Maralinga–Tjarutja lands. In December

Lin Onus
(Yorta Yorta, b.1948, d.1996)
Maralinga 1990
fibreglass, synthetic polymer paint,
acrylic and paper stickers
(a) 163.0 x 56.0 x 62.0 cm (figure)
(b) 125.0 x 119.0 x 45.0 cm (cloud)
State Art Collection, Art Gallery
of Western Australia
Purchased 1990
© Lin Onus Estate/Licensed by
Viscopy, 2016

1984, the South Australian Government returned parts of the 3000 square kilometre test range to the traditional owners. Queama and his wife were among those who founded the Oak Valley community.

An increasing number of Aboriginal artists turned to acrylic canvas paintings in the 1990s, expanding the traditional ways of oral story-telling, sand painting, song and dance. At the same time urban artists developed their own style, which was less informed by traditional designs and symbols but more by European techniques and materials.



Lin Onus was the first to respond directly to the Maralinga story. Son to a Scottish mother and a Yorta Yorta man from the Cummeragunja Aboriginal reserve on the Murray River in New South Wales, William McLintock Onus (1948–96) was a politically minded Koori artist. From a young age he was influenced by his father Bill Onus (1906–68), a successful entrepreneur (he ran Aboriginal Enterprises in Belgrave, not far from Burrinjia Dandenong Ranges Cultural Centre) and a political activist who had campaigned for the Aboriginal vote in 1966–67. In the late 1940s Bill Onus had vehemently

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protested with the anthropologist Dr Charles Duguid, MP Doris Blackburn and Pastor Doug Nicholls (later Governor of South Australia) against the establishment of the Woomera rocket test range on Aboriginal lands in South Australia. The campaign was smothered by the Approved Defence Projects Act of June 1947 which declared anyone who “by speech or writing advocates or encourages the prevention, hindrance or obstruction of carrying out an approved defence project” was liable of a fine of £5,000 or one year imprisonment.

Lin Onus was not yet born then but there is no doubt that he learnt about his father’s political activities as he grew up. He was often described as a ‘bridge between cultures’ for his efforts to reconcile Indigenous and European heritage. His trademark painting style merged Western realism with the traditional Arnhem Land *rarrk* cross-hatching technique. Lin Onus was given permission to paint in *rarrk* by a senior member of the Murrungun Djinang clan, Jack Wunuwun.

In his later artistic career Onus also created a series of fibre-glass sculptures, among these *Maralinga* (1990): An Aboriginal mother protects her child from the apparent pressure wave of an atomic blast. In defiance she is facing it head-on. A stylised acrylic mushroom cloud with embedded radiation symbols accompanies the life-size sculpture. Mother and child are innocent and unknowing victims of the explosion. Yet the mother’s body-language also speaks of outrage and resistance in the face of this horrific event. The sculpture is held in the collection of the Art Gallery of Western Australia. It is a powerful response to the story of atomic testing and of the impact on Aboriginal people, and undeniably a key work, and an inspiration for other artists.



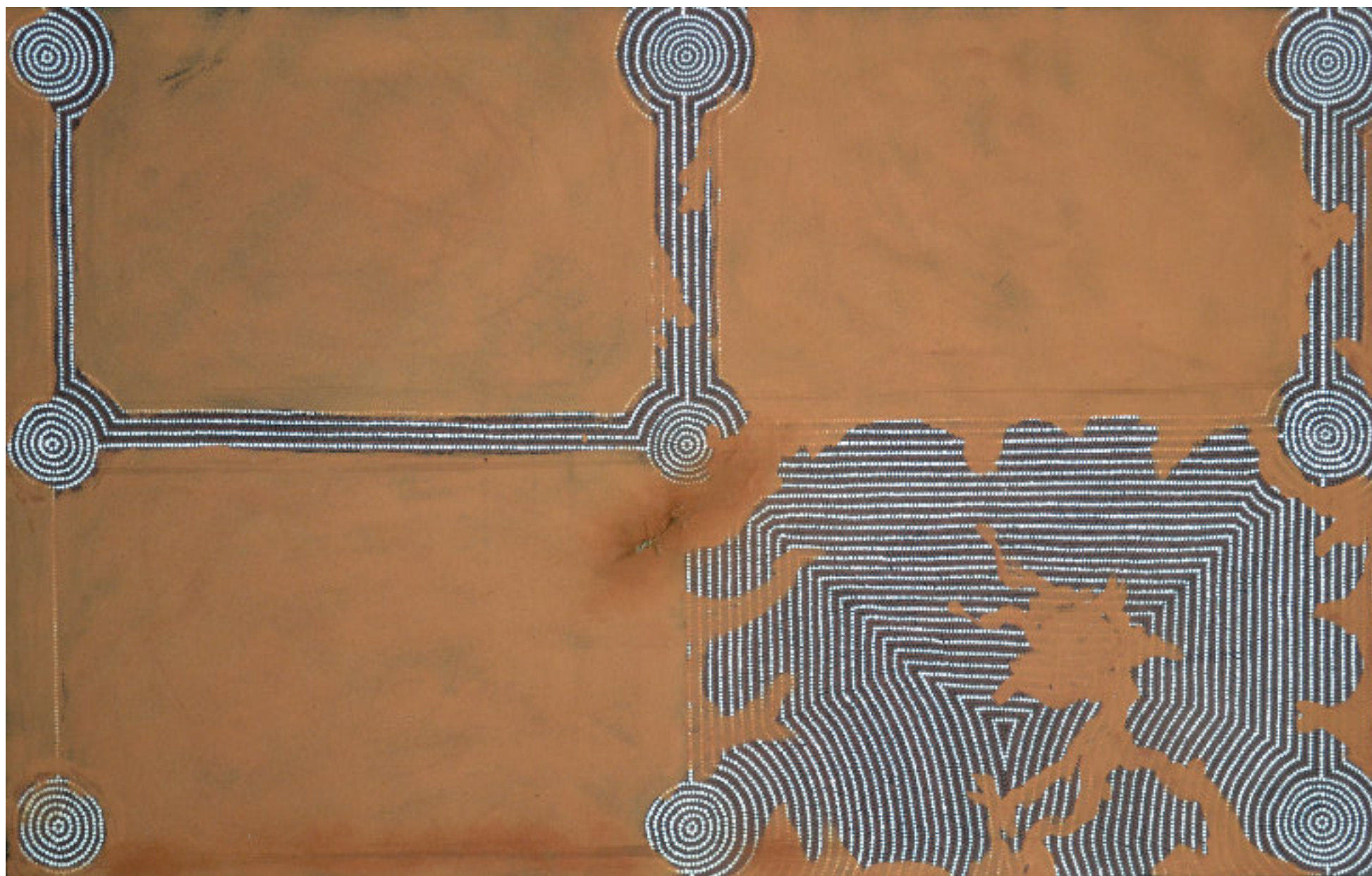
Opposite page (detail above):
Jonathan Kumintjarra Brown
(Pitjantjatjara, b.1960, d.1997)

Maralinga 1992
acrylic, sand and lizard
skeleton on linen
167 x 106 cm
Ebes Collection
© artist estate

Jonathan Kumintjarra Brown was one of these artists. Although he came to art only later in life, he created an extensive body of paintings and several installations centred on the Maralinga story, driven in part by his urge to overcome his own trauma. Three canvas paintings are included in the exhibition: *Maralinga* (1992), *Black Rain* (1995) and *Frogmen* (1996).

Jonathan Brown (1960–97), a member of the ‘Stolen Generations’, was removed from his Pitjantjatjara parents at a very early age. He grew up with a foster family in Melbourne (and later in the Hunter Valley) and was educated at Camberwell Grammar. In his late 20s he took up Aboriginal Studies at the South Australian College for Advanced Education in Underdale, Adelaide, and started painting. Brown actively sought and eventually found his parents in the small community of Yalata on the Great Australian Bight in South Australia. He learnt he had a brother and met his parents, but unable to speak their language, felt estranged. The story of the community’s dislocation and the destruction of their lands caused him considerable distress. Fabian Peel, a nurse at the local clinic, now director of Tullawon Health Centre in Yalata, took him on a tour through the lands. He remembers: “Jonathan was crying the whole way.”

The monumental canvas painting *Maralinga Before the Atomic Test* is part of the Yarra Ranges Council’s McLeod Gift Collection, which is housed at and managed by Burrinja, and shows the country undisturbed. By contrast, *Maralinga* confronts the viewer with the obvious obliteration of the land: Desert sand is poured over the traditional dot painting, obscuring the symbols. The Tjukurrpa is lost. Significant sites have been eradicated. A central lizard skeleton is all that remains.



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In *Black Rain*, Brown expands the story referencing the 'Milpuddie incident' by depicting a group of figures in the lower, sandy part of the canvas. Edie Milpuddie, her husband, two children and dogs were found camping near the crater caused by the only ground-level test at Maralinga, codenamed Marcoo. Their disturbing story was thoroughly investigated by the Royal Commission and has been retold by Liz Tynan in detail in her essay.

Jonathan Kumintjarra Brown was mentored artistically by his friend, photographer and field collector Neil McLeod. He got to know, and later collaborated with Lin Onus, for example on *Nissan Dreaming* for the seminal Queensland Art Gallery exhibition *Balance 1990: Views, Visions, Influences*, an exhibition which had originally been planned for the Bicentenary celebrations. Brown's own oeuvre was presented at Tandanya Aboriginal Cultural Institute at the 1996 Adelaide Festival as part of the exhibition *Native Title Now* (curated by Doreen Mellor) under the title *Maralinga Nullius*. It went on to be on show at SH Ervin Gallery in Sydney the following year. But Brown did not live to see it. Only days before the opening, he passed away due to liver failure in the presence of his friend Neil McLeod.

It is a surprising coincidence that Jonathan Kumintjarra Brown's work and spirit will return to SH Ervin Gallery almost 20 years later for the opening of *Black Mist Burnt Country* and the launch of its national exhibition tour. As he stated in *Maralinga – Heart of the Country*, a short documentary commissioned by Tandanya and directed by Rick Cavaggon for the 1996 exhibition: "My political outlook has been sharpened by what happened to my family. Much of my ancestral lands are inaccessible to me as a consequence of atomic testing in the

Maralinga region in the 1950s and 60s. As well as this, my community is suffering social and physical ills that occur in other Aboriginal communities that have been dispossessed."¹⁸

The minimalist but sizable painting *Black Rain* refers to radioactive fall-out caused by the atomic explosions, and allows for associations with the story of the 'black mist', a mysterious black cloud, which rolled across the land and affected an unknown number of Aboriginal people in its way. The 1984 Royal Commission gathered many accounts from Aboriginal witnesses and white pastoralists, and concluded that the cloud was probably a result of the first atomic test at Emu in 1953 codenamed Totem. Yet, its origins and composition of 'black mist' remain unexplained despite several scientific investigations.

MY POLITICAL OUTLOOK HAS BEEN SHARPENED BY WHAT HAPPENED TO MY FAMILY. MUCH OF MY ANCESTRAL LANDS ARE INACCESSIBLE TO ME AS A CONSEQUENCE OF ATOMIC TESTING.

Yami Lester OAM, a Yankunytjatjara man, was about 10 years of age at the time and living at Wallatinna, 120km northeast of Emu. He recalls that he heard a loud bang. "It was coming from the south – black, like smoke. I was thinking it might be a dust storm, but it was quiet, just moving through the trees and above the trees and above that again. It was just rolling and moving quietly. ... The old people were frightened. They reckon it was *mamu*, a pretty hard word to translate into English ... It could be something that could be bad or evil spirit, or something we are not sure what it is. The old people

were frightened and they were saying: 'We have got to do something.' They used *woomera* (spear-throwers) to make that 'something' to change direction and go away, not to come to the main camp."¹⁹

Tjariya Stanley has painted the story of the 'black mist', or *puyu* in her language, which is also the title for her acrylic painting. She says she chose to paint "happy days" when Anangu Pitjantjatjara families gathered in camps around fires in a landscape filled with bush flowers in pinks, mauve, yellow and white. *Puyu* is depicted in the form of dangerous black snakes, which engulf the camps. "The wati (men) were worried. They had *kulata* (spears) and *miru* (spear throwers – woomera). All the men were holding the *kulata* high, they were going to spear the enemy coming with the *puyu*. They wanted to throw the spears at the *puyu*."

"The Anangu were frightened, so they started to run away from the smoke abandoning their campsites. When some of them returned later to Ernabella they heard the stories of the *ngankarri* (witch doctors) who tried to save the people when they heard about this black *puyu*. They performed a ceremony and by removing their *tarka* (bone) from their forearms and throwing it towards the smoke, tried to push it away and stop it from harming the Anangu. But the smoke was too powerful, too strong. Many Anangu died." she said. Tjariya Stanley lost her parents shortly after the incident.²⁰

Yami Lester, now a Yankunytjatjara Elder, described the effect of *puyu*: "I cannot remember how long after we were getting sick and sore eyes and watery eyes and diarrhea ... vomiting and skin rashes ... *purtju*, sore on the skin ... I could not see with both eyes."²¹ Despite medical treatment he lost his sight soon after and then completely



Tjariya Stanley
 (Ngaanyatjarra, b.1939)
Puyu - Black Mist 2015
 acrylic on canvas
 98 x 121 cm
 Margo Birnberg and the artist
 © Margo Birnberg and
 the artist



Jessie Boylan
(Australia, b.1986)
***Yami Lester, Wallatinna
Station, South Australia***
2006
digital inkjet print
85 x 85 cm
Courtesy of Yami Lester
and the artist
© the artist

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in 1957. He was sent to Royal Adelaide hospital, without an interpreter, where his left eye was removed. He was told he had gone blind because of measles. His medical records have been reported missing.

When in the 1980s Lester heard on ABC radio an interview with Sir Ernest Titterton, a nuclear physicist who was a member of the Australian Atomic Weapons Tests Safety Committee from its inception in 1955 to 1957, and chairman of the committee from 1957 until 1973, he had a realisation. Lester writes in his award-winning autobiography *Yami* (1996) that “he was talking about the atomic weapons tests at Emu in 1953 and at Maralinga in 1956 and 1957. I was in bed listening, but didn’t really pay much attention to what he was saying. Then I heard the interviewer ask him: ‘And what about the Aboriginal people?’ Sir Ernest Titterton says: ‘Oh, the black people were well looked after. We had two patrol officers in the area.’ He was talking like that. And I said to the radio: ‘Bullshit.’ I remember now! I was at Wallatinna. I remember that patrol officer used to come to the camp. All the Anangu called him kuṭa – brother. ... All day I thought about what he said. And things started coming back to me”.²²

Yami Lester’s account formed a cornerstone among Indigenous witness accounts during the enquiry of the Royal Commission. In June 1984 he travelled to London, accompanied by his wife Lucy and lawyer Richard Bradshaw, and to Japan in 1989, to campaign for recognition and compensation for the victims of British atomic tests.

In *Black Mist Burnt Country* two photographic portraits show Yami Lester in quite varied ways and offer different perspectives of their subject through the photographers’

lens. Belinda Mason (b.1971) presents an eerie black and white 3D lenticular holographic photograph, which emphasises Lester’s blindness. It originates in Mason’s *Unfinished Business* series, which was launched in September 2013 at the Palais des Nations in Geneva to coincide with the 24th Session of the UN Committee on the Rights of Persons with Disabilities. In contrast, Jessie Boylan (b.1986) places Yami Lester in the familiar bush of his traditional country at Wallatinna Station standing straight, with hands locked in front of him as in prayer. Yet, his face and his teeth appear as clenched in pain, from an invisible, deep hurt. In this portrait we encounter an upright pose, facing an unknown and unimaginable event – like the many innocent soldiers and officers who turned their backs to the bomb after the white nuclear flash had abated to witness the great spectacle.

Roads to Maralinga – Contemporary concerns

With his bronze sculpture, *Maralinga Test Dummy*, Craig McDonald recalls a familiar image from the early blasts: a sole observer watches the blast through an impenetrable visor, perhaps in awe, admiring the demonic scene, unaware and, as they often were, kept in the dark about the true nature and potential dangers of the hazardous event. McDonald (b.1955) notes in his artist statement: “Blindness, from viewing the blasts, was a real threat, but this figure explores the notion of a more menacing blindness – that of ignorance coupled with colonial arrogance. Yet, the rendering of the figure gives him a heroic quality, as if these participants were somehow free of normal moral constraints.”

The full extent of what service and civilian personnel

were exposed to, and what they thought about their ‘experience’, was not known until long after the tests. Veils of secrecy clouded the true nature and their extensive hazards. Bound to secrecy by respective laws, many veterans only unlocked their memories and histories to wives and families when mysterious illnesses and decreasing health affected them. Only gradually did the general public become aware of these stories, usually through the voices of whistle-blowers and journalists.

Kate Downhill’s father was a member of a team of British scientists present at the ‘major’ and some of the ‘minor’ tests at Monte Bello and Maralinga, and during hydrogen bomb tests on Christmas Island. For Downhill, her paintings take on an important function: the “memorialisation of those events, drawing on family memories and histories, and my own childhood imaginings and perceptions about Australia”.²³

Downhill (b.1955), who moved to Australia from the UK in 2009, draws on fragments of memory and scraps of information, which she weaves into quilt-like ‘patchwork’ paintings (*Operations Hurricane, Mosaic, Totem and Buffalo*). Alongside other works and a variety of personal paraphernalia she presented these in an exhibition at Macquarie University Art Gallery in 2013 titled *Chain Reaction*. In the exhibition’s catalogue Brian Maidment observed “a recognition of the social history of quilts as a form of memorisation collectively undertaken by women to ensure that the history of the tribe or nation is maintained in human memory. Such memorialising turns personal memories and experiences into emblematic shapes that have sufficient weight to stand for the collective historical narratives through which nations begin to mythologise and understand their own histories”.²⁴

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Craig McDonald
(Australia; New Zealand,
b.1958)
Maralinga Test Dummy 2010
bronze
55 x 38 x 24 cm
Courtesy of the artist
© the artist

Operation Hurricane (2013) quotes British Prime Minister Clement Attlee, promoting a New World Order at the dawn of the atomic age in 1945: “This sort of thing has in the past been considered an Utopian dream. It has today become the essential condition of survival and of civilisation and possibly of life on this planet.”

Since the first atomic test at Alamogordo in New Mexico as part of the American Manhattan Project, there has been an ongoing fascination with the devilish bomb and its majestic toxic cloud as it rises, like in slow motion, to even greater heights and power. Not surprisingly, the ‘mushroom cloud’ is an intriguing artistic motif – a symbol for human ability to achieve scientific brilliance, and to cause unprecedented destruction.

As Sydney artist Hugh Ramage notes: “The development of the atom bomb was the culmination of an extraordinary commitment of resources, energy and creativity and represented two of the most irrepressible characteristics of humanity being: the potential for massive creativity and violence.”²⁵ Ramage (b.1958) has painted the British testing of three devices in oil on canvas: *Totem* (at Emu), and *Taranaki* and *Antler* (series) at Maralinga. These paintings are small, but the dark renditions fill the canvas and beset their sinister impression on the viewer.

In comparison, Judy Watson (b.1959), a Waanyi woman from Queensland, produced a series of sublime paintings simply titled *bomb test* (1–5, 1995), two of which are included in the exhibition. These offer no historical reference, nor do they depict the actual event. They are minimalistic in size and colour, quite the opposite to the real spectacle; yet they draw the viewer in to a close study, contemplating the unimaginable power of destruction and its invisible threat to life and health.

In *Revenge of the Stormboy*, Adelaide based Ngarrindjeri artist Trevor Nickolls (1949–2012) displayed his outrage about the atomic tests. Nickolls unusually (almost) monochromatic painting depicts an Indigenous man who brings with his ceremonial spear flames to a city, setting high-rises, houses and even Luna Park on fire. Alarmed, numerous white figures wave their arms in the foreground, while a mother leads away a child, an image Nickolls used repeatedly used. She carries a dilly bag, which contains a tiny mushroom cloud. The painting was inspired by the Australian movie *Storm Boy* made in 1976, which is placed at the Coorong near the mouth of the Murray River and tells the story of a young boy, Storm Boy: he forms a special relationship with Mr Percival, one of three pelican chicks he rescues and nurtures, but is eventually shot by hunters.

The British atomic test program was one of the final acts of colonialism inflicted on Australians. The subsequent report of the Royal Commission has been described as a significant document marking the arrival of a post-imperial Australia, “for it identified Britain as a foreign country – an idea that would have been incomprehensible to Australians of the 1950s”, concludes political journalist Frank Bongiorno. “It presented the British as prone to manipulating and exploiting the Australian people, with the assistance of a local class of conservative Australian Anglophiles and expatriate Britons.”²⁶

Rosemary Laing (b.1959), another artist from a generation born in the Menzies era, set out from Sydney to see the epicentre of British colonialism with her own eyes. After a long, arduous journey through ‘outback Australia’ she arrived at Emu. In a re-enactment of Cook’s landing, she planted an old British flag given to her by one of her Wiradjuri friends. “I found the wonky



Hugh Ramage
(Australia; New Zealand,
b.1958)
Totem 2014
oil on canvas
40 x 35 cm
Courtesy of the artist
© the artist



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metal tripod lying around in the general vicinity. I erected it and attached the flag. ... I used the flag to emphasise the inferred event ownership announced by the inscription on the brutalist monument."²⁷ For generations to come, this and other 'monuments' will mark trial sites at Monte Bello, Emu and Maralinga, memorials of Australian subservience to the British mother country.

Internationally renowned video artist Susan Norrie (b.1953) continues the theme of colonial dispossession and its ongoing ramifications in the video edit *Black Wind*. She states: "We are at a critical and significant moment in the history of the world and as an artist one feels an enormous responsibility to document the truths of our

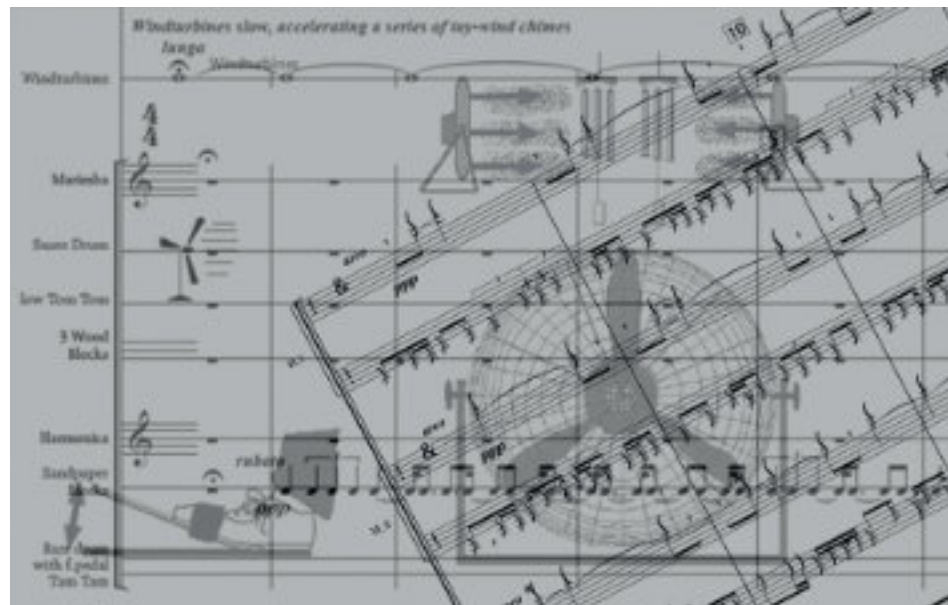
experiences, not just to simply erase history and support a collective amnesia."²⁸ *Black Wind* integrates footage of the Aboriginal Tent Embassy on the lawns of Parliament House in Canberra, a beacon of political activism and protest for Aboriginal (land) rights since 1972. The work was made with the support and agreement of tent embassy members Isabel Coe, Ray Swan, Maisie and Brendan Cook and screened in the Netherlands and Belgium in 2005 and at the Adelaide Festival in 2006 accompanied by an orchestral soundtrack by Sydney-based composer Kim Bowman.

Black Mist was commissioned by the Dutch Government and written by Bowman (b.1957) for Claire Edwardes



Opposite page:
Meryl Fairsky
(Australia, b.1950)
The Day After (Tower, The Polygon, Kazakhstan) 2015
pigment print
36 x 53 cm
Courtesy of the artist
© Meryl Fairsky/
Licensed by Viscopy, 2016

Top right, and right:
Kim Bowman
(Australia, b.1957)
Susan Norrie
(Australia, b.1953)
Black Wind 2005
musical composition
and single channel video
duration 29:30 mins
dimensions variable
Courtesy of the artists
© the artists



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and Amsterdam Sinfonietta. Two wind turbines on stage accelerate wind chimes producing disturbing sounds while the percussive value of the orchestra is exposed by tapping and hitting the body of the instruments. Members of the orchestra play specially designed percussion instruments, like foot slaps and triangles. Percussion soloist Claire Edwardes performs on a range of additional percussion instruments, some homemade. All set to evoke the threatening slow culmination of the piece. The radio broadcast recording of the concert at Het Muziekgebouw in Amsterdam on 12 November 2005 was kindly made available by Russell Postema, chief editor of the Dutch Klassiek Radio 4.

Counts Per Minute ... and still counting – Contemporary responses (part 2)

For Blak Douglas (b.1970), a descendant of the Dharug of the Sydney area, successive Australian prime ministers and their governments have been complicit in their negligence of Indigenous landowners, Australian servicemen and the country itself. In the painting *Tjarutja Tragedy*, clouds for 23 prime ministers hover over a scorched landscape. A ghostly traditional hunter walks the barren land.

Sydney-based Blak Douglas is part of half a dozen younger artists in *Black Mist Burnt Country*. These Gen X and Gen Y are, not unlike the rest of their generation, a well-educated, sophisticated and informed group of metropolitan creatives and global citizens, whose artistic practice is informed by social and environmental awareness. Painters, Karen Standke (b.1973 in Munich, lives and works in Melbourne and Christchurch), Adrian Brierley (b.1973, lives and works in Melbourne),

Kate Shaw (b.1969 in Sydney, lives and works in New York and Melbourne) and photographers Paul Ogier (b.1974 in Auckland, lives and works in Santa Cruz, USA, and Sydney) and Jessie Boylan (b.1986 in Sydney, works in Castlemaine, VIC) approach the story of British atomic tests in quite different, but also less obviously confronting ways.

THE HISTORIES OF THE SITE, UNASSUMINGLY CALLED 'FORWARD AREA' REMAIN LARGELY INVISIBLE.

Paul Ogier's monochrome photograph refers to the site of the first atomic test at Maralinga on 27 September 1956, codenamed *One Tree*, part of the Buffalo series. Ogier presents a void. A sole tree leans against an empty sky. The distinct nuclear cloud forming above silent mulga and saltbush is easily imaginable.

These days few signs of the elaborate infrastructure required to conduct and monitor the tests remain: concrete launch pads, steel boxes partially buried in the ground and scattered pieces of rusty metal attract the visitors' attention. The histories of the site, unassumingly called 'forward area' remain largely invisible in a scarred and partly rehabilitated landscape dotted with concrete memorials which indicate seven 'major test' locations at Maralinga: One Tree, Marcoo, Kite, Breakaway, Tadge, Biak and Taranaki.

At Taranaki, the largest and most contaminated area, extensive earth-scraping operations as part of the final clean-up in the late 1990s are clearly visible. A large mound, like an oversized grave, dominates the landscape. Measuring 200m by 120m, and 2.5m in height, it covers

a 15m deep trench in which all previously and presently contaminated soils, debris, test equipment, machinery, buildings and bulldozers are buried.

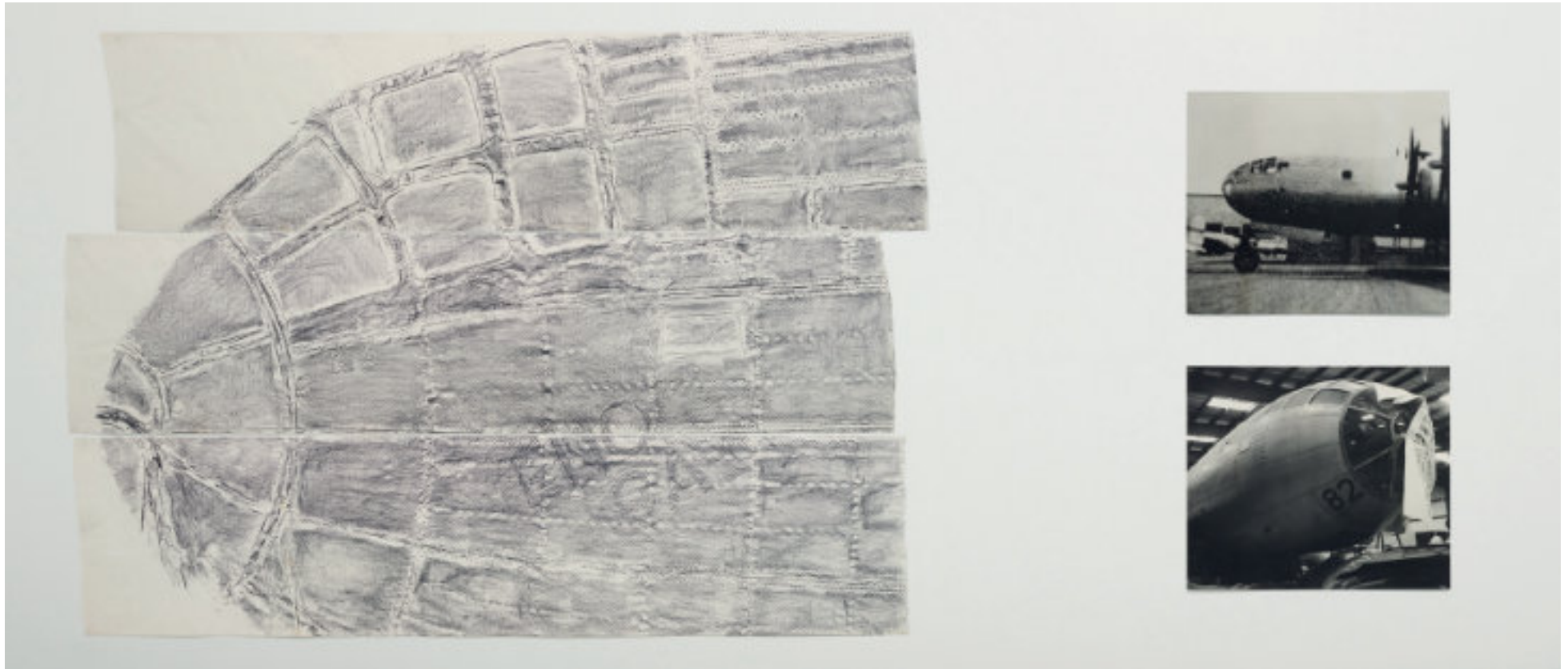
Places with hidden histories like Emu and Maralinga are not uncommon. The photographs by Sydney-based Marilyn Fairskye (b.1950) direct the attention to Polygon, the former Soviet test area in Kazakhstan. The remnants of infrastructure stand out among green meadows – quite literally, grass has grown over its destructive history. Yet, these serve as a reminder, that numerous test sites across the globe with more than 2000 atmospheric and underground tests present themselves as scarred, contaminated, lifeless landscapes. As Fairskye explains in her artist statement these images developed from her work about the 1986 Chernobyl nuclear accident and the resonances of its after-life. In response to the development of the US atomic program, the Soviet Union conducted nuclear explosions between 1949 and 1989 at the Polygon Nuclear Test Site in Kazakhstan.

Australian test sites offer the visitor little excitement in the way of buildings, launch pads and towers these days, as all these were either evaporated in the nuclear blasts or their debris removed and buried in subsequent

Opposite page:
Paul Ogier
(USA/Australia; New Zealand,
b.1974)

***One Tree (former Emu Field
atomic test site)*** 2010
carbon pigment on rag paper
72 x 90 cm
94 x 117 cm framed
Courtesy of the artist
© Paul Ogier





Right:
 Ian Howard
 (Australia, b.1947)
B29 Superfortress
Fuel Line Clamp 2016
 metal and rubber
 15 x 50 x 35 mm
 Courtesy of the artist
 © Ian Howard/Licensed
 by Viscopy, 2016



Above:
 Ian Howard (Australia, b.1947)
Enola Gay 1975
 black wax crayon rubbing on three
 sheets of paper, two black and
 white photographs, wax rubbing
 274 x 361 cm
 Art Gallery of New South Wales
 Gift of the NSW Government Art
 Scholarship Committee 1977
 Photo: Mim Stirling/AGNSW
 © Ian Howard/Licensed by
 Viscopy, 2016
 229.1977.a-e

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clean-ups. The changing physical nature of the site hides various layers of its existence. A few remaining signs in Maralinga village and across the range offer an insight into the changing ownerships of the area. Adam Norton (b.1964) visualises these past realities by recreating the signs. *Prohibited Area* refers to a time when traditional owners were excluded from their country because it was part of the Woomera Prohibited Zone: the Australian Government and Defence Department held ownership of the land long after the completion of the tests. In 2014 Maralinga Tjarutja traditional owners gained total control over their lands.

Similarly, Mick Broderick (b.1959) reproduces a present-day sign, one of over 2000 surrounding the 'forward area', warning Aboriginal visitors: *kuka palya*, 'hunting good'; *ngura wiya*, but 'no camping'. Broderick points out that "this sign combines iconography and text assumed to be comprehensible to local Indigenous peoples. Given the millennia of deep time required to safeguard the buried nuclear contaminants, the semiotics of these signs remain highly contestable".²⁹ To illustrate the point, samples of red soil and molten sand from Maralinga's Breakaway test site accompany the warning. The atomic explosion caused a heat ball, several thousand times hotter than the surface of the sun, which burnt the country: instantaneously the ground melted into glass; this transmutation trapped some of the radionuclides inside turning the sand green; just like at the Trinity test at Alamogordo, which has given these artifacts the name trinitite, also known as atomsite or Alamogordo glass. Only over time did the radiation decrease and the surface glass break up into shards.

Taken out of its authentic environment and its original



context and placed in gallery/museum displays, these objects pose important questions. What meaning do these objects hold? Are these objects relevant only because of their (historical) context? What do they tell us about the layered histories? What potential interpretations do they offer?

Artist Ian Howard presents an unusual exhibit which exemplifies these questions: *a B29 Superfortress fuel line clamp*, in itself, an unassuming and somewhat irrelevant piece of machinery. The clamp, however, was a part of the bomb bay area on the *Enola Gay*, the plane

Mick Broderick
(Australia, b.1959)
Counts Per Minute (CPM):
Alchemy 2015
2 x glass petri dishes.
Contents: (a) Maralinga soil;
(b) atomic glass fused and
transmuted from soil near
ground zero
2 x 25 cm each
Courtesy of the artist
© the artist

ATOMIC TESTING IN AUSTRALIAN ART JD MITTMANN



Mick Broderick
(Australia, b.1959)
**Counts Per Minute (CPM):
Semiosis** 2015
Aluminium frame and
replica sign
191 x 62 cm
(sign 60 x 30 cm)
Courtesy of the artist
© the artist

that dropped the first atomic bomb. Howard (b.1947) came across the plane, covered in dust, in the far corner of a storage hangar in Suitland, Maryland, when he was working with objects of the American space projects. Surprised about the unexpected discovery, Howard took the opportunity and 'wax-rubbed' a three-metre section of the front of the infamous plane. Critic James Gleeson described the rubbing as a process that "subtracts the actual presence of the object and leaves us with a kind of ghost, a residue which summons up the reality of the object".³⁰ In this case, it summons the reality of the event. (The plane, now fully restored, is at the Smithsonian National Air and Space Museum in Washington DC.

However, the world-changing sortie of the *Enola Gay* is, apparently, not identified in the display.)

The changing history of the Maralinga lands is not immediately obvious to the visitor. Newly erected signage serves to educate the interested participant of Maralinga Tours, an enterprise operated by Maralinga-Tjaruta, about the extensive program the British had planned in order to be accepted into the nuclear club in the 1950s. But while the recent accessibility to the range suggests it is reasonably free of health risks, the area remains permanently uninhabitable for generations to come. Yalata artist Warren Paul (b.1970) has addressed this issue poignantly in his clay sculpture *Toxic Australia*. In this work the 'heart of Australia', as it is often referred to, has become a resting place for ominous yellow barrels usually associated with nuclear waste. A bluish substance seeps from some, forming a toxic stream, which, ironically, runs to form a lake in Tasmania, a region that is associated with environmental pristineness. Wooden fence posts and barbed wire secure the site. Cattle yards of the 19th and 20th centuries have been replaced with the 21st century waste dump.

This witty little sculpture hits the nerve of the issue: Indigenous communities are concerned about environmental degradation through uranium mining and nuclear waste storage issues. Sydney-based artist Luke Cornish (ELK) (b.1979) warns: *Wake Up to the Stink*.

In the wider picture this includes concerns about the proliferation of nuclear wastes and weapon grade nuclear materials, as well as the existence of nuclear weapon stockpiles. While Strategic Arms Reduction Treaty (START) negotiations between the US and Russia in the post-

Cold War period were promising and led to significant disarmament, large numbers of warheads and delivery mechanisms remain – they are maintained and, in fact, up-graded. Jessie Boylan and Linda Dement's multi-channel video *Shift*, addresses the seeming impossibility of curtailing or halting the build up of nuclear weapons. "Can humans and nuclear weapons co-exist?" they ask. "Can the systems of global self-destruction be propitiated, disentangled and dismantled?"³¹ In the view of increasing proliferation of fissile materials, global terror threats and nuclear rogue states, the prospect is bleak. If it is any indication: in 2015 the Bulletin of Atomic Scientists moved the 'doomsday clock' to three minutes to midnight, a point where it had not been since 1984 and 1949, stating: "The probability of global catastrophe is very high, and the actions needed to reduce the risks of disaster must be taken very soon."³² The message could not be clearer.

Jan Dirk ('JD') Mittmann (b.1968) grew up in West Germany during the nuclear arms race. He has a MA in History and Political Science from the Technical University Berlin, and a Graduate Diploma in Film & TV and Graduate Certificate in Indigenous Arts Management, both from the Victorian College of the Arts, University of Melbourne. He is a former journalist, award-winning content producer and documentary filmmaker. For over ten years he has worked in the community, commercial and public art sectors. He is Curator and Manager of Collections at Burrinja.

FOOTNOTES

- 1 Tsuchida, Hiromi. *Hiroshima*, Tokyo 1985, p.5
- 2 McCaughey, Patrick. *Why Australian painting Matters*, p.199
- 3 Clarke, Jane. *Nolan – Landscapes & Legends*, p.109
- 4 *The Sun*, Sydney, 31 March 1950
- 5 Gaynor, Andrew. *An odd, angry protest: Sidney Nolan's images of contemporary political events*. Unpublished thesis, University of Melbourne, 2007
- 6 Smith, Geoffrey. *Sidney Nolan – Desert and Drought*, p.94
- 7 Hawley, Janet. *Leaving the Landscape*, in the *Good Weekend*, *The Sydney Morning Herald*, 9 May 1998
- 8 Thomas, Daniel. *Hawkins, Harold Frederick (1893–1977)*, *Australian Dictionary of Biography*, National Centre of Biography, Australian National University – <http://adb.anu.edu.au/biography/hawkins-harold-frederick-10457/text18547>, published first in hardcopy 1996, accessed online 29 January 2016
- 9 Chanin, Eileen, Steven Miller, *The Art and Life of Weaver Hawkins – Weaver Hawkins Memorial Retrospective Exhibition*, 1995, p.62
- 10 The first major reactor accident occurred at Three-Miles-Island, Harrisburg, Pennsylvania, in 1979
- 11 James, Rod. *Nuclear (R)Age, The Bomb in Australian Art*, Clayton, 1993, p.10
- 12 NATO's 'Double Track' strategy paid off with the 1988 INF Treaty (Intermediate Nuclear Forces), which regulated the removal and destruction of launcher and rocket motors, but not the elimination of nuclear warheads.
- 13 Kelly, Paul. *How to Make Gravy*, p.304
- 14 Mattingley, Christobel. *Maralinga's Long Shadow: Yvonne's Story*, Melbourne 2016, p.43
- 15 Mattingley, Christobel. *Maralinga's Long Shadow: Yvonne's Story*, Melbourne 2016, p.65
- 16 Mattingley, Christobel. *Maralinga's Long Shadow: Yvonne's Story*, Melbourne 2016, p.67
- 17 Lee, Heather. In *Silent Reconciliation*, exhibition brochure, Mildura Arts Centre, 2009
- 18 Brown, Jonathan Kumintjarra. In *Maralinga – Heart of the Country*, directed by Rick Cavaggion, documentary, 12 mins, Adelaide 1996
- 19 Mattingley, Christobel (ed.). *Survival in our own land – 'Aboriginal' experiences in 'South Australia' told by Nungas and others*, Adelaide 1988, p.92
- 20 Recorded by Margo Birnberg, Ernabella, December 2015
- 21 Mattingley, Christobel (ed.). *Survival in our own land – 'Aboriginal' experiences in 'South Australia' told by Nungas and others*, Adelaide 1988, p.92
- 22 Lester, Yami. *Yami – The autobiography of Yami Lester*, Alice Springs 1993, p.174
- 23 Downhill, Kate. Artist statement
- 24 Maidment, Brian. In *Chain Reaction – Kate Downhill*, Macquarie University, Sydney 2013, p.9
- 25 Ramage, Hugh. Artist statement, 2015
- 26 Bongiorno, Frank. *The Eighties – The Decade that transformed Australia*, Collingwood 2015, p.119
- 27 Laing, Rosemary. Studio notes, November 2013
- 28 Norrie, Susan. Artist statement, 2004
- 29 Broderick, Mick. Artist statement, May 2016
- 30 Gleeson, James. *Realism with a Difference*, *The Sun-Herald*, 6 February 1972, p.102
- 31 Boylan, Jessie and Dement, Linda. Artist statement
- 32 <http://thebulletin.org/timeline>

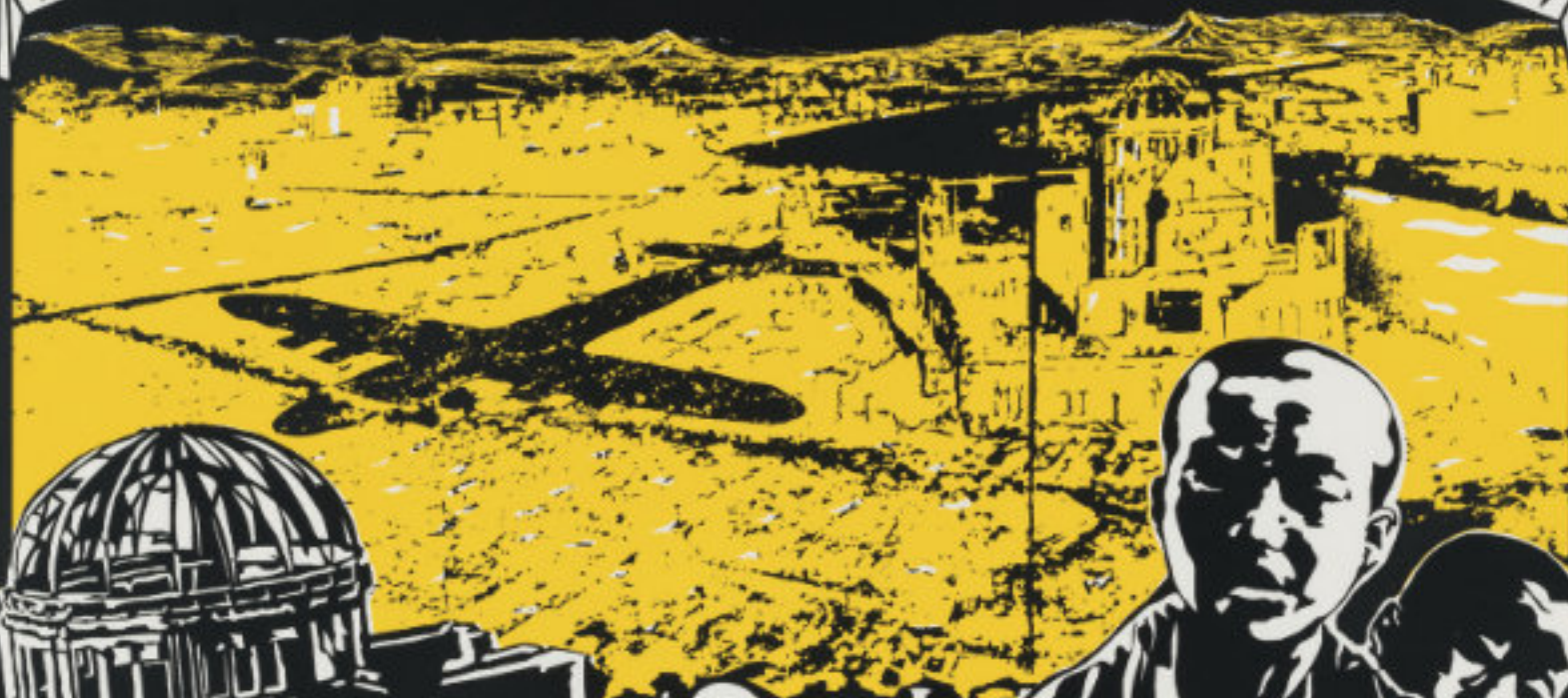
ADi
(Australia, b.1973)
In Anticipation of Marcoo
2016
oil on canvas
89 x 41 cm in 18th century
French gilt frame
Courtesy of the artist
© the artist



HIROSHIMA

40 YEARS

広島後四十年



PEACE
MEMORIAL



'88 P.D. TIN SHEDS

ATOMIC POP MICK BRODERICK

Since the end of World War II the utopian promise and apocalyptic threat of atomic energy has never been far from the Australian cultural imagination. This essay provides a short overview of some of the popular manifestations of this paradoxical nuclear binary – the bountiful ‘peaceful’ atom versus the dread of nuclear annihilation – circulating throughout Australia’s Cold War zeitgeist. It is not meant to be comprehensive, but rather indicative of the scope and type of pop culture reflecting Australian nuclearism throughout the era.¹

1940s–50s

Initial reports of the atomic bombings of Hiroshima and Nagasaki were mostly met with jubilation in the Australian mainstream press. The common sentiment was that a brutal foe in war had faced its ultimate punishment. In late 1945 reporters described the Aussie POWs who had miraculously survived the Nagasaki atomic explosion, most of whom worked as slave labourers less than 2km from the hypocentre, and were recuperating in the Philippines or on their way to be demobbed back home. Within a year, however, Australian soldiers returned to the Pacific, this time as occupation troops (1946–52), comprising the largest contingent of the British

Commonwealth Occupation Force (BCOF), stationed in Kure and responsible for the Hiroshima Prefecture. During the seven-year occupation, Australian newspapers, magazines and newsreels regularly featured stories about the diggers in Japan, some of whom had brought over wives and children to the specially constructed Rainbow Village for married foreign servicemen.

Eighteen months after the American twin A-bomb explosions at Bikini Atoll in the South Pacific, a new comic book was launched in Australia. *Captain Atom* was produced by Atlas Publishing in January 1948 and ran 64 issues until 1954. At its peak the comic outsold imported *Superman* and *Batman* comics. Captain Atom’s muscular, nuclear-powered prowess – drawn from being exposed to a Bikini atomic blast – entertained children with feats of superhuman strength and ability. Derivative of Captain Marvel, Captain Triumph and Superman, the superhero could fly at supersonic speed, used x-ray vision and super-sensitive atomic-radar power enabling him to pick up radio signals. He could produce intense, radiant heat from his body, discharging bolts of atomic energy from his hands, and exhale incredible blasts of air due to his atomically powerful lungs. Throughout the series Captain Atom was also known as the Atomic Warrior, Atom Man or Atoman.

Replete with evildoers crudely drawn from recent Axis foes (Germans and Japanese), these communists, thugs, crooks, spies and mad scientists were frequently caricatured in wartime racist propaganda style, e.g. slanty-eyed and buck-toothed Asians or goatee-wearing Teutons and thick-browed Slavs. Such stereotypical cold war imagery was not confined to the comic narrative itself. Interspersed between later editions were full-page advertisements for “Nigger Boy” licorice with coarsely



CAPTAIN ATOM WAS PRODUCED BY ATLAS PUBLISHING IN JANUARY 1948 AND RAN 64 ISSUES UNTIL 1954. AT ITS PEAK THE COMIC OUTSOLD IMPORTED SUPERMAN AND BATMAN COMICS.

inked images of Rustus and Sambo chewing on licorice, enticing readers to spend “only a penny” and “just dream the day away”. As with American and British wartime radio serials, Australian comic readers could join secret clubs in order to obtain a cadet membership with loyalty rewards. Fans of the *Captain Atom* comic book could receive a magic luminous ring in the shape of the eponymous hero’s helmeted face, complete with “ruby” eyes.² Other Australian Cold War comics embracing nuclear adventure in the same vein included *The Phantom Knight*, *Secret Agent X-9* and *Space Ace*, featuring atomic powered rockets, radiation ray guns and interplanetary nuclear conflict.

Pam Debenham
(Australia, b.1955)
Hiroshima 40 years 1985
screen print on paper
51 x 76 cm
Courtesy of the artist
© Pam Debenham
Image courtesy of National
Gallery of Australia, Canberra

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During this period a postwar boom emerged in exploration for uranium, essential for fueling infant research into nuclear applications, and doubly vital for the West's development of industrial scale atomic weapons manufacturing. Documentaries on Rum Jungle (NT) and Radium Hill (SA) mines were shown in city and suburban movie theatres while magazine features extolled the uranium mine bonanza for intrepid prospectors using geiger counters in the outback. Elsewhere, Australian troops joined American allies in Korea alongside other UN forces while Macarthur, Truman and Eisenhower publicly or privately all entertained the idea and actually threatened to use atom bombs against communist forces.

Also in the late 1940s the Chifley Labor government agreed to establish a long-range weapons establishment in South Australia. A new, remote 'oasis' town – Woomera – was constructed for scientific boffins, military, security personnel and their families. The appropriation of this Aboriginal term, Woomera, describing a wooden implement to help propel spears was widely lauded as entirely apt for the new facility, dedicated as it was to test-firing missiles, rockets, jets and drones. Some media commentators invoked a clash of civilisations in the central Australian desert, where nomadic peoples were displaced by an emerging Anglo-Australian military industrial complex. Newspaper cartoonists lampooned this development with a stone age meets the space age or atomic age trope. Throughout the Cold War, envelopes, official stationery and first day covers celebrating successive Woomera technical milestones were often adorned with imagery juxtaposing Aborigines with rocketry.



SHUTE'S NOVEL DESCRIBED HOW A WAR BETWEEN SUCH LOCALISED COMBATANTS SOON ESCALATED INTO A GLOBAL NUCLEAR CONFLICT, TERMINALLY POISONING THE PLANET. IT WAS A SOBERING AND STOIC RENDITION OF HUMAN FRAILTY AND HUBRIS IN THE ATOMIC AGE PLAYED OUT IN THE DYING AND DISINTEGRATING SOUTHERN CAPITAL CITY OF MELBOURNE.

After three atomic detonations of British atomic devices at the Monte Bello Islands (Operation Hurricane) and at Emu Field in central South Australia (Totem 1 and 2) a similar inter-governmental agreement was struck by Prime Minister Robert Menzies to establish a nuclear proving ground at Maralinga. The village of Maralinga and the swathes of surrounding gazetted land was excised as a permanent nuclear testing facility, as had occurred under the Woomera Prohibited zone only a few years earlier. A series of atmospheric nuclear explosions at

Maralinga (1956–57) and so-called 'minor' radioactive trials of non-critical nuclear components contaminated vast areas of land, locations still being traversed by the traditional owners, despite government efforts to clear out Aborigines. Ironically, it was the pioneering outback surveyor Len Beadell, tasked with opening up the bush for the atomic tests and rocket trials, who adorned the Emu mess hall with a large mural of an Aboriginal man. Beadell also regularly produced greeting card caricatures in his spare time. With highly punitive D-notice restrictions censoring media reportage, only officially sanctioned news reached mainstream audiences, except for a small but growing international controversy concerning fallout from nuclear weapons tests.

The most significant cultural response to the local and global impact of the fallout debate came with the publication of *On the Beach* by British expatriate author Nevil Shute. The accomplished writer settled with his wife and two daughters in Langwarrin, south-east of Melbourne, during the mid- to late-1950s.

As a retired aviation engineer who had worked on secret weapons development during WWII, Shute was uniquely connected with British and Australian military-political elites. His novel was a simple elaboration of the potential for nuclear proliferation to continue unchecked until even the minor nations (e.g. Albania) owned powerful thermonuclear weapons. These weapons were laced with cobalt in order to render an enemy territory lifeless from exposure to extremely dirty, long-lived fallout. Shute's novel described how a war between such localised combatants soon escalated into a global nuclear conflict, terminally poisoning the planet. It was a sobering and stoic rendition of human frailty and

hubris in the atomic age played out in the dying and disintegrating southern capital city of Melbourne.

Shute's book was hugely popular, serialised in newspapers around the world and adapted for radio, including the ABC. The movie rights to the novel were bought by powerful independent American producer-director, Stanley Kramer, who brought his cast and crew to Australia in 1959 to film on location. Both book and film captured the imagination of a generation, depicting individual and global suicide resulting from the intrinsic instability of an escalating nuclear arms race.

1960s

By the 1960s the allure of atomic energy and nuclear weapons began to be contested, if not somewhat wane, in popular culture. At the time Australian television was awash with imported American and British programming, often depicting the perils of nuclear science and technology. Despite children's shows such as *Disneyland* and the *Mickey Mouse Club* extolling the virtues of "our friend the atom" in nuclear-powered Tomorrowlands of the future, most television fare of the era entertained episodic scenarios involving secret agents attempting to thwart nuclear terrorists, or the theft of atomic secrets (e.g. *Dangerman*, *I Spy*, *The Man from UNCLE*). Others casually depicted atomic energy powering futuristic cars, laboratories, submarines, space craft or the perils of future nuclear war (e.g. *Dr Who*, *Thunderbirds*, *The Jetsons*, *Voyage to the Bottom of the Sea*, *The Time Tunnel*, *Batman*, *Star Trek*). However, all of these productions presented such technologies as inherently problematic with the dangers of radiation and contamination always imminent and close by. A child of

Luke Cornish (ELK)
(Australia, b.1979)
Wake Up to the Stink
2009
spray enamel on board
141 x 87 cm
Private Collection
© Luke William Cornish/
Licensed by Viscopy,
2016



ATOMIC POP MICK BRODERICK

the Cold War growing up in Australia could be thrilled by saboteurs destroying a central Australian nuclear reactor, sending a deadly plume of radiation towards Melbourne (*Thunderbirds*), or watch a race against time by special agents to prevent a terrorist plot to contaminate a “clean” nuclear bomb test in the outback run by the Australian military (*The Champions*).

Few domestic dramas appeared regularly on Australian commercial television until Hector Crawford broke the drought with his long-running *Homicide* police series. Following up this success, Crawford created the Cold War espionage series *Hunter* (1967–69). *Hunter* was a domestic spy series filmed across Australia at stunning locations including the Gold Coast, Woomera and the Snowy Mountains. *Hunter* was an extraordinarily ambitious program that challenged the prevailing dominance of imported content.

Hunter's success can perhaps be attributed to its self-conscious representations of Australian intelligence operatives confronting external threats or unmasking of subversive domestic infiltration. These themes enabled local television scriptwriters and directors to represent mid-to-late 1960s Australia as an evolving nation at a time of radical socio-political and cultural change.

As an index of Australian cold war development, *Hunter's* televisual gaze traversed a range of nation-building projects that were imagined targets for espionage and sabotage, such as a fictional missile being launched from Woomera and the Snowy Mountain Hydro facility destined for nuclear destruction by foreign agents. The Australian Security Intelligence Organisation (ASIO) briefed Crawford's team on relevant matters and cooperated in order to avoid the producers embarrassing

ASIO or prejudicing its public image.³ Declassified Cold War defence and cabinet documents now reveal how close Australia came to developing its own nuclear deterrent during the period, as well as uncovering substantial programs of domestic surveillance targeting a broad section of the general community, including anti-nuclear protesters rallying across the country, ongoing from the 1950s.⁴

AUSTRALIAN TELEVISION EMBRACED A RANGE OF NUCLEAR THEMES IN THIS DECADE, FROM THE HISTORICAL AND CONTEMPORARY, TO THE SPECULATIVE AND FUTURISTIC.

One-off Australian TV drama also considered nuclear themes. *Silo 15* (1969), starring Jack Thompson in an early role, was set at an undisclosed US-Australian defence facility where two missile operators occupy a subterranean ICBM launch complex. A nuclear alert erupts and the pair argue over orders to prepare their rockets for immediate launch, debating their moral and ethical obligations in the nuclear age. Produced and broadcast at the time of the controversial Australian-American alliance during the Vietnam War, *Silo 15* raised concerns about soldiers blindly following orders that could lead to Armageddon.

The same year Russell Morris' acid rock single *The Real Thing* (1969) topped the charts. Written by Johnny Young, the song was produced by Ian 'Molly' Meldrum, inspired by Beatlesque techniques to meld electric distortion with foldback and a Hitler Youth song at the finale. *Real Thing* reaches its epic and disturbing crescendo as an air raid siren wails. The German children

chant in unison with “Sieg heil!”, followed immediately by a booming and protracted nuclear explosion. This atomic frisson sent shivers down the spines of radio listeners and TV viewers who watched Morris perform solo on *Uptight*, accompanied by director Robbie Weekes' psychedelic music video montage.

1970s

Before the renaissance of Australian cinema in the mid-1970s an offbeat exploitation film depicted the consequences of an atomic attack on central Melbourne. Released in 1970 the low-budget film *Beyond Reason* depicts a group of psychiatric staff and their libidinous mental patients trapped inside a hospital fallout shelter. When they eventually escape and emerge into the impressively filmed urban holocaust, the remnant doctors are considered patriarchic oppressors and killed by the survivors, who are left to stumble forward into an uncertain new world order.

Australian television embraced a range of nuclear themes in this decade, from the historical and contemporary, to the speculative and futuristic. One early Australian TV series to be filmed in colour was *Barrier Reef* (1970–72) for the 0/10 network. Shot on the large *New Endeavour* yacht, a corporate crew of scientific investigators operate a secret nuclear powered sensing apparatus MINUS 5 as contractors to government or private enterprise. Several episodes feature atomic themes, including encountering radioactive fish and uranium smugglers, the crew falling victim to errant experimentation and radiation sickness, and the salvaging of *Apollo 13's* discarded radioisotope canister before it could contaminate the Great Barrier Reef.

In a two-part episode of *Spyforce* (1971–73) Australian intelligence agents (played by Jack Thompson, Peter Sumner and Kitty Wild) are sent to New Guinea at the request of the US military to extract a pacifist physician due to his involvement in the *Manhattan Project*.

By the mid-1970s the ABC commissioned a number of short-run science fiction series, especially for children. *Alpha Scorpio* (1974) featured two university students vacationing in coastal Victoria where they encounter extra-terrestrials assuming human identity and security agents trying to recover two tonnes of missing deuterium oxide, diverted from Australian atomic energy projects. Two years later the ABC Children's Unit produced *Andra* (1976), set two millennia into the future after a global nuclear war has devastated the planet's surface and survivors live in a subterranean metropolis.

Graphic arts during the 1970s frequently adopted anti-nuclear positions in posters strewn across Australian cities. The Earthworks Poster Collective drew from British counter culture and San Francisco psychedelia to create multiple works that mocked the media and Australia's growing contribution to the global uranium and nuclear industry.

Chips Mackinoly's faux *Daily Mirror* billboard (1977), for example, replicates the tabloid newspaper stand with an ironic "official" headline suggesting "uranium income to finance H-bomb shelters", whereas Colin Little's post-Three Mile Island reactor meltdown poster (1979) satirises the Americanisation of local culture by wedging an Australia-shaped beef patty inside a burger bun, playfully asking "do you want a Nuclear Australia in a HARRISBURGER with the lot?".

Similarly, a broad range of simple but often witty and



Kate Shaw
(Australia, b.1969)
Charcoal, UK: Maralinga
2012
acrylic and resin on board
120 x 240 cm
Courtesy of the artist
© the artist

ATOMIC POP MICK BRODERICK



Pam Debenham
(Australia, b.1955)
No Nukes No Tests
1984
screen print on paper
76 x 51 cm
Courtesy of the artist
© the artist
Image courtesy of National
Gallery of Australia, Canberra

amusing Australian anti-nuclear protest badges were ubiquitous in the 1970s and 80s, extolling solar over nuclear power, an end to the nuclear arms race and a ban on uranium exports.

1980s

This decade was undoubtedly the most prolific Cold War decade for Australian anti-nuclear audiovisual culture. Echoing heightened public activism which saw hundreds of thousands of Australians taking to the streets in annual protest marches, the striking screen-print graphics of the 1970s were re-energised and flourished. Redback Graphix and Tinsheds created compelling and colourful campaign artwork that adorned Australian capital city cafés, university and college campuses, municipal libraries and public spaces. Arresting images by artists such as Michael Callaghan, Pam Debenham and Bob Clutterbuck included posters that urged “No More Hiroshimas”, a “Nuclear Free and Independent Pacific”, and to “End Uranium Mining”.

Impressive socio-political documentaries reached large audiences with theatrical cinema screenings and broadcast on public television. *Backs to the Blast* (1981) and *The Secret Country* (1985), for example, respectively recounted the effects of the British nuclear tests on service personnel and indigenous communities. *Home on the Range* (1982) and *Allies* (1983) critiqued the secrecy surrounding the American military and intelligence bases at North West Cape, Pine Gap and Nurrungar, operating without Australian oversight despite their assumed status as primary nuclear targets. Commercial television occasionally entertained narratives that played on nuclear fears, such as the telemovie, *Deadline* (1982),

which depicts an American journalist (Barry Sullivan) investigating a large, seismic tremor in the outback, suspected to be caused by a nuclear detonation. When he discovers extortionists have hidden another nuclear device in Sydney the reporter races against time and interfering ASIO agents to help find and disarm the bomb.

It was the continued boom in Australian feature drama that enabled filmmakers to explore nuclear issues throughout the decade. Produced in the immediate wake of the Three Mile Island reactor meltdown, Ian Barry’s *The Chain Reaction* (1980) is a remarkably prescient thriller. The film depicts a government-supported radiological waste treatment facility experiencing a “one in ten million” chance “excursion” which releases nuclear waste, flooding into the giant Australian artesian basin. The plot anticipates the leaking of radioactive contaminants into highly sensitive and protected Australian environmental areas, such as the leaks at the Ranger uranium mine which is adjacent to the Kakadu National Park World Heritage site. This unique wilderness has been subjected to over 200 environmental breaches since 1979 involving several million of gallons of toxic waste.⁵

In the film’s fictional scenario a multinational corporation conspires to cover-up the radiological catastrophe, alongside its own clandestine medical experimentation, a scenario that quickly moved from the realm of science fiction in the 1980s towards certainty once Cold War declassifications of nuclear accidents, containment breaches and systemic international human radiation experiments were widely reported.⁶

Nuclear themes also attracted tangential though often important treatment. In John Duigan’s contemplative inner city drama, *Winter of Our Dreams* (1981) a

despondent sex worker (Judy Davis) turns her back on prostitution to join with a group of women in solidarity campaigning against uranium mining and nuclear weapons.

Only a few years later Duigan returned more pointedly to the topic with his absurdist, and deliberately theatrical nuclear nightmare, *One Night Stand* (1985). The film features a quartet of adolescents trapped inside the Sydney Opera House during a northern hemisphere nuclear attack.

IMPRESSIVE SOCIO-POLITICAL DOCUMENTARIES REACHED LARGE AUDIENCES WITH THEATRICAL CINEMA SCREENINGS AND BROADCAST ON PUBLIC TELEVISION.

As the teens seek shelter inside the venue a radio announcer describes how nuclear devices have struck the US installations at Nurrungar, Pine Gap and North West Cape, and that a fourth device hit south of the Sydney. The latter reference presumably refers to the research nuclear reactor at Lucas Heights.⁷ The city is bathed in an uncanny blood-red glow as the protagonists flee underground, finding temporary refuge at the nearby Martin Place railway station, as ominous booms and tremors from above rumble through the subterranean metro. The film ends with a freeze-frame on the adolescent protagonists as they wait for the anticipated atomic coup de grace on metropolitan Sydney.

The overarching plight of Indigenous communities in late cold war Australia was demonstrated in several films, including Werner Herzog's Australian co-production *Where the Green Ants Dream* (1984). European and

indigene cosmologies are shown in a seemingly irreconcilable conflict over uranium mining – white man's law and 'black fella' law. In part the film portrays Aborigines seeking Western legal recognition of their custodial responsibilities on lands threatened with mineral exploitation. The traditional owners warn of dire, indeed literally apocalyptic consequences if the dreaming of the green ants is disturbed by the extractive industries. The atomic age impacts on Aboriginal Australia are also central to Michael Pattinson's political thriller, *Ground Zero* (1987). Based loosely on the Royal Commission hearings into the British nuclear tests, the film depicts fictional ASIO and British MI5/6 agents trying to acquire secret film that shows not only the deaths of indigenous people from radiation exposure or fallout but possibly human experimentation.⁸

These films operated in sharp distinction from the populism of Paul Hogan and Peter Faiman's *Crocodile Dundee* (1986). In this domestic and international box-office hit the eponymous hero Mick Dundee cynically

Toni Robertson
(Australia, b.1953)
The Royal Nuclear Show – 6
1981
screen print, colour inks
on paper
77 x 51 cm
Donated through the
Australian Government's
Cultural Gifts Program
by Amanda Martin
Flinders University Art
Museum Collection
5024.006



ATOMIC POP MICK BRODERICK

dismisses an American journalist's questioning of his opinion about the nuclear debate, the arms race and indigenous land rights. "None of my business," he replies curtly, adding "who's gonna hear it out here?" before authoritatively asserting that Aborigines "don't own the land, they belong to it".

The cultural hang-over from Australia's 1983 America's Cup victory was depicted in Martha Ansara's *The Pursuit of Happiness* (1987), which dramatised the corrosive impact on families pursuing short-term economic profits from the globalised arms industry. Set in Fremantle, the film presented a middle-class family that gradually awoken to their domestic absorption into, and dependence upon, the transnational military-industrial economy. Quietly influenced by community activists (including then West Australian Nuclear Disarmament Senator Jo Vallentine) the film portrays the increasingly militant mother and teenage daughter advocating peaceful resistance and alternatives to the assumed security of not challenging the American nuclear umbrella.

Trans-Tasman concerns over the tripartite ANZUS arrangements were similarly evident in the Australia-New Zealand co-production of Vincent Ward's allegorical *The Navigator: a Medieval Odyssey* (1988). As plague is about to consume Europe a party of 14th century Cumbrian pilgrims mysteriously appear transported into late 20th century Auckland, where they are shocked by the both monstrous, Leviathan-like appearance of a nuclear submarine in the harbour and grim reaper televisual imagery of the AIDS epidemic. The film poetically raises the narrative parallels between the dark ages and end of the millennium concerns with apocalypse.

The international success of George Miller's *Mad Max* films spawned dozens of post-holocaust movies around the world. Punk aesthetics and the visual detritus of imagined post-holocaust survival was then everywhere in music videos, fashion and advertising.⁹ By the time the third feature *Mad Max: Beyond Thunderdome* (1985) was released – explicitly set after a nuclear war – the parched, antediluvian Australian outback had become etched into our post-apocalyptic, global imagination. Subsequently, the Australian desert inspired a range of dystopian futurist films shot here, for example: *The Time Guardian* (1987), *Salute of the Juggler* (1989), *Fortress* (1992) and *Tank Girl* (1995).

A similar display of punk sensibility informed Gary Keady's low-budget, glam rock-musical, *Sons of Steel* (1988). The musical comedy featuring a post-holocaust agent, Black Alice (in an outré performance by Rob Hartley), who is sent back in time to prevent the nuclear destruction of Sydney, caused ironically when protesters accidentally collide with a visiting nuclear-armed vessel. In contrast, post-punk aesthetics were nihilistically embraced in Ray Bosley's satirical *Smoke 'em if You Got 'em* (1988) where, instead of fearing nuclear holocaust, twenty-something year old Melbournians party inside a subterranean shelter, slowly succumbing to fatal radiation poisoning amid the sex, drugs and rock-n-roll.

Slightly less prolific than Australian cinema in reflecting nuclear themes during the 1980s was popular song. The influential, leftist bush/rock band Redgum performed *Nuclear Cop* on their album *Virgin Ground* (1980). The song belittled the complacent, political acceptance of uranium mining and the destruction of the environment under conservative coalition government

policies. The brassy, nasally lyrics by John Schumann sardonically bemoan the co-opting of Australians into a uranium economy championed by conservative politicians:

I used to be a farmer till my sheep all dropped
Doug Anthony made me a Nuclear Cop

Melt down, turn around, where do you hide?
Can't let your children play outside
Put your Geiger counter near your airtight door
Watch it jiggle and hear it roar

There's so much to celebrate
Living in Australia's uranium state
Parliament House is Leukemia Lodge
And standing at the door is a Nuclear Cop!

Following the success of Goanna's *Solid Rock* (1982), front man Shane Howard released *Common Ground*, from the *Oceania* LP in late 1984. Howard's folk rock ballad gently evokes concerns of nuclear dread, with "The atom splits ... When mushroom clouds hang overhead, we tuck our children into bed, saying 'this is what we've all been waiting for' ... when nations battles rise and fall, love walks slowly by the Berlin Wall".

Two years later on Paul Kelly's landmark double LP *Gossip* (1986), the singer-songwriter draws from testimony by two central Aboriginal victims both physically and emotionally traumatised by the British nuclear tests. In *Maralinga (Rainy Land)*, Kelly's acoustic guitar mournfully accompanies lyrics that attest to the cognitive dissonance experienced by these Aboriginal witnesses:



Toni Robertson
 (Australia, b.1953)
The Royal Nuclear Show – 3
 1981
 screen print on paper
 77 x 51 cm
 Flinders University Art
 Museum Collection
 Image courtesy of National
 Gallery of Australia, Canberra

ATOMIC POP MICK BRODERICK

My name is Yami Lester
I hear, I talk, I touch but I am blind
My story comes from darkness
Listen to my story now unwind
This is a rainy land
First we heard two big bangs
We thought it was the Great Snake digging holes
Then we saw the big cloud
Then the big, black mist began to roll
[...]
A strangeness on our skin
A soreness in our eyes like weeping fire
A pox upon our skin
A boulder on our backs all our lives
[...]
My name is Edie Millipuddie
They captured me and roughly washed me down
Then my child stopped kicking
Then they took away my old man to town
They said 'Do you speak English?'
He said 'I know that Jesus loves me I know
Because the bible tells me so'
This is a rainy land

Without doubt the most visible (and audible!) presence in Australian atomic popular culture dominating the 1980s was the highly kinetic and politicised rock band Midnight Oil. From the late 1970s and into the new millennium 'the Oils' consistently strove to raise the consciousness of audiences on issues of environmentalism, the colonial dispossession of Aborigines, agricultural and mineral exploitation, the dangers of nuclear technology via the uranium fuel cycle and its legacy, nuclear weapons

systems, and Australia's enmeshment in hosting American command, control, communication and intelligence bases.

Their landmark album *10, 9, 8, 7, 6, 5, 4, 3, 2, 1* (1982) – or simply *10 to 1* as it became popularly known – promulgated lyrics about nuclear war, the British nuclear tests, the atom bombings of Japan, the arms race and foreign bases on Australian soil in songs such as *Short Memory*, *Read About It*, *US Forces*, *Power and the Passion* and *Maralinga*. The band's official music videos were inventive, entertaining and often charged with nuclear culture references, such as the rapid montage of almost subliminal imagery, silently showing atomic weapons explosions, nuclear submarines, ICBMs and blast radii in the video clip for *Read About It*.

Written and recorded in Tokyo, the follow-up album, *Red Sails In The Sunset* (1984), maintained the discursive and thematic concern with global nuclearism. Key tracks such as *Minutes to Midnight*, *Best of Both Worlds* and *Harrisburg* continued to lyrically evoke the lunacy of Mutual Assured Destruction (MAD) and the dangers of civilian nuclear energy.

The band commissioned a Japanese montage artist, Tsunehisa Kimura, to create the album design – one of the most arresting pop culture images of the decade. The LP's cover renders Sydney Harbour empty and devoid of water. The northern entrance to the Harbour Bridge is destroyed and two massive impact craters replace the waterfront. A part-submerged, giant red orb of plasma engulfs Circular Quay, recalling atmospheric bubbles evident at the point of thermonuclear ignition, captured in ultra-slow motion by Atomic Energy Commission films. It is a nightmare snapshot, defying physics and



RED SAILS IN THE SUNSET (1984), MAINTAINED THE DISCURSIVE AND THEMATIC CONCERN WITH GLOBAL NUCLEARISM.

implausibly rendered on an album cover that sold over a quarter million copies.

The following year Midnight Oil released the EP, *Species Deceases* (1985), which remained at number one on the Australian charts for six weeks. Three of the four songs raised anti-nuclear concerns and the fourth, *Hercules*, named after the Australian air force troop carrier. It alludes to military power and presence in the Pacific, especially the nuclear testing throughout the Cold

War, which was continuing in the mid-1980s by French, American and British governments. *Blossom and Blood* conjures the tragedy of war, Japan's imperialism and the importance of memory as a means to confront militarism, especially in calling for the testimony of *hibakusha* to be preserved.

On the Oils's next album, *Diesel and Dust* (1987), the hushed, haunting track *Put Down that Weapon* raised the spectre of visiting nuclear powered ships and submarines, laden with MIRVed SLBMs capable of devastating an entire continent, stealthily entering Australian ports. The song challenges the assumption that national and international freedom can be preserved by Australia hosting these undeclared genocidal weapon visits, as the lyrics intone imagery of annihilating black rain and nuclear winter.

During the decade Midnight Oil also collectively organised and performed multiple benefit concerts, particularly for anti-nuclear causes such as Stop the Drop in 1983, and environmental groups. Lead singer Peter Garrett stood for the Australia Senate in 1984 as a member of the Nuclear Disarmament Party but was defeated due to the Labor government directing preferences to the conservative opposition away from Garrett. The Oils also donated many of the proceeds of albums and EPs to social justice groups fighting to preserve wilderness and halt uranium mining and established a charitable foundation to support other causes. Hence, the band created a unique and sustained presence within Australian popular and political culture, deploying their strident lyrics, driving music and energised public performances to raise social consciousness throughout the late Cold War period and beyond.

The 1990s and beyond

Australian pop culture's concerns with atomic themes did not end with the fall of the Berlin Wall in 1989 and the dissolution of the Soviet Union, events that signalled the end of the long Cold War. Numerous cultural artefacts continue to represent concerns over nuclear weapons, uranium mining, proposed toxic waste dumps and the impact of British atomic tests, Australian social media memes, indigenous hip-hop, public performance and visual arts continue to confront us with the catastrophic history and future threats of the nuclear age. Whether casting our eyes back to the colonial dispossession, contemplating politicians and lobbyists desperate to reanimate a moribund nuclear industry, or looking to the long future of containment and rehabilitation of our inherited radioactive legacies, Australian popular culture will embrace new modes and new forms of expression.

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FOOTNOTES

- 1 'Nuclear-ism' is a term deployed by psychologist Robert Lifton to describe a range of conflicting pathologies, collective and individual, such as silence, denial, numbing and worship or deification, to explain cultural responses to living in the nuclear age. Lifton, Robert Jay and Falk, Richard. *Indefensible Weapons: The Political and Psychological Case Against Nuclearism*, New York, Basic Books 1982
- 2 My thanks to historian and Australian comic blogger Kevin Patrick. For details of *Captain Atom*. <http://comicsdownunder.blogspot.com.au/search?q=captain+atom>
- 3 Blaxland, John. *The Protest Years: The Official History of ASIO 1963–75*, Sydney, Allen & Unwin 2015, p.70
- 4 One example of the copious ASIO surveillance footage of anti-nuclear/peace demonstrations can be found from the SBS TV series *Persons of Interest* (2014). <http://www.smartstreetfilms.com.au/persons-of-interest/film-gallery/176-aldermaston-march-brisbane-easter-1964-length-1-50>
- 5 Mudd, Gavin. *Ranger's toxic spill highlights the perils of self-regulation*, *Australian Mining*, 16 December 2013. <http://www.australianmining.com.au/features/rangers-toxic-spill-highlights-the-perils-of-self-regulation>
- 6 On popular culture's anticipation of international human radiation experiments. Broderick, Mick. *Nuclear frisson: Cold War Cinema and Human Radiation Experiments*. *Film/Literature Quarterly*, Vol.27, No.3 (1999): 196-201
- 7 This sequence runs from 51:32 – 51:52 mins and can be viewed at – <https://www.youtube.com/watch?v=sWNNEUdRJEw>
- 8 The film's concluding sequence 03:33 – 05:01 mins can be viewed at – <http://vimeo.com/105533967>
- 9 Broderick, Mick. *Surviving Armageddon: Beyond the Imagination of Disaster*, *Science Fiction Studies*, No.61, Vol.20, November 1993. <http://www.depauw.edu/sfs/backissues/61/broderick61art.htm>



Reginald Rowed
(Australia, b.1916, d.1990)
Rebuilding Hiroshima
1946
watercolour on paper
51 x 66 cm
© Australian War Memorial
AWM26220

AN ALARMING WILLINGNESS TO DO HARM DR TILMAN RUFF AM

When the first British nuclear weapon was exploded at Maralinga on 27 September 1956, I was a toddler, 18 months old, living in a South Australian Housing Trust home in the southern suburbs of Adelaide. Over the next 13 months, four of the seven nuclear explosions at Maralinga sent fallout over Adelaide. The highest contamination in Adelaide was recorded after the Kite explosion on 11 October 1956, and after the Taranaki explosion on 9 October 1957. The latter was almost twice as powerful as the bomb which destroyed Hiroshima; the Australian Radiation Laboratory estimated that it caused the highest level of population radiation exposure of any of the British nuclear tests in Australia.

At the age of 34, in the absence of any identified risk factors, I developed an aggressive cancer, requiring extensive surgery. Did my exposure to radioactive fallout from nuclear bomb tests as a young child have something to do with my cancer? Fallout from the British tests spread over the whole of the continent. Young children are 3 to 4 times more sensitive to the cancer-causing effects of ionising radiation than adults. Medical x-rays were my only other notable exposure.

There is generally no way to distinguish a cancer caused by radiation from one caused by smoking or chemical exposures or other factors, and most cancers have a number of interacting causes. Radiation is insidious for a number of reasons. It can't be seen or felt or smelt or tasted. Except for acute radiation sickness occurring following high doses, you can't feel it doing you harm. Long-term genetic damage and cancer typically manifest years, often decades, later. So many radiation victims cannot be personally identified. They melt into the crowd. These factors mean that effects of radiation are

often inadequately recognised or downplayed. However this does not make the people and families affected any less real, or less deserving of efforts to prevent suffering and premature death. In Australia and around the world there are millions of stories similar to mine.

This essay focuses on the nuclear weapons tests conducted in Australia; their global context; their health and environmental impacts; the ongoing needs of workers and affected communities for justice: recognition, care, monitoring and compensation; and for environmental clean-up, management and monitoring of test sites.

In it up to our eyeballs – nuclear-enmeshed Australia

While Australia does not possess nuclear weapons or nuclear power reactors, the nuclear history and enmeshment of our country run deep. Mining of radium and uranium commenced in South Australia about 1906. Australia is the only nation without nuclear weapons to have mined uranium for production of nuclear weapons by another state (the UK), which were then exploded on its own territory. Exports of Australian uranium to nuclear-armed states (China, France, Russia, UK, US and in the future possibly India) contribute to the production of materials (plutonium and highly enriched uranium) which can be used to make nuclear bombs. Radioactive waste poses intractable challenges to be kept safe and isolated from the environment and populations for geological timeframes.

Australian uranium is the source of much of the radioactive fallout contaminating Japan and the Pacific Ocean from the 2011 Fukushima nuclear disaster, still displacing over 170,000 people, and continuing to leak from the damaged reactors. Many of the traditional

custodians of the land from which the uranium is mined are deeply distressed by this consequence of mining on their land that proceeded despite their opposition.

Australia is the only member country of a nuclear weapons free zone, the South Pacific Nuclear Free Zone, which at the same time claims protection by nuclear weapons owned by another state. Australian facilities and personnel contribute to possible use of US nuclear weapons. The upshot is that the Australian government actively opposes a treaty to ban nuclear weapons. This stands in contrast to Australia's support for all the other treaties that prohibit and provide for the elimination of other types of indiscriminate and inhumane weapons – biological and chemical weapons, landmines and cluster munitions – all of them far less destructive than nuclear weapons.

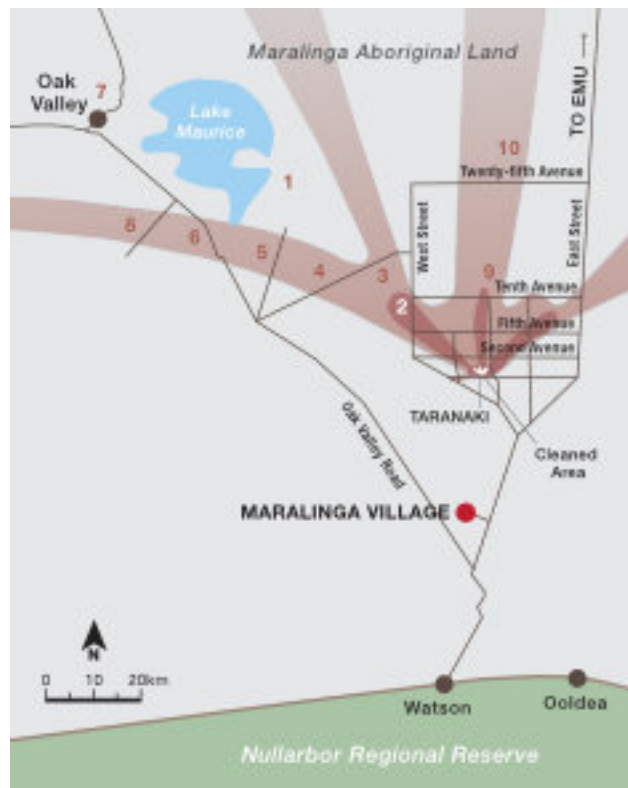
Nuclear test explosions – what for?

Between 1945 and 2016, 2056 nuclear explosions have been undertaken globally, almost all of them for the purpose of developing new nuclear weapons – making them more destructive, more compact and more deliverable. By contributing to nuclear weapons development, nuclear tests have fuelled the existential danger of nuclear war – identified by the World Health Organisation as the greatest immediate threat to human health and welfare.

Despite the conclusion of the Comprehensive Test Ban Treaty (CTBT) in 1996, which would prohibit nuclear explosions everywhere, the treaty has not yet entered into force. Since 1998, North Korea has been the only state to continue explosive nuclear tests.

Nuclear test explosions have been conducted in the

AN ALARMING WILLINGNESS TO DO HARM DR TILMAN RUFF AM



EXTENT OF PLUTONIUM CONTAMINATION

3 Numbers identify measurement areas

Plume contours (Am^{241} 1 kBq/m²)
Plume boundaries are based on this and previous ARL studies and are indicative only.

Plume contours (Am^{241} 0.1 kBq/m²)
Inferred directions of the major plumes are based on the present measurements, and are indicative only.

Source: MARTAC 2002

atmosphere, on the Earth's surface, underground, underwater, and in space. All nuclear explosions have similar physical and biological effects. For practical purposes, it is useful to divide them into two categories: atmospheric, surface, space and underwater tests, usually termed 'atmospheric' because they release radioactive fallout directly into the air and water; and underground tests, where radioactivity is mostly retained underground, with long-term risks of leakage and groundwater contamination. However, all underground tests have leaked radioactive tritium into the atmosphere, and some vented explosively. The British nuclear tests in Australia were all atmospheric. Many were 'groundbursts', meaning the fireball touched the ground, sucking up soil and debris, increasing the radioactive fallout.

Every phase of nuclear weapons production, development and deployment beginning with mining of uranium, involves health and environmental hazards. Nuclear tests have caused the largest human releases of radioactivity, leaving a legacy of ongoing environmental and health harm.

The peoples of the Pacific region have been caught up in the nuclear age from its beginnings, as generally without their knowledge or consent, their lands and seas have been used for the development, testing and deployment of nuclear weapons by distant powers – France, UK and US. This has impacted their health, their homelands, and their future. All nuclear test programs were claimed at the time to have no significant adverse health and environmental consequences.

Frequently they were imposed on rural, minority, disenfranchised and colonised peoples. Governments have been ready to accept harm to their own populations

in the name of enhancing their national security; they have been even more willing to harm others: Soviet nuclear tests were conducted in Kazakhstan and in the remote Arctic archipelago of Novaya Zemlya, home to the minority Nenets people; most US nuclear tests were conducted in the Marshall Islands in the central Pacific or in land of the Western Shoshone people in Nevada; Chinese nuclear tests were conducted at Lop Nur, home to the Uyghur minority; the UK undertook its nuclear tests in Australia, in the desert lands of the Anangu Pitjantjatjara and Maralinga Tjarutja people; and its larger thermonuclear (hydrogen bomb) test explosions were conducted in its then Pacific territory of the British Gilbert and Ellice Islands Colony (Malden and Christmas Island); France used its then colony Algeria, until forced by a rising independence struggle to relocate to its colony of French Polynesia (Moruroa and Fangataufa), the home of the Maohi people.

Attitudes of those conducting the test explosions often differentiated between "civilised" and "primitive" people, as shown by a British report on radiation levels on Christmas Island: "the levels recommended by the ICRP (International Commission on Radiological Protection) would necessarily be exceeded ... (by about 15 times, however) only a very slight health hazard to people would arise, and that only to primitive people."¹

Australian personnel working on the British nuclear tests in Australia, and Fijian and New Zealand personnel (in the Pacific) performed more hazardous duties with less training, protection and radiation monitoring than their British counterparts. Yet no nation has extended compensation for exposure to its nuclear tests beyond its own citizens.



Yvonne Edwards
 (Pitjantjatjara, b.1950,
 d.2012)
Maralinga 2009
 acrylic on canvas
 30 x 40 cm
 Produced for *Maralinga*,
The Anangu Story
 by Yalata and Oak Valley
 Communities with
 Christobel Mattingley,
 first published by
 Allen & Unwin in 2009
 © Maralinga Tjarutja Inc.
 representing the Oak
 Valley and Yalata
 Communities, 2009

AN ALARMING WILLINGNESS TO DO HARM DR TILMAN RUFF AM

Radiation health effects: the more we know the worse it looks

A nuclear explosion produces an initial burst of neutrons and gamma radiation in the first minute; inducing transient radioactivity in the ground and other materials, and creating radioactive carbon-14 from nitrogen in the air. Ongoing gamma, beta and alpha emissions occur from hundreds of different radioactive isotopes produced, with half-lives varying from a fraction of a second to many millions of years. The long persistence of a number of important radioisotopes, the impossibility of recovering much of those dispersed, and the potential for leakage and dispersal from test sites, including underground ones, means that health risks will continue for future generations across hundreds of thousands of years. Radioactive fallout is not even, and was often inadequately monitored, with failure to identify 'hotspots', where radioactivity could be hundreds to many thousands of times higher than average levels.

Because it delivers energy in large packets which can alter the structure of atoms, ionising radiation has a high propensity to damage large complex molecules, like DNA, which largely define us, and are both our most precious inheritance and legacy for future generations. A dose of radiation lethal to a human being can contain no more energy than the heat in a sip of hot coffee. Acute radiation sickness occurs only after high radiation doses; however at any dose, radiation causes genetic mutations and increases the risk of most cancers and a variety of chronic diseases, such as cardiovascular and respiratory disease.

The more we learn about the health effects of ionising radiation, the greater the effects evident for a given

radiation dose. Standards for radiation protection have historically always been tightened over time, never slackened. The long-term follow-up studies of Hiroshima and Nagasaki *hibakusha* (nuclear bombing survivors) have provided the bulk of historic data on which radiation health risks have been estimated, and recommended exposure limits for workers and the public have been set. These have been shown to have multiple flaws which lead to underestimation of radiation risk. Powerful new studies have provided estimates more accurate and demonstrating greater risk than previously estimated. For example, a greater than doubling of leukemia risk has been identified for children living within 5km of a normally operating nuclear power plant.²

A large Australian study of cancer risk after CT scans (a special kind of diagnostic x-ray) in young people, involving more than 10 times the number of people exposed and 4 times the total radiation dose than the Japanese survivor data for low doses, has demonstrated a 24% increase in cancer in the decade following one CT scan delivering an average effective dose of only 4.5 millisievert (mSv, less than 2 years average background radiation), and 16% greater for each additional scan.³ Cancers occurred as early as two years after exposure. While new cancers will continue to occur through the life of exposed individuals, the risk for leukemia related to CT radiation was similar to that described among *hibakusha* over several decades, and the risk of solid cancer for a given dose of radiation over the first decade in the more powerful CT study was estimated to be 3.5 to 9 times higher than in the *hibakusha* studies.

New studies of hundreds of thousands of nuclear industry workers demonstrate greater than previously

estimated risks for leukaemia⁴ and cancer⁵, even at doses well within recommended occupational limits.

Women are about 50% more likely to develop cancer and about 40% more likely to die of cancer than men following the same radiation exposure; girls exposed under the age of 5 are 86% more likely to develop cancer than boys.

Children are substantially more sensitive to radiation damage than adults – exposures in infancy are 3.7 to 4.5 times more likely to lead to cancer than the same exposure at age 30.⁶ The risk of breast or thyroid cancer from ingesting strontium-90 or iodine-131 respectively, over a girl's first five years is greater than she will accumulate over her entire adult life. Hence the high priority to protect fetuses and young children, and girls and women, from avoidable radiation exposure.

For Indigenous people such as Pacific islanders and Aboriginal Australians in close physical contact with a natural environment contaminated by nuclear testing, traditional lifestyles and food sources are associated with increased radiation exposures. This adds further layers of jeopardy, dispossession and pressures on cultural well-being on top of the discrimination of Indigenous people being disproportionately put in harm's way by nuclear testing.

Global health impacts of nuclear tests

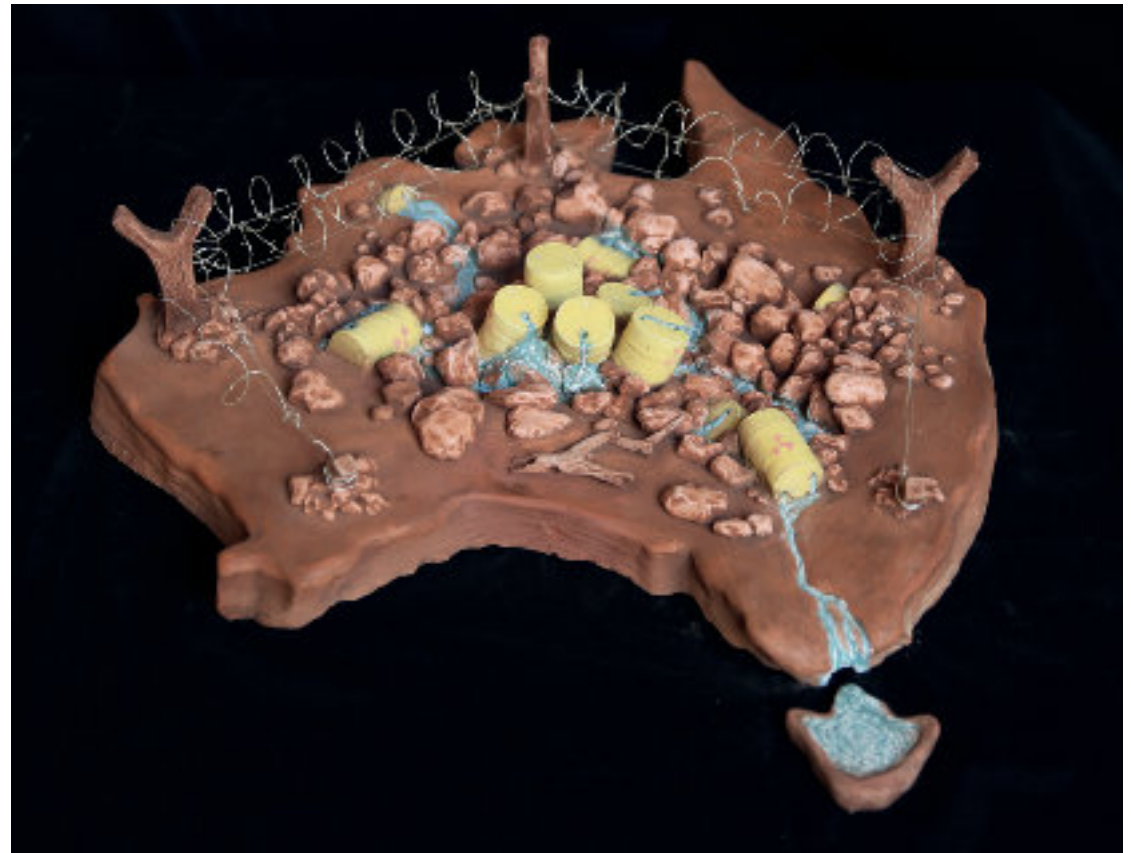
Even though the largest radiation doses associated with above-ground nuclear test explosions are borne by people living within hundreds of kilometers downwind, the largest collective radiation exposure is borne globally by the whole human population – much smaller exposures but to vast numbers of people. In 1991,

a commission established by International Physicians for the Prevention of Nuclear War (IPPNW) and the Institute for Environmental and Energy Research (IEER) used the United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) estimates of global population radiation exposures from atmospheric nuclear tests, and the then current radiation risk estimates, to estimate global cancer deaths from the test fallout.⁷ The study concluded that 430,000 additional cancer deaths world-wide could be expected by the year 2000, and the total excess cancer deaths over time were estimated to reach 2.4 million. In light of higher and more accurate recent radiation risk estimates, it is likely that the true long-term toll of nuclear test explosions is greater. Further, a comparable additional number of non-fatal cancer cases can be expected. These estimates take no account of past or future leakage of radioisotopes into the biosphere from underground nuclear test sites.

While these are large numbers of cancer cases and deaths, they will not generally be discernible because cancer is very common, these cases will occur over an extended period of time, be widely dispersed, and radiation-induced cancers have no specific signature. Most people who suffer these cancers will not be identifiable. This does however, diminish the need for accountability and feasible preventive and remedial public health action.

British nuclear tests in Australia

Between 1952 and 1957, the UK undertook 12 nuclear test explosions in Australia – three at the Monte Bello Islands in Western Australia; two at Emu Field, and seven at Maralinga, South Australia, up to 60kt in size – four



Warren 'Ebay' Paul
(Pitjantjatjara, b.1970)
Toxic Australia 2015
acrylic, clay and metal
10 x 50 x 40 cm and 1 x 6 x 7 cm
Courtesy of the artist
© the artist



Trevor Nickolls
 (Ngarrindjeri, b.1943, d.2012)
Revenge of the Stormboy
 2010
 acrylic on canvas
 142 x 151 cm
 Private Collection
 © Trevor Nickolls/Licensed
 by Viscopy, 2016

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times the explosive yield of the bomb that destroyed Hiroshima.⁸ In addition, about 600 “minor trials” were conducted at Emu and Maralinga. These involved predominantly chemical rather than nuclear explosions, and tested nuclear weapons components; dispersal of radioactive material; and the effects of impacts, fire and other accidents on nuclear weapons.

Australian Prime Minister Robert Menzies immediately agreed to a British request to host nuclear test explosions, without consulting even Cabinet colleagues, announcing: “It [an atomic weapon test] will be conducted in conditions which will ensure that there will be no danger whatever from radioactivity to the health of the people or animals in the Commonwealth.” His Minister of Supply Howard Beale claimed: “England has the bomb and the knowhow; we have the open spaces, much technical skill and great willingness to help the Motherland.” A high level of secrecy, obfuscation, denial and lies accompanied the testing program. It was not until a Royal Commission into the nuclear tests was established in 1984 that much of what occurred came to light.

The major tests produced varying fallout patterns which contaminated the whole Australian continent, including Adelaide, Melbourne, Hobart, Canberra, Sydney, Brisbane and Darwin. The Royal Commission found that the Australian Atomic Weapons Tests Safety Committee failed in many of its tasks, and “at times it was deceitful and allowed unsafe firing to occur”. Official fallout measurements were incomplete and concealed from the public and in many cases the government as well. The over 600 “minor trials” dispersed 24.4kg of plutonium with an estimated 50,000 fragments in an 18km major plume, with soil contamination recorded

up to 100km away; 101kg of beryllium; and 8083kg of powdered uranium. Most hazardous were the final series of Vixen B trials at Taranaki in 1960, 1961 and 1963 which dispersed 22kg of plutonium using high explosives. Only 900g of plutonium were repatriated to Britain.

AUSTRALIAN PRIME MINISTER ROBERT MENZIES IMMEDIATELY AGREED TO A BRITISH REQUEST TO HOST NUCLEAR TEST EXPLOSIONS, WITHOUT CONSULTING EVEN CABINET COLLEAGUES.

Those at highest radiation exposure risk were local Aboriginal people and pastoralists, who were not systematically evacuated or even informed; and over 16,000 workers directly exposed to the tests. Warning signs in English were usually incomprehensible to the Aborigines. Some were covered by local fallout. The ‘Black Mist’ radioactive fallout cloud from the Totem 1 test on 15 October 1953 at Emu contaminated people living in the community of Wallatinna – who heard the explosion – and nearby pastoral area of Welbourn Hill. At Wallatinna widespread vomiting and diarrhea, headache, skin and eye irritation consistent with acute radiation sickness very likely signified that radiation exposures (unmeasured) were high.

In May 1957 the Milpuddie family, as mentioned earlier in this publication, were found on the edge of the crater created by the Marcoo explosion (a groundburst) seven months earlier. The Royal Commission noted: “The affairs of a handful of natives counted little compared to the interests of the British Commonwealth of Nations.” The final Report was scathing about the appalling treatment of Indigenous Australians during

the tests. Aboriginal people were within and lived in prohibited zones during and for up to six years after tests; responsible officials demonstrated “ignorance, incompetence and cynicism”; failed to consider “their special vulnerability to radioactive fallout”; and decades of denial of access to traditional lands as a result of the British nuclear test program “contributed to their emotional, social and material distress and deprivation”.

Although the vast majority of the Australian population were exposed to relatively small radiation doses by the tests, as noted above the exposure of millions of people can result in significant health effects. The Royal Commission was unable to quantify these risks, but was clear that: “By reason of the detonation of the major trials and the deposition of fallout across Australia, it is probable that cancers which would not otherwise have occurred have been caused in the Australian population.”

Not so ‘minor trials’: cleaning-up or re-distributing?

The ‘minor trials’ were not minor in their consequences, but responsible for the bulk of persistent contamination. No Australian was present at any of the firings, and the Royal Commission described “persistent deception and paranoid secrecy”, with “British authorities embarked on a course of determined concealment of information from the Australian Government”.

A hasty British clean-up in 1967 (Operation Brumby) involved ploughing and disc-harrowing plutonium-contaminated areas, and shallow burial (under only 75mm of clean soil) of material from 180 hectares of heavily contaminated land, which was then declared “radiologically safe”. It led to a 1968 agreement between the British and Australian governments releasing Britain

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from liability for any future claims related to its nuclear tests. However, a 1984 study by the Australian Radiation Laboratory demonstrated far more extensive and severe contamination than had previously been revealed, proving invalid the information and hazard assessment on which the agreement was based.

The conclusions of the Royal Commission regarding the 'minor trials' include:

154. In view of the known long half-life of plutonium (24,000 years), the Vixen series of minor trials should never have been conducted at Maralinga.

163. The treatment of the plutonium-contaminated areas during Operation Brumby was inadequate, based on the wrong assumptions, and left the area in a more difficult state for any proper future cleanup.

169. The Maralinga Range is not acceptable in its present condition and must be cleaned up.

The Commission recommended that "Action should be commenced immediately to effect the clean-up of Maralinga and Emu ... so that they are fit for unrestricted habitation by the traditional Aboriginal owners as soon as practicable", and that "All costs of any future clean-ups at Maralinga, Emu and Monte Bello Islands should be borne by the United Kingdom Government" as the previous clean-up in 1968 was clearly inadequate and based on insufficient information.

A Technical Advisory Group examined options for management of the worst of the residual contamination at the test sites, reporting in 1988 on options ranging from fencing entire areas and maintaining an Australian Protective Services presence in perpetuity, to eliminating the need for fencing and surveillance through collecting and burying or diluting contaminated soil and other

materials. The cost estimates for the latter ranged up to A\$653 million (1988 dollars). In 1993, the British government agreed to contribute 20 million pounds ex-gratia (then about A\$45 million), in six annual instalments, effectively a repudiation of their continuing obligations regarding the toxic legacy for which they are responsible. An intermediate option was chosen, with a budget of A\$108 million, involving burial of the most contaminated retrievable material under at least 5m of clean soil, and placing warning fences (in the end only markers were used) around areas within which it was estimated that Aboriginal people could receive additional radiation doses of 5mSv/yr or more.

LESS THAN 2% OF AREAS CONTAMINATED AT THE TARANAKI 'MINOR TRIALS' SITE MEET THE CLEAN-UP CLEARANCE CRITERIA.

The basis for this criterion was that the annual risk of fatal cancer through exposure to contaminated material should not exceed one in 10,000 by age 50, estimated to be associated with additional exposure of 5mSv/year, covering 120km². Not only does this criteria not withstand the test of time, it is more fundamentally fraught. It is based in part on the current low life expectancy of Aboriginal people and assuming that this will continue. The cancer risk following any radiation exposure is cumulative and accrues over the rest of the life of the affected individual. The conventional (now dated) risk estimate is that the risk of fatal cancer across a population is increased by about one in 20,000 for each additional mSv of radiation exposure. Ongoing annual exposure of 5mSv would amount to a cumulative total

of 250mSv by age 50, roughly translating to a 1-in-80 risk of fatal cancer across a population. As discussed above, the best available current evidence indicates a cancer risk per mSv higher than this. Even the current ICRP recommendation is that for long-term residence in contaminated areas, radiation doses should be kept below 1mSv per year. It is therefore more appropriate that the boundary markers placed around the Taranaki plutonium plumes enclose 412km², corresponding with an estimated extra dose for permanent residence on the boundary of about 1mSv/year.

Engineer Alan Parkinson was appointed in 1994 to oversee the clean-up project, until he was removed for questioning the project's management. In extensive public material including his book, Parkinson has documented shortcomings, failures, and poor management of the challenging project; and a number of his concerns have been echoed by other knowledgeable scientists. He points out for example that a July 2001 government paper on safe storage of radioactive waste states that long-lived radioactive waste, whether considered low or intermediate level, is not suitable for near-surface disposal (less than 30m deep). He argues that the process of solidifying the major plutonium-contaminated sites through intense heating (in situ vitrification), agreed to be technically the best option, was inappropriately abandoned to cut costs. He is critical of highly plutonium-contaminated debris being buried in shallow trenches; and large quantities of contaminated soil blowing away during removal. He emphasises that the full extent of contamination remains unknown, citing identification of 40 'minor trial' ground zero sites, whereas UK records indicated 26, with at least three contaminated sites being found by accident.

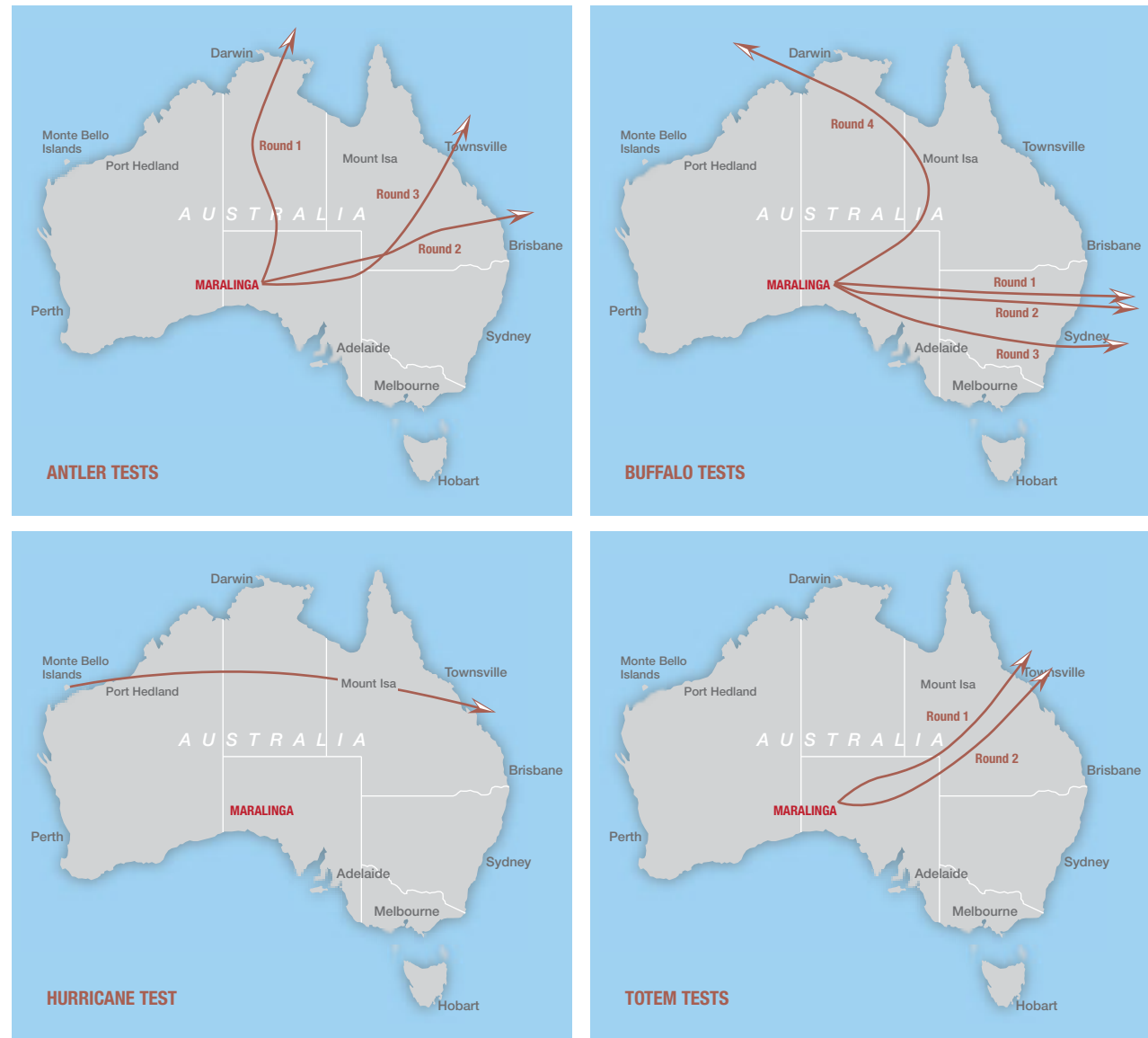
CLOUD TRAJECTORIES OF ATOMIC TESTS IN AUSTRALIA

Maralinga was nonetheless declared safe by federal Senator Nick Minchin in 2000 after this clean-up.⁹ Parkinson documents that a region of over 400km² remains unsuitable for permanent occupation with boundary markers that will last 50 years, while half the plutonium-239 will still be there in 24,400 years. Less than 2% of areas contaminated at the Taranaki 'minor trials' site meet the clean-up clearance criteria, and 84% of the plutonium contamination remains on the surface. The clean-up added only 0.5km² of land suitable for permanent habitation.

The Maralinga Tjarutja agreed that digging up soil contaminated by fine particulate plutonium in plumes north and west of Taranaki over 250km² would probably create an environmental disaster greater than the current plutonium contamination. A fundamental reality is that much of the harm done by wide dispersal of radioactive and other hazardous material cannot be undone, and no clean-up can render radioactive material safe or destroy it; only locate and manage it to be less accessible and pose less of a hazard.

In 2011, a report obtained under Freedom of Information documented that only a decade on, significant remediation has been required because of erosion of the massive Taranaki burial trench, and subsidence and erosion have exposed asbestos-contaminated debris at other burial pits. Indefinite monitoring of such contaminated sites is essential, especially in the context of climate disruption causing more frequent and intense extreme events including bushfires, storms, floods and extreme winds.

The Royal Commission recommended that: "It is appropriate and fair that after the loss of use of the



Source: The Report of the Royal Commission into British Nuclear Tests in Australia Vol 1

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lands the Aboriginal people be compensated.” In 1991, the Maralinga Tjarutja concluded negotiations with the Commonwealth which resulted in payment of compensation for 25 Aboriginal people affected by the tests – having been covered by fallout clouds, sent on perilous journeys by range patrol officers, or found in and forcibly removed from the test range. However, this includes only a small proportion of the Aboriginal people displaced, dispossessed and put in harm’s way by the tests. A further A\$13.5 million (of \$45 million sought) was agreed to be paid to the Maralinga Tjarutja in trust as compensation for 120km² of land contaminated for the next 240,000 years, and loss of connection with 480km² of land for decades.

Test workers

The nuclear test program was a massive industrial undertaking. Over 16,000 Australians, military and civilian, worked on the program, in addition to British personnel. Permissible radiation dose limits for whole body penetrating radiation for workers from 1950 were 5mSv per week, compared with current occupational limits averaging 20mSv per year and 1mSv per year for the public. Yet measures to comply with even the then current low standards were frequently deficient. Veterans describe lack of protective clothing and equipment, soldiers sent into ground zero the same day after an explosion, and unpressurised aircraft flying through fallout clouds. The Royal Commission described “departures, some serious and some minor, from compliance with the prescribed radiation protection policy and standards”. Despite no more than 4% of veterans having radiation film badge data available, external

exposures of up to more than 400mSv (following the first Monte Bello test) were documented.

The Royal Commission concluded that test participation had increased the risk of cancer among nuclear veterans, but given inadequate radiation monitoring, was unable to quantify the probable increase in the risk of cancer among the participants in the trial program. “Because of the deficiencies in the available data, there is now little prospect of carrying out any worthwhile epidemiological study of those involved in the tests nor of others who might have been directly affected by them.” It was recommended that a national register of nuclear veterans, Aborigines and other persons who may have been exposed to the ‘Black Mist’ or otherwise exposed to radiation by the tests should be compiled.

A belated Australian government-funded mortality and cancer study of test veterans was concluded in 2006.¹⁰ It confirmed that some servicemen had been intentionally exposed to radiation. Test workers were generally a relatively young population healthier than average, evident in their reduced mortality rates from causes other than cancer (‘healthy worker effect’). Despite the major limitations of a retrospective study with incomplete data undertaken 50 years after the nuclear tests began, it found statistically significant 23% higher rates of cancer and 18% higher cancer deaths between 1982 (29 years after the first test) and 2001 in test veterans compared with the general population. The study excluded about 7000 of the estimated 17,000 directly exposed persons. These were Aboriginal and other local residents exposed to fallout, and include some of those likely to have suffered the highest radiation exposures.

In 2006, 54 years after the tests began, the government

announced provision of free care for cancers to all test participants (military, public servant, and civilian); and in 2010 military veterans were extended the same benefits as veterans involved in operational service or service recognised as hazardous. However there is still no fully non-adversarial and readily available compensation for all test participants. Claimants have faced difficulties getting evidence – Maralinga hospital records are not available and dosage records are grossly incomplete and for reasons not explained, have been removed from the National Archives.¹¹ For survivors, time is running out. In 2013, it was estimated that only 2000 of the over 16,000 Australian test participants were still alive. Justice so delayed is justice denied.

Unethical research

The conduct of much research and monitoring of nuclear test fallout has been seriously deficient in ethical conduct, respect for human rights, transparency and accountability. An Australian example is an extensive program of sampling of human bones for strontium-90. From 1957 to 1978, hospital pathology services were paid to remove sometimes quite sizeable samples of bone from about 22,000 bodies at autopsy, particularly of infants and children. Samples were initially sent to the UK or US (under *Project Sunshine*) for testing; later they were tested in Australia. Permission was not sought from families, who were not aware of the program, nor that many remains were kept without their knowledge or consent for decades.¹² There are disturbing reports of families being denied access to their dead children’s bodies, or not being able to bury them after bones had been removed; their fetuses having been discarded or

buried anonymously. This study was one of approximately 4000 human radiation experiments conducted under the auspices of the US Atomic Energy Commission between 1944–1974, and was addressed by the Australian Health Ethics Committee only in 2002.

Fallout is forever: public health needs and humanitarian imperative

With mounting public concern over radioactive fallout, the Australian government in 1956 rejected hydrogen bomb trials for safety reasons. As a consequence, Britain had to take its hydrogen bomb development – involving explosions up to 3 megatons, 50 times the explosive yield of the largest nuclear test in Australia – to Christmas and Malden Islands in the central Pacific.

Radioactive discrimination regrettably does not lie solely in the past. For example, concerns have been raised that the Royal Commission into the nuclear industry established by the South Australian government in 2015, in its promotion of storage and disposal of used nuclear reactor fuel and other international radioactive waste in South Australia, may have an objective of promoting use of ‘sacrifice zones’ on Indigenous lands contaminated by fallout from British nuclear tests.

Humanitarian priorities in regard to nuclear test explosions include the need to prevent further nuclear tests; to minimise further radioactive leakage through long-term monitoring of contaminated sites, emplacement of feasible barriers to leakage of contaminants into the biosphere, and clean-up of contaminated debris; and to provide recognition, an official apology, ongoing care and fair compensation for workers and communities put in harm’s way. However it is essential to recognise the

unique nature, scale and persistence of nuclear impacts; the impossibility of comprehensive clean-up of radioactive materials dispersed into the atmosphere as fallout, or blasted into the sea or underground; and the impossibility of reversing the genetic and other health damage caused by radioactivity.

The two most recent treaties banning a class of intrinsically indiscriminate, inhumane weapons, the *2008 Convention on Cluster Munitions*, and the preceding antipersonnel *Mine-Ban Convention* contain ground-breaking provisions for victim assistance. The *Comprehensive Test Ban Treaty* (not yet in force) includes no such provisions. There is currently no international legal instrument that provides for victims and survivors of nuclear explosions to seek assistance towards the realisation of their rights, nor any specific international obligations to decontaminate or otherwise remediate areas affected by nuclear explosions. Both these aspects could usefully be addressed in the development of new legal measures for the prohibition and elimination of nuclear weapons.

At the second World Nuclear Victims Forum held in Hiroshima in November 2015, *Draft Elements of a Charter of World Nuclear Victims’ Rights* were developed which can provide a valuable reference for promoting

Jonathan Kumintjarra Brown
(Pitjantjatjara, b.1960, d.1997)
Black Rain 1995
acrylic and sand on linen
244 x 90 cm
Private Collection



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and protecting the rights and health of the survivors of nuclear explosions.¹³

Every human being alive carries in their body radioisotopes from nuclear test explosions, the largest collective source of radiation exposure by human hands. The victims and survivors of nuclear weapons production and testing around the world number in the millions. Nuclear test explosions have not only directly caused profound and persistent health and environmental harm which will extend across many generations, but have been integral to building the destructive capacity of the enormous nuclear arsenals that now constitute an unprecedented, urgent, existential danger to humanity and life on Earth. The humanitarian impacts of nuclear tests are severe enough, but they provide but a small glimpse of the largely irreparable devastation that would be wrought by nuclear war. The evidence of test impacts, and the lived human experience and compelling testimony provided by test survivors, can play an important role in informing and motivating humanitarian-based efforts to stigmatise, prohibit and eliminate nuclear weapons. The suffering caused by nuclear explosions worldwide demands justice for the survivors, and that nuclear weapons are eradicated before they claim more victims.

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Belinda Mason
(Australia, b.1971)
Maralinga 2012
3D lenticular holographic
photograph
60 x 90 cm
Courtesy of the artist
© the artist





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Opposite page:
Linda Dement
(Australia, b.1960)
Jessie Boylan
(Australia, b.1986)
Shift 2016
multi channel video
dimensions variable
Courtesy of the artists
© the artists

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Merilyn Fairskye
(Australia, b.1950)
***The Day After (Bridge,
The Polygon, Kazakhstan)***
2015
pigment print
36 x 53 cm
Courtesy of the artist
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JD Mittmann

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In partnership with



BLACK MIST BURNT COUNTRY

BURRINJA TOURING EXHIBITION

Black Mist Burnt Country is a national touring exhibition produced by Burrinja Cultural Centre in Upwey, Victoria. It commemorates the British atomic test series in Australia through the artworks from public and private collections by Indigenous and non-Indigenous artists with works across the mediums of painting, printmaking, sculpture, photography, music and new media spanning seven decades.

Set in the foothills of the Dandenong Ranges on the outskirts of Melbourne, Burrinja is a multi-faceted centre combining performing, visual and community arts with museum and collection management.

Burrinja's vision *building community through arts* was born out of community arts and activism in the late 1990s that led to the foundation of Burrinja as a cultural centre. It was named Burrinja (Yorta Yorta for 'star') in homage to Koorie artist Lin Onus who was a local Upwey resident.



burrinja.org.au



England has the bomb and the know-how. We have the open spaces, much technical skill and great willingness to help the motherland.

Howard Beale

Australian Minister of Supply, 4 May 1955

Merilyn Fairskye

(Australia, b.1950)

**The Day After (Tower,
The Polygon, Kazakhstan)**

2015

pigment print

33 x 50 cm

Courtesy of the artist

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Since Trinity, the first atomic test which led to the bombing of Hiroshima and Nagasaki, over 2,500 nuclear weapons have been exploded across the globe. Unbeknown to many, Australia too became a nuclear testing ground: for the development of British atomic weapons in the 1950s. *Black Mist Burnt Country* revisits the story and continuing legacy of the Emu and Maralinga tests through work by Indigenous and non-Indigenous artists from the last seven decades.

