The Earth Project - more than dirt

The Earth Project is a collaborative project bringing Aboriginal culture, Tasmanian soil science and artists together to create an emergent program of experiences that reveal the deep history and complex material substance of one of Tasmania's most significant sites, the Royal Tasmanian Botanic Gardens (RTBG).

While soil is the basis of all human life, it is rarely considered in our daily lives. Unsurprisingly, given its criticality to human survival, soil has acquired significant symbolic and cultural meanings.

The Earth Project explores soil as a provocation, engaging with Aboriginal embodied knowledge of country, western knowledge soil science, expanded notions of inheritance, nutrient, metabolism, alchemical processes, biocentric thinking and agency.

Project Team

Dr Martin Moroni (soil scientist), Dr Richard Doyle (soil scientist), David Reid (Deputy Director, Royal Tasmanian Botanic Gardens –RTBG), Denise Robinson (Cultural advisor), Michael Edwards (Director, Contemporary Arts Tasmania -CAT), Lucy Bleach (Artist)

Project Partners

RTBG, CAT, Soil Australia

Project aims

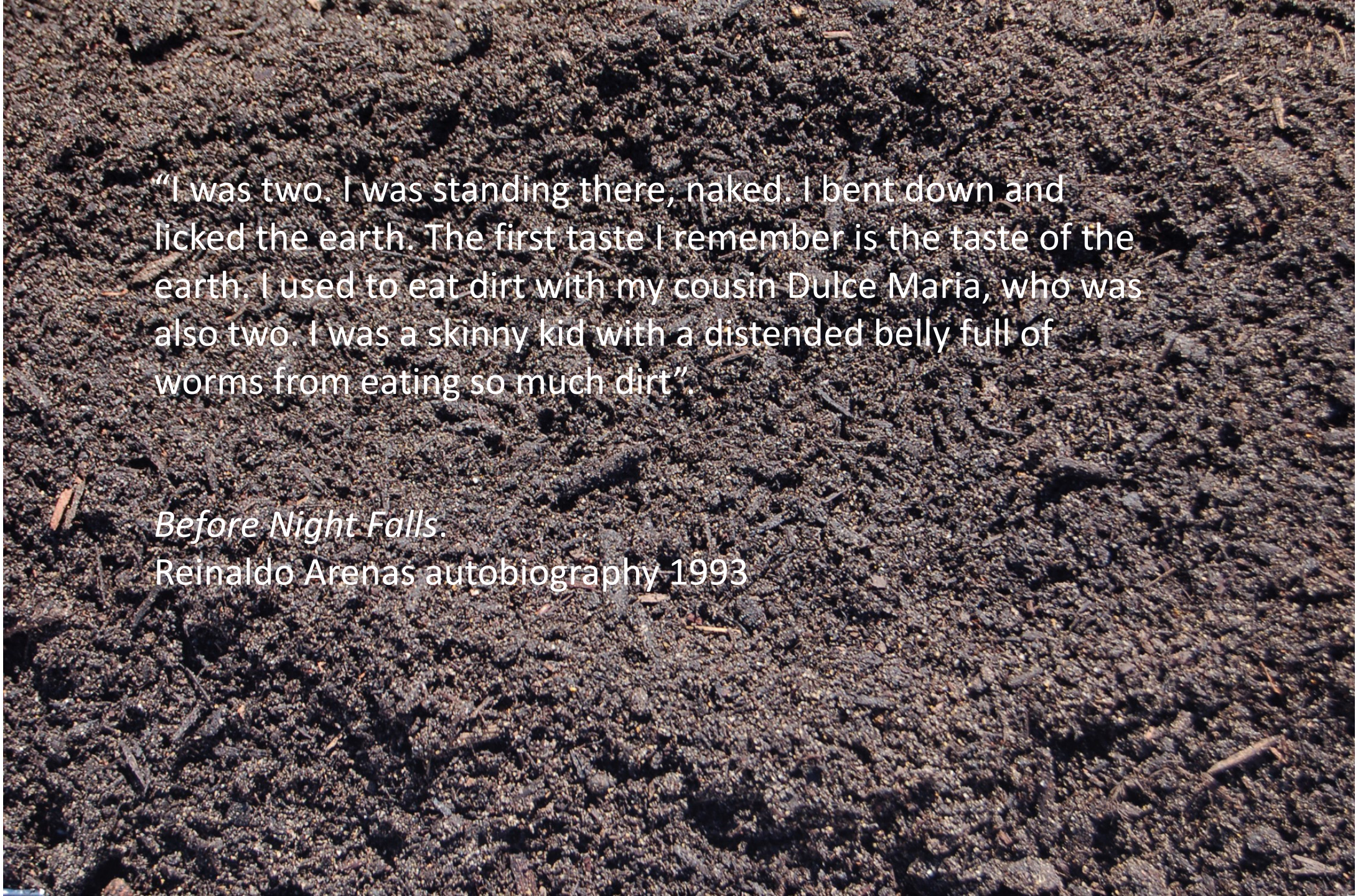
- How might we better understand the earth that we live upon and the soil that supports us
- How does soil embody our histories
- How are we able to recognise the knowledge and expertise that is bound within it
- How might we communicate this, and how might such ‘communication’ have the capacity to move, to affect

Stage 1 – Ground Work

GROUND WORK

- The initial stages of the project involved artist/project manager Lucy Bleach:
- engaging in preliminary meetings with members of the Tasmanian Aboriginal community across various fields of knowledge, including land management, language, collection of histories, returning to country, connections to land and sea, and cultural or creative expression pertaining to telling story, sharing knowledge and celebrating Country / Life cycles
- meeting with soil scientists to discuss their expertise in Tasmanian soil, subterranean networks, geologic formation and an always moving/changing landscape;
- undertaking preliminary site-based research at the RTBG, the Queen's Domain and Government House, which are all located on significant Aboriginal cultural sites, with soil evidence confirming the long occupation by the muwinina people
- becoming acquainted with diverse cultural, scientific, philosophical and geopolitical readings relating to and extending from the topic of soil
- identifying artists within the Community who might contribute to the project

This preliminary phase of conversation, research, idea digestion and speculative practice, the *ground work*, contributed to shaping the next stages and approaches of the project


“I was two. I was standing there, naked. I bent down and licked the earth. The first taste I remember is the taste of the earth. I used to eat dirt with my cousin Dulce Maria, who was also two. I was a skinny kid with a distended belly full of worms from eating so much dirt”.
Before Night Falls.
Reinaldo Arenas autobiography 1993

the "daily"

The soil is a natural, independent and historical body.
Vasily Dokuchaev

Vasily Dokuchaev was a Russian geologist and geographer who is credited with laying the foundations of western soil science

Dokuchaev considers the soil as a natural body having its own genesis and its own history of development, a body with complex and multiform processes taking place within it. According to him, soil should be called the "daily" or outward horizons of rocks regardless of the type; they are changed naturally by the common effect of water, air and various kinds of living and dead organisms.

anisotropy

Pedogenesis
(from the Greek pedo-, or pedon, meaning 'soil, earth,' and genesis, meaning 'origin, birth')
(also termed soil development, soil evolution, soil formation, and soil genesis).

Pedogenesis is the process of soil formation as regulated by the effects of place, environment, and history.

Biogeochemical processes act to both create and destroy order (an-is-otropy) within soils. These alterations lead to the development of layers, termed soil horizons, distinguished by differences in colour, structure, texture, and chemistry. These features occur in patterns of soil type distribution, forming in response to differences in soil forming factors.

Soil agency

In her book, Reading Amilcar Cabral's Agronomy of Liberation, Independent filmmaker and scholar Filipa Cesar writes that observations of intention within natural phenomena – can be read as an urge to allow for a kind of rock agency: the rock/soil as a carrier of a prose, a narrative, the substrate where everything is inscribed.

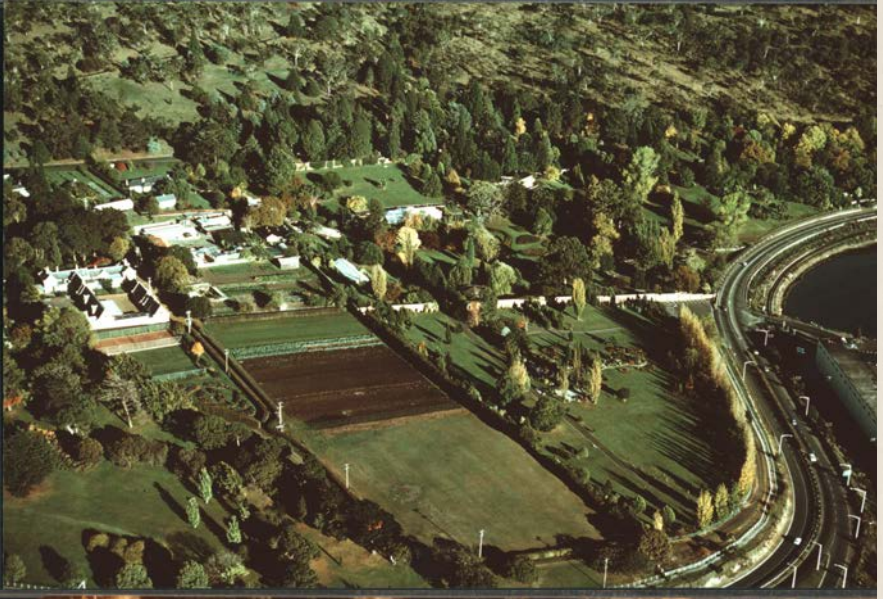
This echoes what Indian historian Dipesh Chakrabarty describes as a 'geophysical force'; this he writes, 'is what in part we are in our collective existence – [it] is neither subject nor an object. A force is the capacity to move things. It is pure, nonontological agency.'

In Amilcar Cabral's thought the geological is not separated from human history, the soil is not an inert and static 'ground' subjected to human agency, but rather has a dynamic relation to human social structure, evident in its different responses to forms of colonial extractivism.

Filipa Cesar, *Meteorisations – Reading Amilcar Cabral's Agronomy of Liberation*





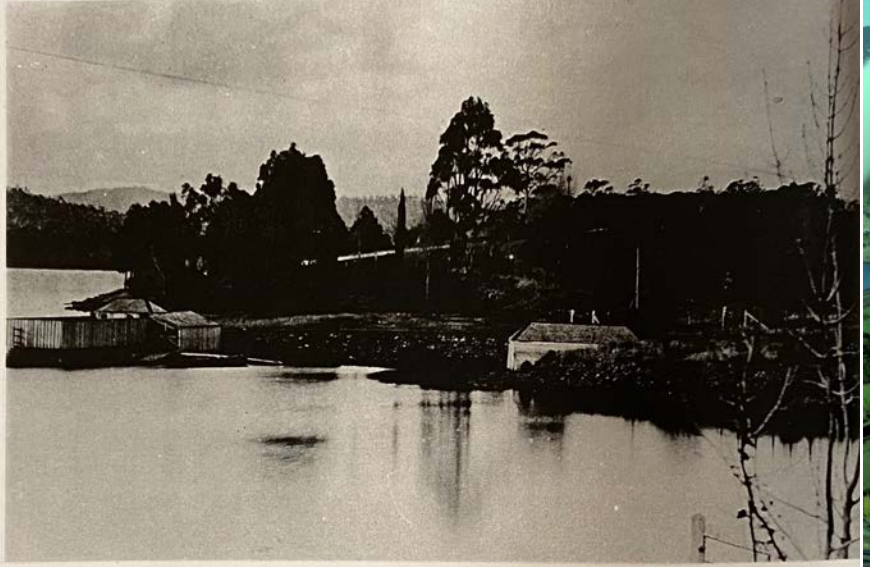
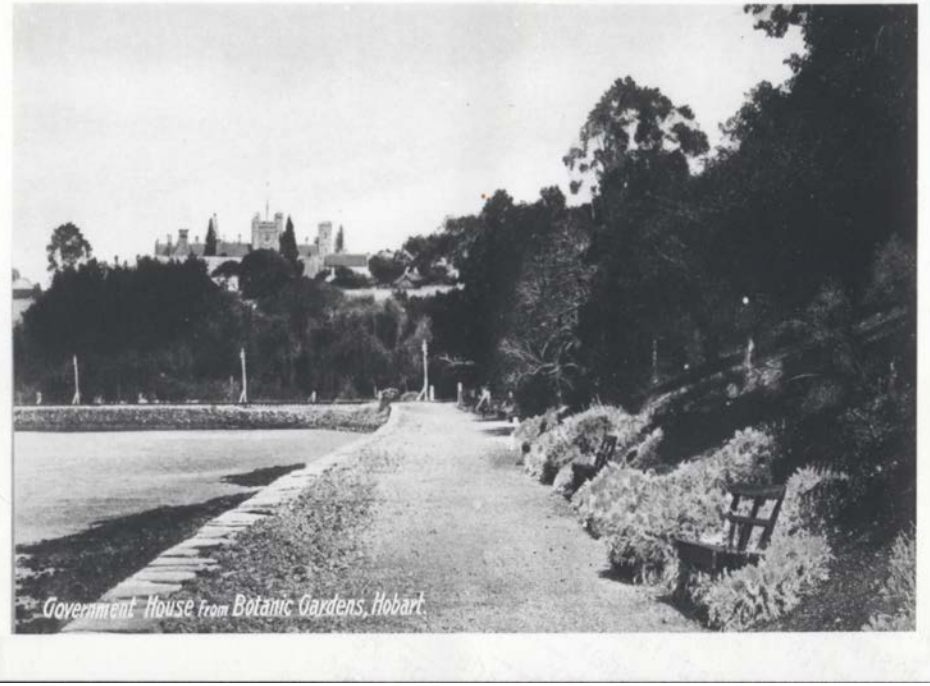
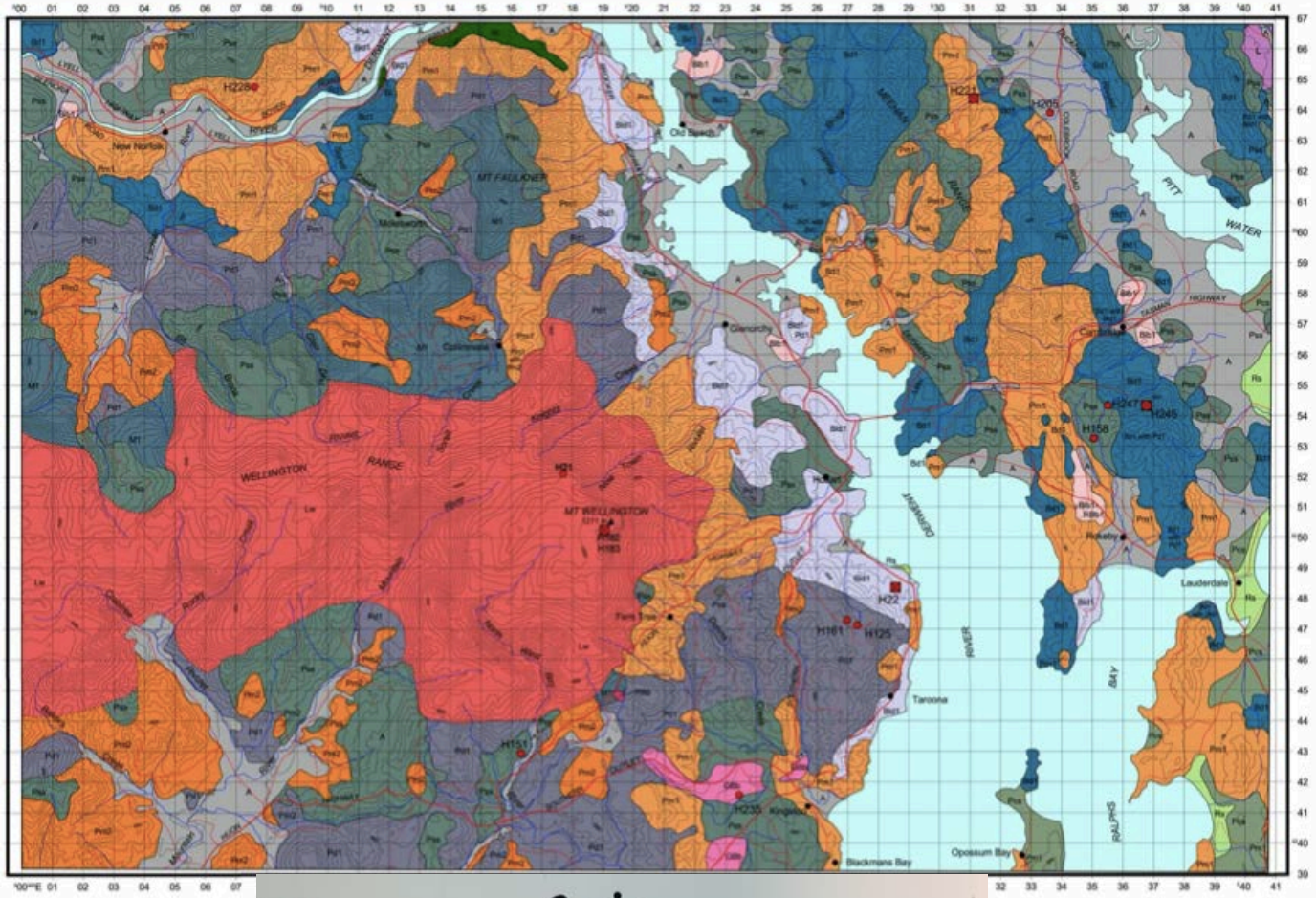


Figure 51. 1868 photograph of the Governor's jetty and adjacent boatshed. Note also the stone seawall and the road running behind Pavilion Point (TMAG — Q10985). Compare with figures 29 & 52.



RECONNAISSANCE SOIL MAP SERIES OF TASMANIA

HOBART



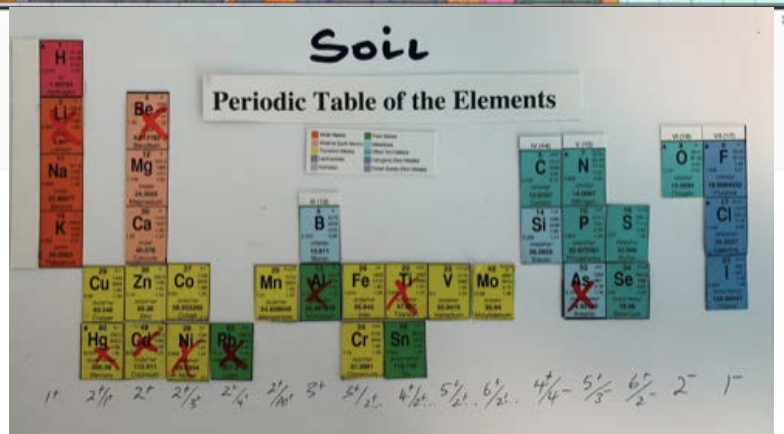
Map Reliability

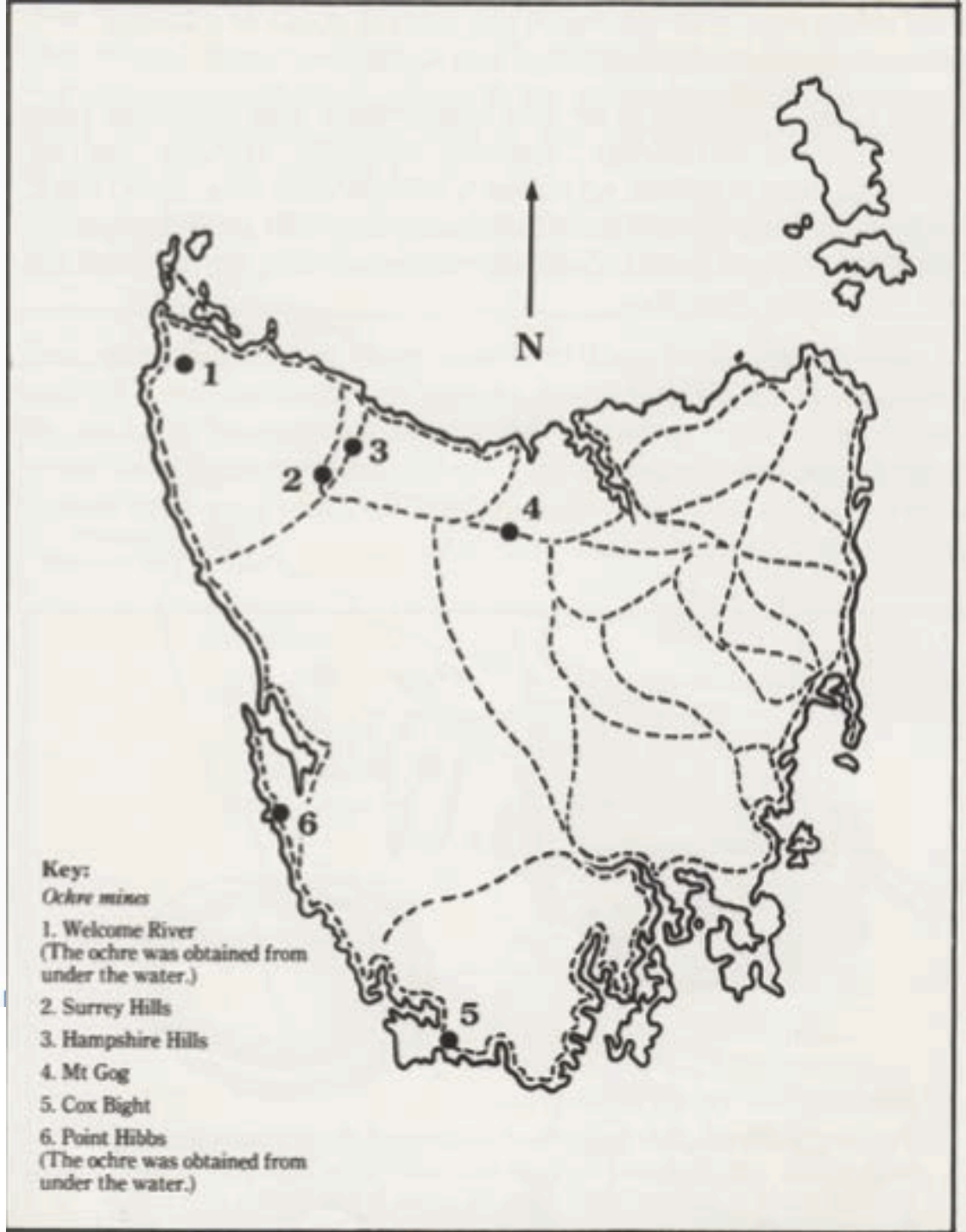
The map framework depends entirely on the Second Order Triangulation, performed by the 3rd. Field Survey Company, based on data in Transverse Mercator Projection, with measurements in yards and elevation in feet. The map was subsequently converted to AMG via an undocumented procedure. Some soil boundaries and soil survey sites digitised from the original CSIRO reconnaissance soil maps contain appreciable error inherent from the source maps.

- Laboratory reference sites for identified dominant soils
- Type profiles for associated minor soils

Soil Boundaries

- Well defined
- Interpreted from air photos





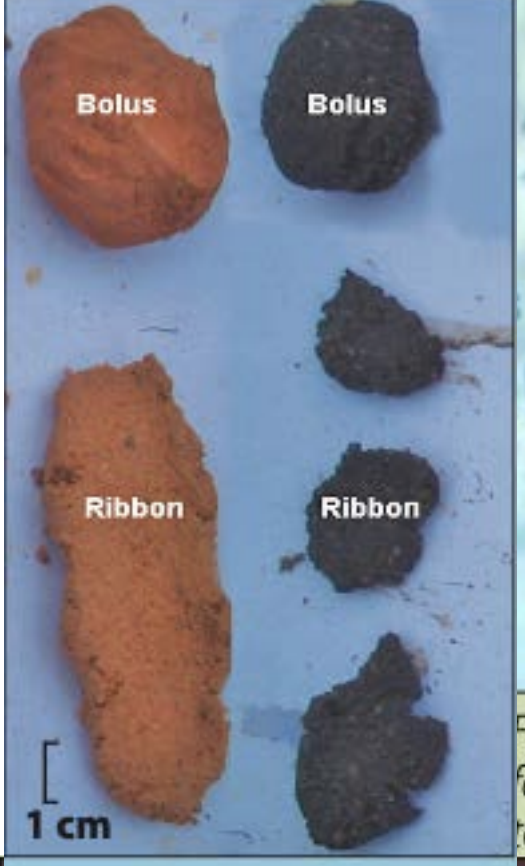


Figure 2: A mycorrhizal fungi growing into plant cells where it ha
formed tree-like structures (arbuscules) that allow phosphoru
to be transferred from the fungi to the plant.

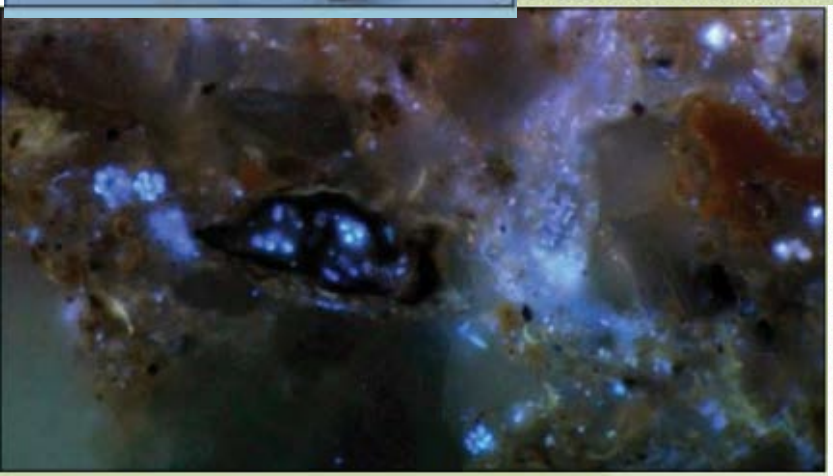
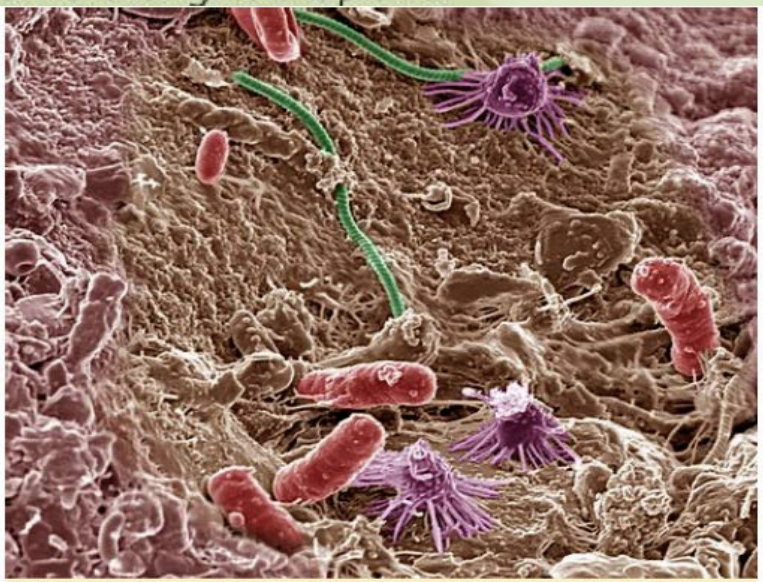
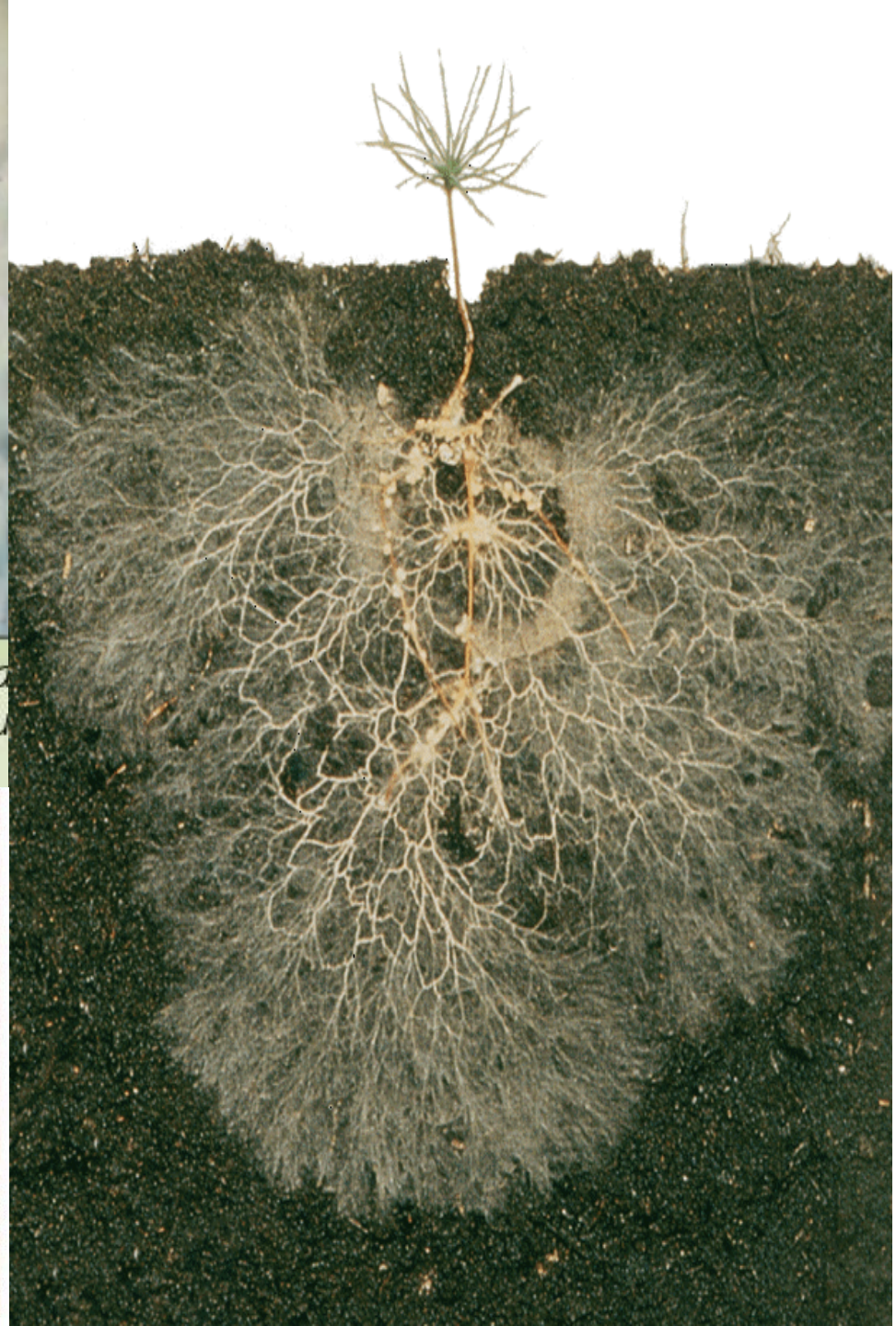
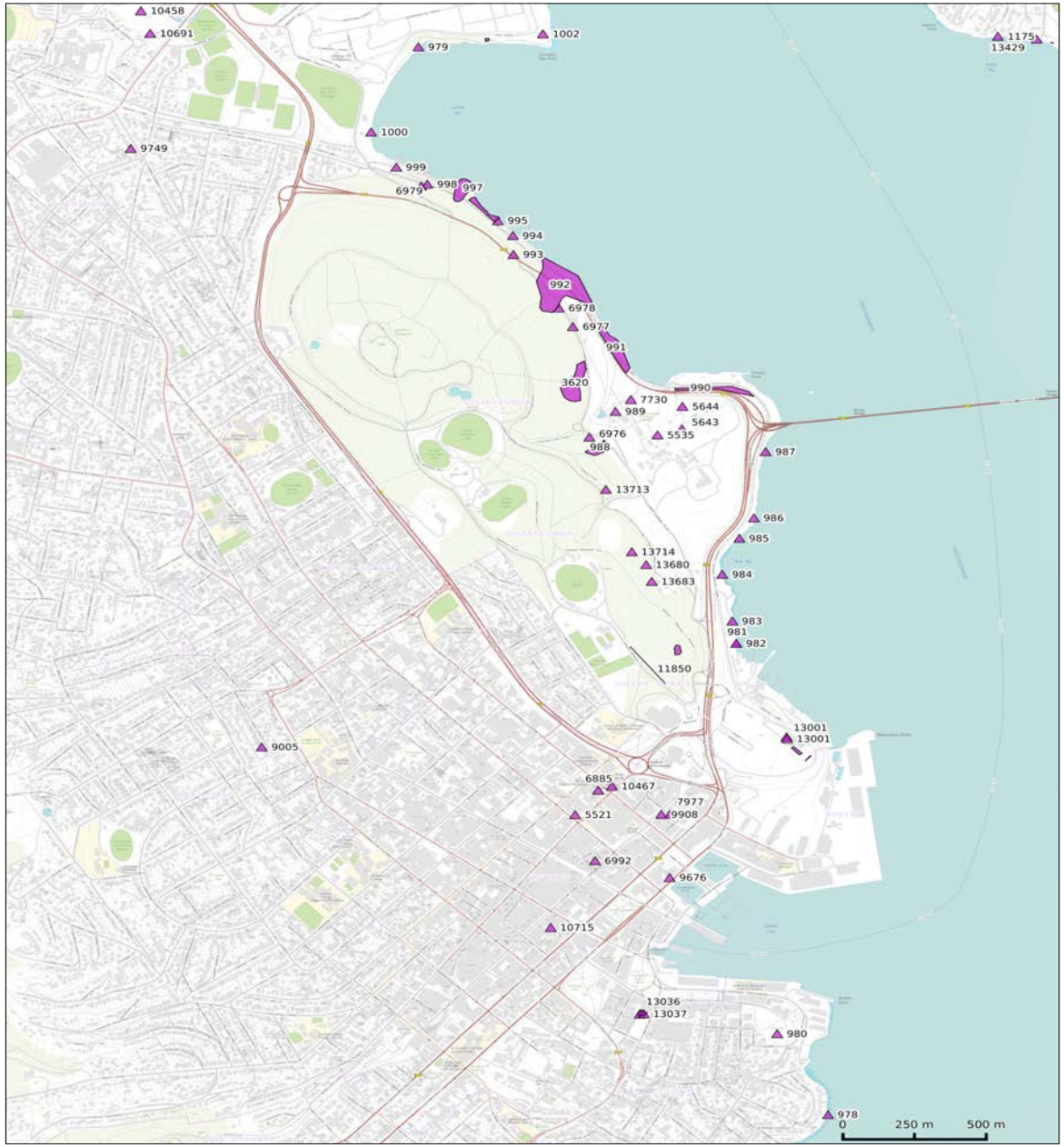


Figure 1: Colonies of bacteria shown in light blue in soil, each bacterium approximately 1 micron in size. (image: Karl Ritz)



Soil Microbes



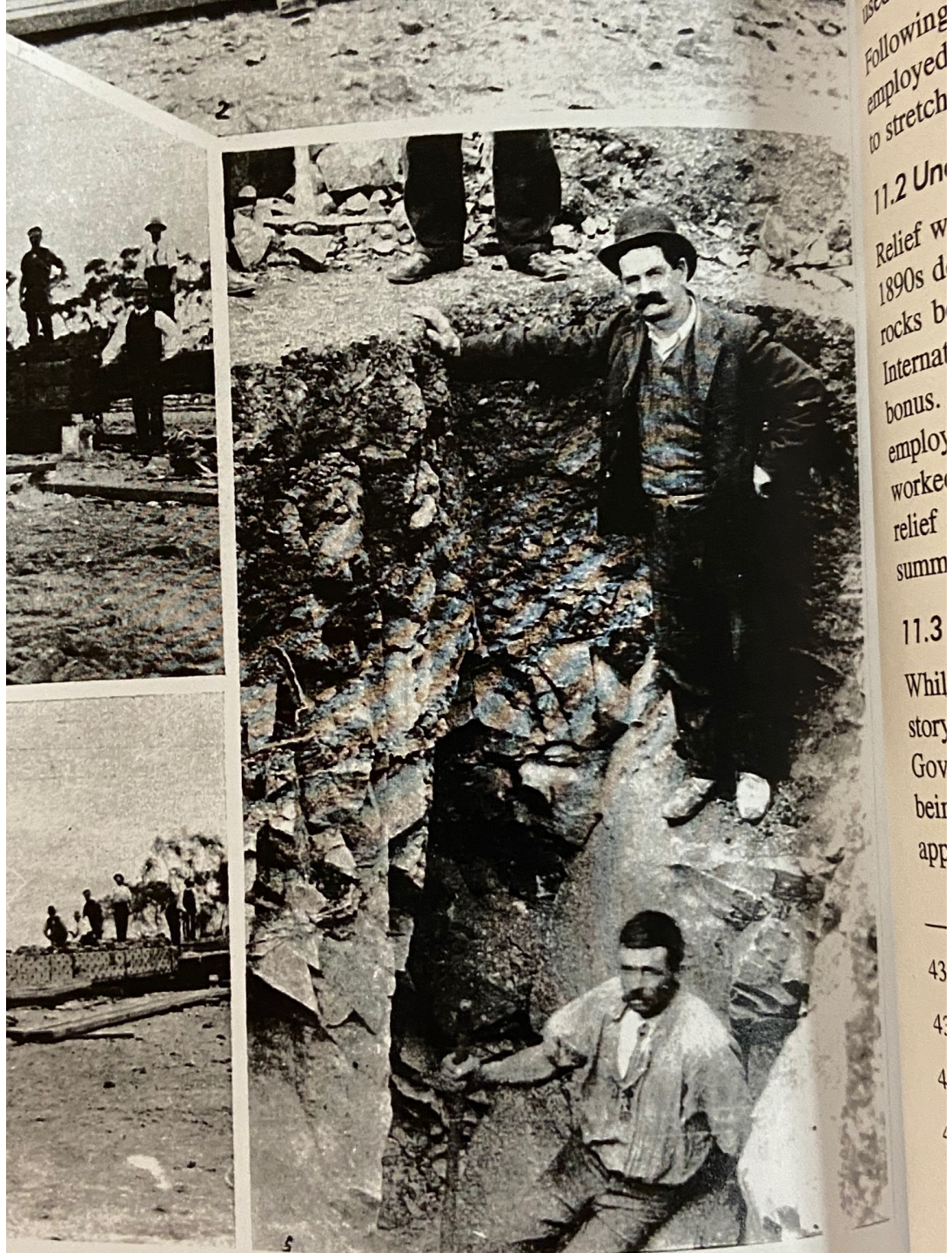


Aboriginal Heritage Tasmania
Natural and Cultural Heritage Division
Department of Primary Industries, Parks, Water and Environment

N
GDA94 - Zone 55
1:14K

Legend:
AH Item
AH Instrument

Created on 13/10/2020
Created by Tony Brown



Meteorisations

Reading Amílcar Cabral's Agronomy of Liberation

Filipa César

Our people are our mountains.[1]
Amílcar Cabral

'Mining' historical strata to almost half a century ago, we find Amílcar Cabral at the University of London on 27 October 1971 describing the state of the armed struggle he had led since 1963 in the country that was then known as Portuguese Guinea. After eight years of anti-colonial war, two thirds of the small West African country had been freed from Portuguese occupation. Within these 'Liberated Zones' that spread across areas of tropical forest the PAIGC (African Party for the Independence of Guinea and Cape Verde) established schools, hospitals, courts and people's communal shops. During these years, Cabral moved between the party headquarters in Conakry in neighbouring Guinea, the jungle of the guerrilla within Guinea-Bissau and the international geopolitical realm where he was advocating for and attempting to develop a new society.[2] At the lecture in London in 1971 he described the conditions of the armed struggle in Guinea-Bissau:

> We are in a flat part of Africa… The manuals of guerrilla warfare generally state that a country has to be of a certain size to be able to create what is called a base and, further, that mountains are the best place to develop guerrilla warfare… Obviously we don't have those conditions in Guinea, but this did not stop us beginning our armed liberation struggle… As for the mountains, we decided that our people had to take their place, since it would be impossible to develop our struggle otherwise. So our people are our mountains.[3]

audience was made up of young British students, leftist activists, ants and other supporters of the London-based Committee for

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THE CHRONOSEQUENCE CONCEPT AND SOIL FORMATION

By P. R. Stevens [1] and T. W. Walker [2]

[1] Department of Forestry, Australian National University, Canberra, Australia
[2] Department of Soil Science, Lincoln College, Christchurch, New Zealand

ABSTRACT

One method of studying the effects of time as a soil-forming factor is to recognize and investigate a chronosequence, wherein four out of five soil-forming factors are constant or vary ineffectively. Thus, observed differences between soils of different … the result of the lapse of varying intervals … n. In this paper theoretical considerations … e examined and soil development is dis… are reviewed, and a nu… of chrono… nce of such studies is as…

UNIVERSITY of TASMANIA

The Queen's Domain and the People's Temper: Contest for Public Natural Space in Urban Landscapes

Stephenie Cahalan
BA, Grad Dip Env Stud (Hons), Dip BEP
School of Social Sciences

Commentary

The case for biocentric microbiology

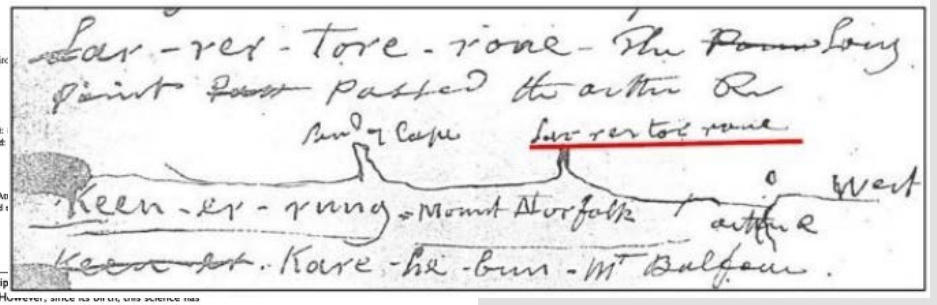
Ramy Karam Aziz

Address: Department of Microbiology and Immunology, Faculty of Pharmacy, Cairo
Email: Ramy Karam Aziz - ramy.aziz@kalmonella.org

Published: 4 August 2009
Gut Pathogens 2009, 1:16 doi:10.1186/1757-4749-1-16
This article is available from: http://www.gutpathogens.com/content/1/1/16

Abstract

Microbiology is a relatively modern scientific discip… microorganisms, including pathogens and nonpathogens. H… been negatively affected by anthropocentric convictions, including rational and irrational beliefs. Among these, for example, is the artificial separation between environmental and medical microbiology that weakens both disciplines. Anthropocentric microbiology also fails to properly answer questions concerning the evolution of microbial pathogenesis. Here, I argue that an … e for improving our understanding not only of the … ur guts, and the world around us.



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soilquality.org.au

MICROBIAL BIOMASS

Key points

- Microbial biomass (bacteria and fungi) is a measure of t… component of soil organic matter.

OCHRE

Ritual

Ochre is a valuable and versatile resource that has been used by Tasmanian Aboriginal people for millennia. The following article provides evidence of the ritual significance of ochre.

CROSS CURRICULUM PRIORITIES

Aboriginal and Torres Strait Islander Histories and Cultures

Sustainability

CONTENT AREAS

KEY CONCEPT

Ritual is the performance of ceremonial acts prescribed by tradition... Ritual is a specific, observable mode of behaviour exhibited by all known societies. It is thus possible to view ritual as a way of defining or describing humans.

Journal of Astronomical History and Heritage, Vol. 19(3), Preprint

Reconstructing the Star Knowledge of Aboriginal Tasmanians

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Email: gantevoort@icloud.com

Duane W. Hamacher
Monash Indigenous Centre, Monash University, Clayton, VIC, 3800, Australia.
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Savannah Lischick
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Email: Savannah.lischick@gmail.com

Factors affecting microbial biomass

The microbial biomass is affected by factors that change the water or carbon content of soil, and include soil type, climate and management practices. Rainfall is usually the limiting factor for microbial biomass in southern Australia (figure 2). Soil properties that affect microbial biomass are clay, soil pH, and organic C (figure 3). Soils with more clay generally have a higher microbial biomass as they retain more water and often contain more organic C (figure 4). A soil pH near 7.0 is most suitable for the microbial biomass.

ÉDOUARD GLISSANT

Poetics of Relation

translated by Betsy Wing

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492 *Harrison—On the Geology of Hobart Town.*

racter of the rocks varies considerably. The land, therefore, may be presumed to have once presented a very different line of contour to what it does at the present day.

In bygone geologic ages, Tasmania must have been represented by at least five rocky islets. Then the intervening sea-bottom became raised, and the area appeared as one continuous mass of land, deeply indented, however, by two gulfs, which being in time filled with aqueous deposits, now constitute the respective coal-basins of Campbell and Hobart Towns. It is to the geology of the latter basin that the following notes bear reference.

Following the road from Hobart Town to New Norfolk (a township situate on the Derwent, and about twenty miles from the metropolis), there are met with a succession of Carboniferous shales and sandstones, cut by numerous dykes and masses of eruptive greenstone and black basalt, or covered over by gravel and other aqueous deposits, until near Bridgewater (ten miles from Hobart Town), where there is exposed a dense claystone, which is in turn succeeded by thick beds of highly fossiliferous limestone. The latter, after extending for several miles, and presenting a gradually rising series, dip in quite a contrary direction, so that at New Norfolk the clay-stone of Bridgewater is again met with, and then, still further on, towards Hamilton, are beds of sandstone, shale, and coal, appearing in the reverse order of the succession passed over in journeying from Hobart Town to Bridgewater. It would seem, therefore, that an anticlinal axis exists near the latter place (see fig. 1).

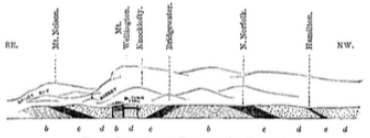

FIG. 1.—SANDY BAY AND HOBART TO NEW NORFOLK.*
(The whole of this section is much cut up and disturbed by dykes of basalt, &c., which are not shown.)

Along nearly all the other routes pretty much the same series of rocks is met with, only that the limestone seldom appears at the surface: in the lines leading up Mount Wellington, however, the last-named rock is met with at barely a mile from the boundary of Hobart Town. This is simply the result of great disturbance and denudation having taken place thereabout.

The area of Hobart Town is traversed by a series of broad stripes alternately of sandstone and basalt. In one locality—near Trinity

* For an explanation of the letters, see fig. 2.

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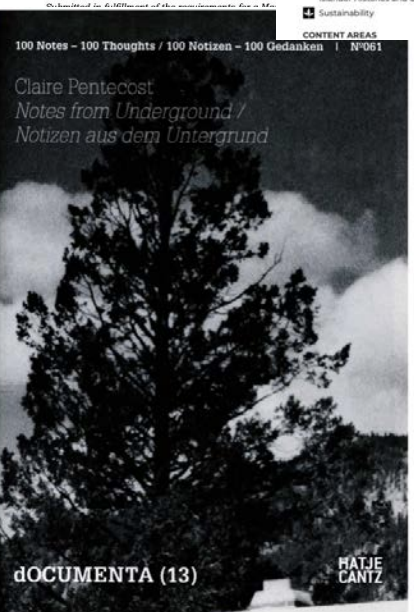
6. Viticultural Soils of Tasmania

Dr Richard Doyle BSc(Hons), MSc(Dist), Ph…

Certified Professional Soil Scientist - Level 3

soilydoyley@gmail.com



GLOBAL CHANGE

Soil microbiomes and climate change

Janet K. Jansson * *and Kirsten S. Hofmockel* *

Abstract | The soil microbiome governs biogeochemical cycling of macronutrients, micronutrients and other elements vital for the growth of plants and animal life. Understanding and predicting the impact of climate change on soil microbiomes and the ecosystem services they provide present a grand challenge and major opportunity as we direct our research efforts towards one of the most pressing… about th… ecosyste… the nega…

over the pa… nd global… ined in the… limate is p… atterns be… nicroorga… oil organi… ave a key… ion or consumption of greenhouse gases such as CO_2, CH_4 and N_2O. However, whether soil will become a source or sink of greenhouse gases under future climate

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PETROGLYPHS OF MEENAMATTA, THE BLUE TIER MOUNTAINS, TASMANIA

Robert G. Bednarik, Gloria Andrews, Stephen Cameron and Elfriede Bednarik

Abstract. The discovery of petroglyph sites in the Blue Tier mountains (Meenamatta) of north… ment of changes in soil respiration. In order to improve models of soil carbon–climate feedback, there is also a

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Research Article

Can Carbon Sequestration in Tasmanian "Wet" Eucalypt Forests Be Used to Mitigate Climate Change? Forest Succession, the Buffering Effects of Soils, and Landscape Processes Must Be Taken into Account

Peter D. McIntosh,[1] James L. Hardcastle,[2] Tobias Klöffel,[3] Martin Moroni,[4] and Talitha C. Santini[5]

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Received 11 November 2019; Revised 25 February 2020; Accepted 28 March 2020; Published 30 July 2020

Academic Editor: Kurt Johnsen


extractavism
Colonisation of Country/country
Matter
COUNTRY
knowledge
language
agricultural
+
cultural
practice
Carbon cycles
+
storage
SCIENCE
Soil microbiology
Microscopic
animism
CONCEPTS
SOIL
BIOMASS
Inheritance
Biocentrism
Alchemy
Symbiosis
(mutualistic, commensal, parasitic)
Decomposition
+
nutrient cycling
ECONOMY
Rhizosphere
Mycorrhizal
fungi
SOIL HEALTH
limits
of
growth
PEAK
SOIL
finitude
+
regeneration
SYSTEMS + NETWORKS
Mycelium
geomedicine
geophasy
geopharmacy
Compost
ecosystems
SUSTENANCE

Soil Science

- **Soil Biomass**
- **Soil microbiology**
- **Mycorrhizal Fungi**
- **Mycelium**
- **Decomposition and Nutrient Cycling**
- **Carbon Cycles and Soil Carbon sequestration**
- **Compost**
- **The Rhizosphere**
- **Cycles of life, death, absorption, transformation, emergence.**

Soil Country

- Language
- Embodied Knowledge - Soil is the holder of stories, holds a record
- Knowledge comes from Country, whatever happens to it, the people, it goes back into Country, waiting to re-emerge.
- Reawakening of traditional agricultural and cultural practices
- Soil Matter - body and Spirit, transformation and connectivity
- Soil is alive. It is a living realm. It is ancestors and us
- We are all Country, everything has equal value, everything contributes to a greater system
- Ochre sites
- Rock carvings and rock art
- Creation stories
- Agency

Soil Concepts

- **Inheritance**
- **Alchemy**
- **Biocentrism**
- **Symbiosis (mutualistic, commensal, parasitic)**
- **Social and biological practice**
- **Ritual practice (ballawinne/ochre)**

Soil Economy

- **Limits of Growth**
- **Finitude and regeneration**
- **Sustenance**
- **Peak Soil**

Soil politics

- **Colonisation of soil and Country**
- **Liberation through agronomical practices**
- **A reclamation of soil**

Art, good story telling, illuminates a truth that is already there.

PROJECT APPROACHES

Stage 2 – 2021- 2022

Soil Lab established at RTBG

- Continuous series of workshops, scientific exploration, on site research
- An active and ongoing series of investigations exploring the science, environmental health, cultural significance, aesthetics, politics and social, cultural and economic currency of soil
- The lab affords a meaningful and live acknowledgment of Country – expanding on from the ceremonial gesture
- mutual learning of knowledge
- Go to the heart of cultural practice. Field trips into Country, learning and comprehension through engaging with traditional cultural practice
- Presentation series and discussions
- Research sites in proximity or in view from RTBG – Government House, the Domain, Macquarie Point, Risdon Cove and Bedhlam Walls
- DNA testing of site
- Understand locations of midden sites

PROJECT APPROACHES

Stage 2 – 2021- 2022 (continued)
Creative responses

- Sensorial experiments with the aesthetic properties of soil (smell, touch, taste, sound, sight)
- Soil perfumes
- Experiments with mycelia, microscopic bacteria, soil DNA of RTBG
- schematics, diagrams, mud maps, cross sections, aboriginal visual representations of country
- experiential artforms - writing, poetry, performance,
- soil profiles/geology cross sections

Stage 3 - 2022
Series of commissioned experiential artworks generated from Soil Studio/Lab

Stage 4 - 2023

- Situated and evolving/growing/long-term artwork at RTBG (which might have been commenced in 2022)
- Employ traditional agricultural practitioner from the aboriginal community on RTBG staff
- Establish internships for young people from the aboriginal community and outside the community, to foster knowledge acquisition and exchange

A propagation house will become the location for the Soil Lab/Studio at the Royal Tasmanian Botanic Gardens



The access gardening space is also available for various activities

The seminar room and outdoor cooking space can be booked for presentation and sharing sessions

Lucy Bleach, Lead Artist / Project Manager

Rueremus
Mona Foma. 2021

Suspended within the spatial constraints of a former car mechanic workshop, large blocks of ice momentarily hold rocks which pertain to the different geologic periodsof lutruwita / Tasmania.

The rocks were collected during the months preceding exhibition from previously disturbed locations across the island, such as old quarry sites and road cuttings, where the rock material lay exposed.

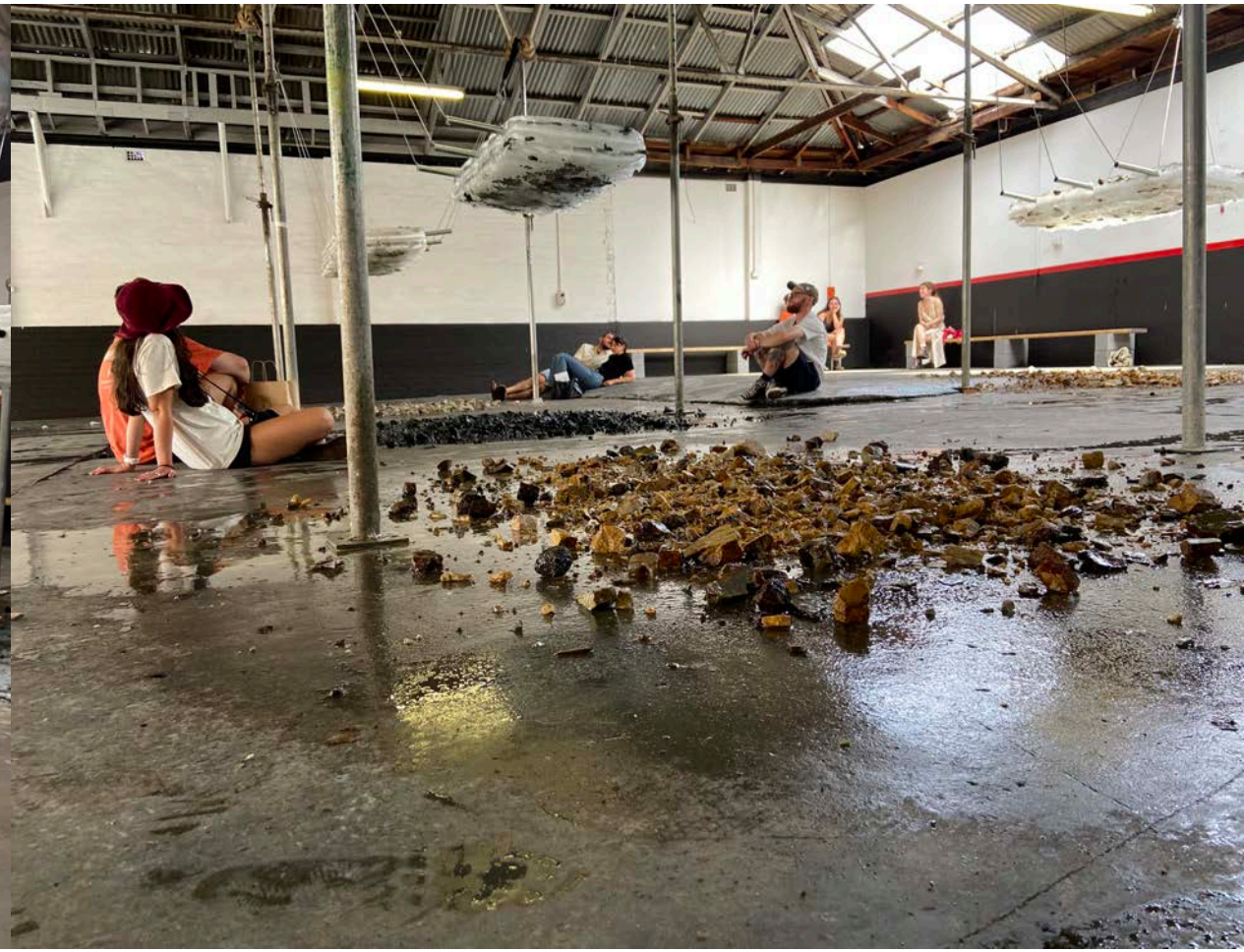
GPS locations were recorded at each site of collection, based on the Geocentric Datum of Australia 1994 (GDA94), and the Map Grid of Australia zone 55 (MGA55).

Conversations held with elders from the Tasmanian Aboriginal community recognise that these gathered earth materials represent more than a geochronological sequence, and exist beyond reference to global positioning systems.
The work acknowledges the rocks as Country and will be returned to Country on completion of the work.

Rueremus reflects different temporal registers.

As the ice melts, the rocks, each holding their own time, are released from their frozen hold, falling to the concrete workshop floor.

Amidst the shifting time scales and transitioning forms, violinist Alethea Coombe performs an adaptation of John Cage’s One6, a composition comprising especially long, flexible time brackets, with long overlaps between them.
Performing with the ice sculptures, Alethea plays tremulous and sustained tones, responding to the unstable blocks of ice and sonic impact of the falling rocks.



Underground
Contemporary Art Tasmania. *2015*

Underground resulted from a collaboration between the artist and the Department of Seismology, Earth Sciences, UTAS; The Institute of Mine Seismology; and Unique Earth. Underground presented a simple arc wall comprised of rammed, re-cycled crushed concrete. The architectonic form contained two earthmover inner tubes, carefully embedded in the friable mass, and connected via hoses to an air compressor. Underground sourced global seismic data from live web-based monitoring streams, as well as local 'vibrations' pertaining to human activity collected within the gallery administration and public spaces. The two streams of vibrational data were translated to electronic impulses, triggering the air compressor to release air and inflate the corresponding inner tube. Contingent on the intensity and duration of the local or global live seismic events, the inner tubes distorted within their rammed material constraints, shifting and destabilising the overall form, triggering a process of destruction over the course of the exhibition.

As an immense contradictory object, Underground's material mass charged the neutral gallery space with a silent, ominous presence, countered by the comical (if not rude) engorgement of the protruding, inflating rubber. The form's protracted collapse and unpredictable transformation elicited a state of suspended anticipation.

Underground suggested a synthesis of body, architecture and earth; the live events and artefacts indexing a volatility and terror that consumes, compels and drives us - our imagination, our sense of mortality and our deep connection to the unstable shifting earth.


POWERTECH
1.5 AMP
EXIT


EXIT

Revue des Deux Mondes
Inflight Gallery. 2008

Revue des Deux Mondes (review of two worlds) consisted of a rammed earth wall of local Hobart soils and a wall of stacked light-box transparencies, detailing the stacks of journals at the university library. The work referenced geology and knowledge as dual engagements of time and space. Both epic and both vulnerable to conflation and erosion. Built to ‘last’, the structure was knocked down after its 2-week exhibition.

Revue des Deux Mondes
Inflight Gallery. 2008

Variations on an Energetic Field
The Unconformity Festival, Queenstown. 2018

Approximately 800,000 years ago an extra-terrestrial projectile, large enough to penetrate the earth-atmosphere system, struck the earth south of Queenstown. The force of such an impact would release approximately 20 megatons of energy into the atmosphere, ending a journey that may have started several billion years ago in the early Solar System.

Variations on an Energetic Field proposed a sequence of variations of energy across three sites in Queenstown: a succession of material, sonic and spatial lag, impact and transformation.

Variation 1 – Darwin Glass and Obsidian Mirror. Paragon Theatre projection room

Darwin glass is an impact melt glass, found in proximity to Darwin crater. The glass ranges in colour from frothy pale green to dark green/black, representing a spectrum of melted country rock and extra-terrestrial material.

Obsidian is a dark volcanic glass that lacks a crystalline structure due to its fast formation from the earth's mantle to the surface. Obsidian is metastable at the Earth's surface; its unstable nature and incompatibility to external forces means that it harbours a propensity for entropy, and over time its glassy substance becomes fine-grained mineral crystals which are absorbed into surface material.

The 'mirror' consists of melted Darwin Glass and Obsidian. It is intended to be a silent object, which doesn't reflect, rather absorbs and fuses the viewer with the deep interior of earth, the earth's surface and cosmic space, proposing a conflation of present, geologic and solar system matter and time.

Variation 2 – Energetic Objects of the Empire.
The Empire Hotel Cellar

Europeans in Tasmania became aware of Darwin glass (and the hypothesis of a meteor impact) around 1905. The Empire Hotel was constructed in 1901. Sited in the Empire's cellar are objects that reflect an imperial occupation; their material and form are simultaneously precarious, muted, encompassing or transitioning.

A tiered chandelier suspended in the centre of the keg room resides in a state of sustained phase transition. Its toffee prisms shift from a solid to liquid state at a varied rate, according to the degree in which the toffee has been cooked. The chandelier lamp flickers erratically, visually pulsing a signal captured from a meteor's trajectory in space. The heat from the lamp accelerates the toffee's transition.

Variation 2 – Energetic Objects of the Empire.
The Empire Hotel Cellar, Queenstown

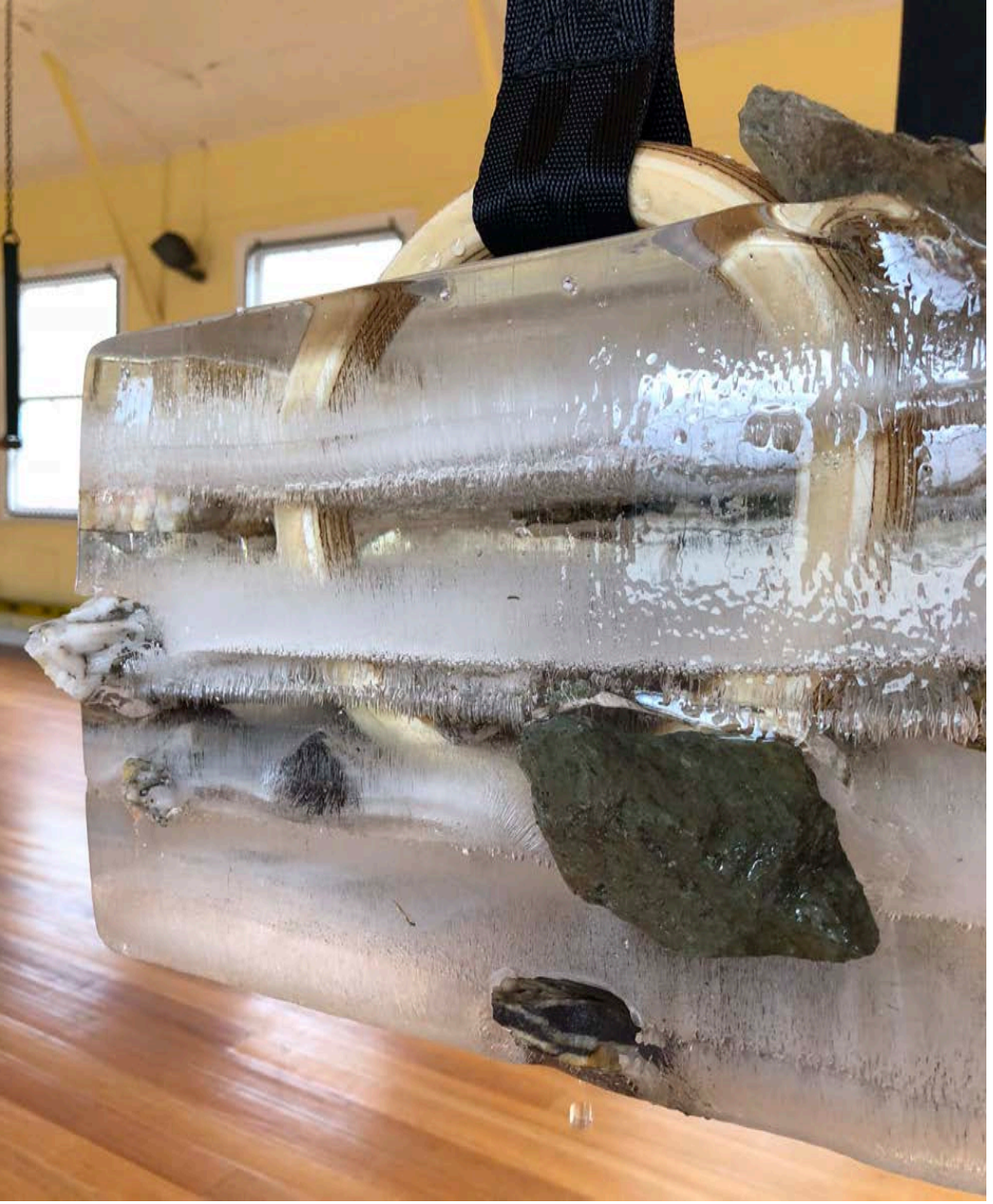
A modest timber fireplace stands in the centre of the cellar. The hearth and mantle have been rammed with crushed local quartzite, so that the earth material fills, surrounds and consumes the form. Transducer speakers are attached to the earth material.

The sonic signal of the meteor's trajectory is transferred into the rammed form, the gritty material absorbing the vibration and silencing the sound.

Variation 3
Queenstown PCYC gymnasium

Hanging from the ceiling rafters of the PCYC are intermittent blocks of ice; their placement and manner of suspension echo the existing aerial gym equipment of trapeze and hand rings. Frozen into each block is a stratum of local rocks.

As the ice melts the rocks fall into mild steel trays.



Variation 3 is a variation of John Cage's *One6* in collaboration with violinist Alethea Coombe.

During the course of the exhibition, Coombe performs Cage's *One6* composition, responding to the ice blocks' transition. *One6*belongs to a body of work in which Cage developed the time bracket technique, where the score consists of short fragments (frequently just one note, with or without dynamics) and indications, in minutes and seconds, of when the fragment should start and when it should end.

sampling (the slow seismogenic zone)
The Habitat of Time
Arts Catalyst Gallery. London. 2020

Sampling (the slow seismogenic zone) responded to sound recordings of a phenomenon known as slow earthquakes, accessed during a residency at a research facility in Kyoto, Japan in January 2020. The development of technologies that monitor extremely low frequencies have enabled scientists to detect the presence of a form of seismic activity that has the potential to either diffuse or trigger more rapid and destructive earthquake events.

The installation of the work in the gallery window drew the site and the public into the vibrational field of techno-geological time.

Informing artists

Urs Fischer – *You*, 2007.

Excavated, gallery space.

1:3 scale replica of main gallery space, dimensions variable.

Gavin Brown's Enterprise, New York

http://www.ursfischer.com/images/77629



Walter De Maria
Munich Earth Room 1968 , Darmstadt Earth Room 1974, New York Earth Room 1977- present

As caretaker of the NY Earth Room since 1989, Bill Dilworth waters, weeds and rakes the *Earth Room's* dirt once every week, while alternating directions to maintain the level of the earth. Dilworth says:
"People look at the Earth Room and they think nothing is growing, but what is increasingly evident is that time is growing there. The fact that it doesn't change means that time is constantly accumulating."

Walter de Maria said that every good work should have at least ten meanings.

Over the years *Earth Room* has successfully impacted its viewers to rethink their relationship with nature.

https://www.diaart.org/visit/visit-our-locations-sites/walter-de-maria-the-new-york-earth-room-new-york-united-states

Prime Minister Gough Whitlam pours soil into the hands of traditional land owner Vincent Lingiari, Northern Territory. 1975.

Dye destruction photograph on white Fujichrome photographic paper.
National Gallery of Australia collection.

Mervyn Bishop

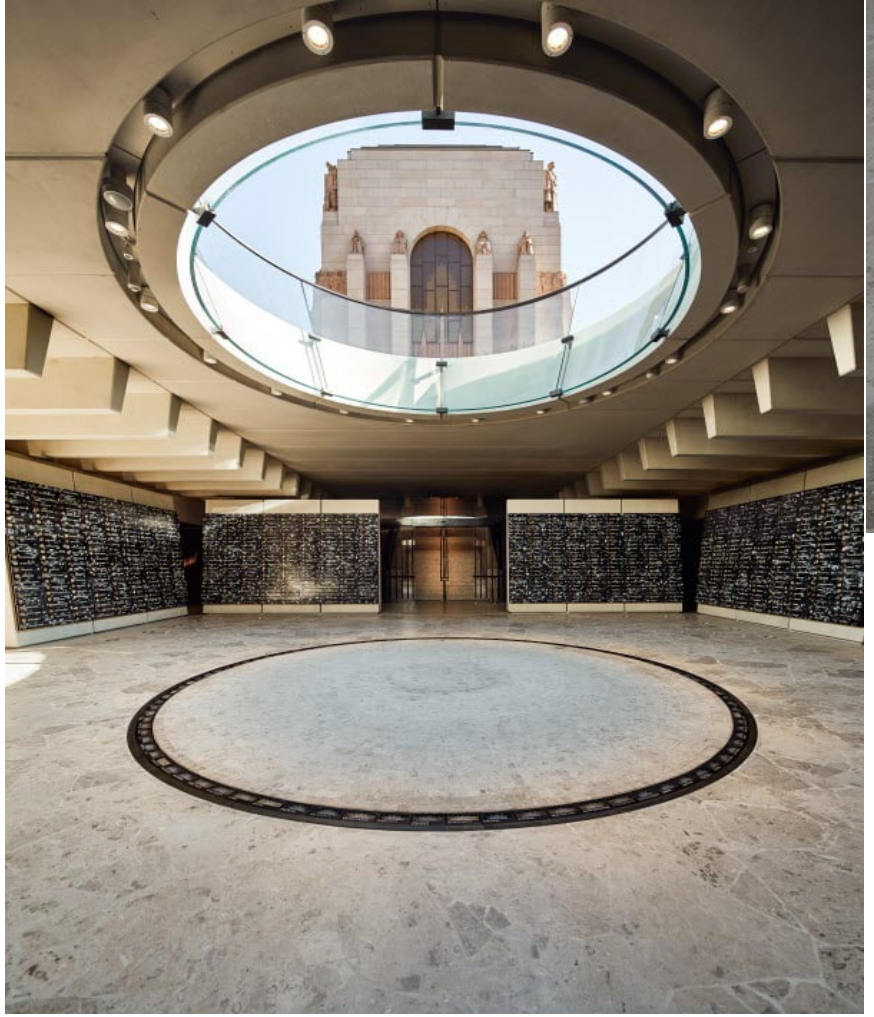
From 1974 Bishop established the position of staff photographer at the Department of Aboriginal Affairs in Canberra during an important era in Indigenous self-determination. Here he covered the historical moment at Wattie Creek on 16 August 1975 when Prime Minister Gough Whitlam poured a handful of Daguragu soil back into the hand of Vincent Lingiari, Gurindji elder and traditional landowner.

Whitlam said: 'Vincent Lingiari I solemnly hand to you these deeds as proof, in Australian law, that these lands belong to the Gurindji people and I put into your hands part of the earth itself as a sign that this land will be the possession of you and your children forever.' Lingiari, having received the crown lease of his ancestral land, simply replied, 'We are mates now'.

In a few minutes the two hands in the shape of an hourglass symbolically rectified the years of injustice for the Gurindji people by giving them access to their ancestral lands.

https://cs.nga.gov.au/detail.cfm?irn=2554

Fiona Hall
The Hall of Service,
Anzac Memorial, Sydney, 2019



The Hall of Service, at the centre of the Centenary Extension, is a civic space that architecturally and artistically mirrors the Hall of Silence. The Hall was named in acknowledgement of the original Memorial halls and to recognise more than a century of service by Australian servicemen and servicewomen.

The artwork by Fiona Hall comprises two key components, The International Soil and The Home Soil:
THE INTERNATIONAL SOIL- Soil from 100 Significant Military Sites are set into a ring embedded in the floor of the Hall of Service.
THE HOME SOIL - The eight walls of the Hall of Service display soil from 1,701 New South Wales' towns, cities, suburbs and homesteads given as a home address by First World War enlistees.

“The project not only facilitates obtaining the earth samples, but also creates an informative and timely opportunity for community and educational involvement across the state during the centenary of the war. The placement of the earth in the Hall of Service provides a way for each community to feel an enduring connection with the Hyde Park Anzac Memorial.” Fiona Hall

https://www.anzacmemorial.nsw.gov.au/memorial/explore-memorial/hall-service/introduction-fiona-halls-artwork

Asad Raza's *Absorption.* 2019

Asad Raza's *Absorption*, at The Clothing Store, on the Carriage- works site, Eveleigh, Sydney, from 3–19 May 2019.

The site-specific work completely occupies the Clothing Store building at Carriageworks, with the full expanse of the building's concrete floor coated with dense layers of soil, weighing a total of almost 300 tonnes. To develop the scientific elements of the project, Raza has worked in collaboration with the Sydney Institute of Agriculture, led by Professor Alex McBratney and his colleague Associate Professor Stephen Cattle to create a new soil mixture, or neosoil. Their work focused on varying the components of the soil to cultivate specific properties, including the ability to react and absorb elements, in order to improve its productive capacity.

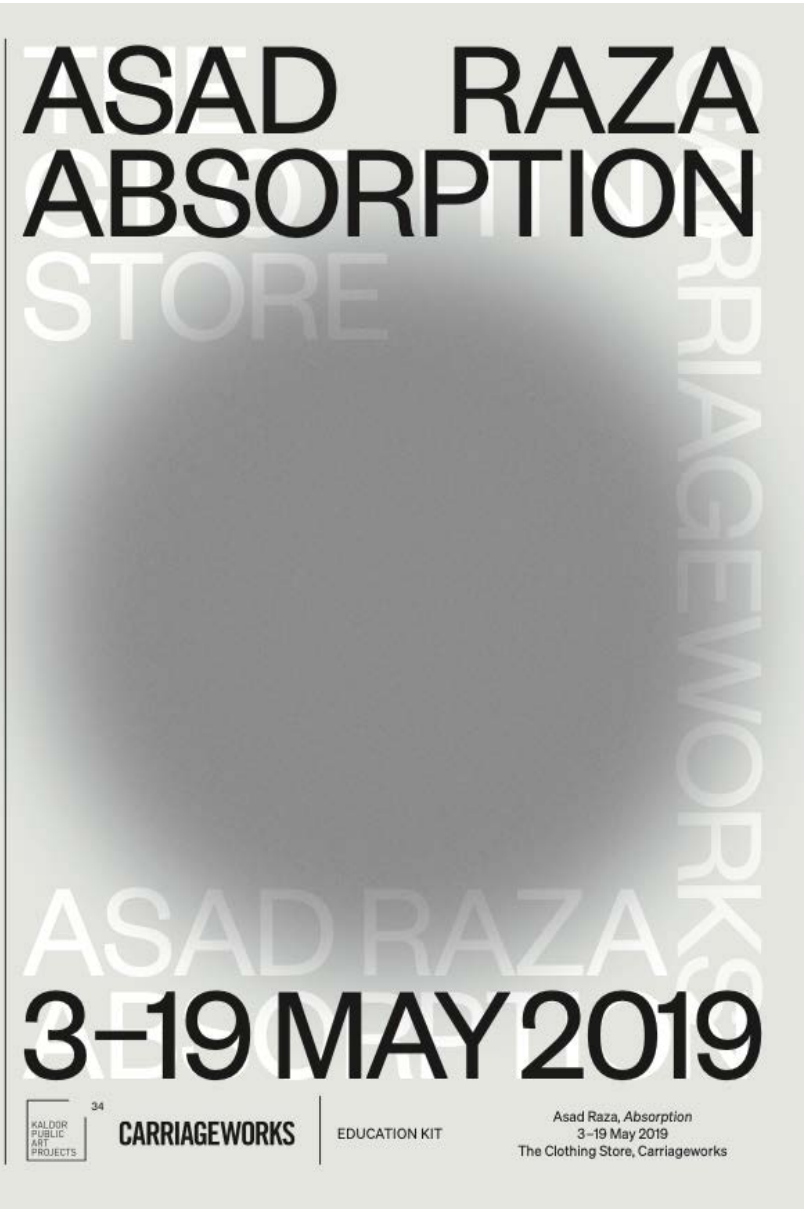
http://kaldorartprojects.org.au/project-34-asad-raza

Raza described the result as "Anthropocene soil; the soil can only be created through human intervention."

He then enlisted local artists to undertake their own "interventions", working with them to create works that responded to the ideas of absorption and soil.

Absorption brought the ground beneath us into the foreground, drawing our attention to the living and changing nature of soil.

A group of cultivators enacted this process of mixing, creating a composite material that visitors were free to take for their own uses, allowing *Absorption* to continue to grow and be nurtured beyond the building.



HOW TO USE THIS EDUCATION KIT

This resource is designed to help students and educators understand and engage with the themes and concepts of Kaldor Public Art Project 34: Asad Raza, *Absorption*. The kit comprises an overview of the project, Asad Raza's practice, historical and contextual framework, classroom questions and activities, along with a glossary of key terms and list of references for further reading. The material in this kit has been developed in accordance with the Australian Curriculum, and is suitable for students in Visual Arts stages 2–6, with further cross-curriculum links to geography, history, science, Aboriginal studies and design and technology. Available for free download on the Kaldor Public Art Projects website, the kit may be used to support a school visit to the project, or as a stand-alone resource.

Teachers are encouraged to adapt activities to suit students' needs or to integrate areas of this resource into existing classroom units of study. Focus questions and activities are included to stimulate discussion and critical thinking by students, and to lead to a deeper investigation of the issues raised.

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Kaldor Public Art Projects acknowledges the Traditional Owners and Custodians of the land on which this project is presented. We pay our respect to the Gadigal of the Eora Nation and to their Elders, past and present, and through them to all Aboriginal and Torres Strait Islander peoples.

CONTENTS

Lucas Ihlein *Baking Earth: Soil and the Carbon Economy*

Baking Earth is a project by Lucas Ihlein in collaboration with Allan Yeomans.

The project focuses on the *Yeomans Carbon Still*, a recent invention by Allan Yeomans for measuring the carbon content of soils. The machine is intended to be used by farmers as a means of quantifying the carbon sequestration performed through their agriculture practices. In a future carbon economy, farmers could be paid for drawing down carbon dioxide from the atmosphere through regenerative farming.

According to Allan Yeomans, up until now soil carbon testing procedures have been complex and prohibitively expensive. Simpler and cheaper methods of finding out how much carbon is in a farmer's soil are needed to create the incentive for widespread change in agricultural practice.

http://lucasihlein.net/Baking-Earth-Soil-and-the-Carbon-Economy

ROBERT QUIRK'S FARM
BUNDJALUNG TRADITIONAL OWNERS
TWEED, NORTHERN NSW (COASTAL)
CLIMATE - WARM + TEMPERATE
PLENTY OF RAIN EVEN IN THE 'DRY' MONTHS

ROBERT WON "CARBON FARMER OF THE YEAR" IN 2014.
HE GROWS SUGARCANE WITH A FOCUS ON SOIL HEALTH -
NOT BURNING BEFORE HARVEST, RETURNING CROP
RESIDUE TO THE SOIL, + GROWING MULTIPLE
DIVERSE PLANT SPECIES.

ONE CHALLENGE OF FARMING IN THE TWEED
IS HIGH RAINFALL - SO DRAINAGE BECOMES A
PRIORITY TO PREVENT FLOODING.
WHEN SOIL IS HIGH IN ORGANIC MATTER IT IS
"SPONGIER" - RESULTING IN LESS SEDIMENT RUN-OFF
+ EROSION. (ORGANIC MATTER = 5.8%. CARBON).

IN AUG. 2018 LUCAS TOOK ALLAN YEOMANS TO MEET
ROBERT QUIRK, + INDIGENOUS LAND MANAGER
RUSSELL LOGAN.
THIS PHOTO SHOWS THE FARMER, THE INVENTOR,
THE LAND MANAGER + THE ARTIST DISCUSSING
THE POTENTIAL UTILITY OF THE
YEOMANS CARBON STILL WITHIN AN
EMERGING CARBON MARKET.
(SEE VIDEO FOR MORE INFO.)

SAMPLE GATHERED AUG 29 2018
BY ALLAN YEOMANS, DARREN WILLIAMS, LUCAS IHLEIN
USING THE YEOMANS SOIL PIPE + AUGER.
THIS WAS LUCAS' FIRST TRY AT USING THE YEOMANS
SOIL PIPE. THE SYSTEM IS EASY TO USE - REQUIRES 2
PEOPLE AND IS A BIT STRENUOUS. FOR CALCULATING
TOTAL TONNES OF CARBON IN A PADDOCK SEVERAL
SAMPLES MUST BE TAKEN RANDOMLY. (IN THIS CASE
WE JUST TOOK ONE SAMPLE AS A DEMONSTRATION).

INITIAL SOIL MASS - (NOT RECORDED)
WATER EVAPORATED - NOT RECORDED
DRY MASS OF SOIL = 1169 GRAMS
FINAL SOIL MASS = 1004 G
ORGANIC MATTER = 165 G
CARBON (ORGANIC MATTER × 0.58) = 95.7 G
% CARBON (CARBON MASS / DRY MASS × 100) = 8.19 %

THIS IS A VERY STRONG RESULT FOR SUGARCANE
FARMLAND - AND WOULD SEEM TO AFFIRM
ROBERT'S EXPERIENCE IN REGENERATIVE
LAND MANAGEMENT.

Baking Earth premiered in the exhibition [*Shapes of Knowledge*], curated by Hannah Mathews at Monash University Museum of Art, February 9 – April 13, 2019. For the exhibition, Lucas and Allan presented a fully operational demonstration model of the *Yeomans Carbon Still*, which was used to test the carbon content of soils of various farms throughout Victoria, NSW and Queensland.

Excursions to collect the soil samples involved Monash University students, scholars and members of the wider community and doubled as opportunities for learning about regenerative farming processes more broadly.

Alongside these material investigations, public discussions took place in the gallery involving engineers, climate scientists and carbon farming advocates about the potential viability (economic, legal, botanical) of an agricultural approach to carbon sequestration.

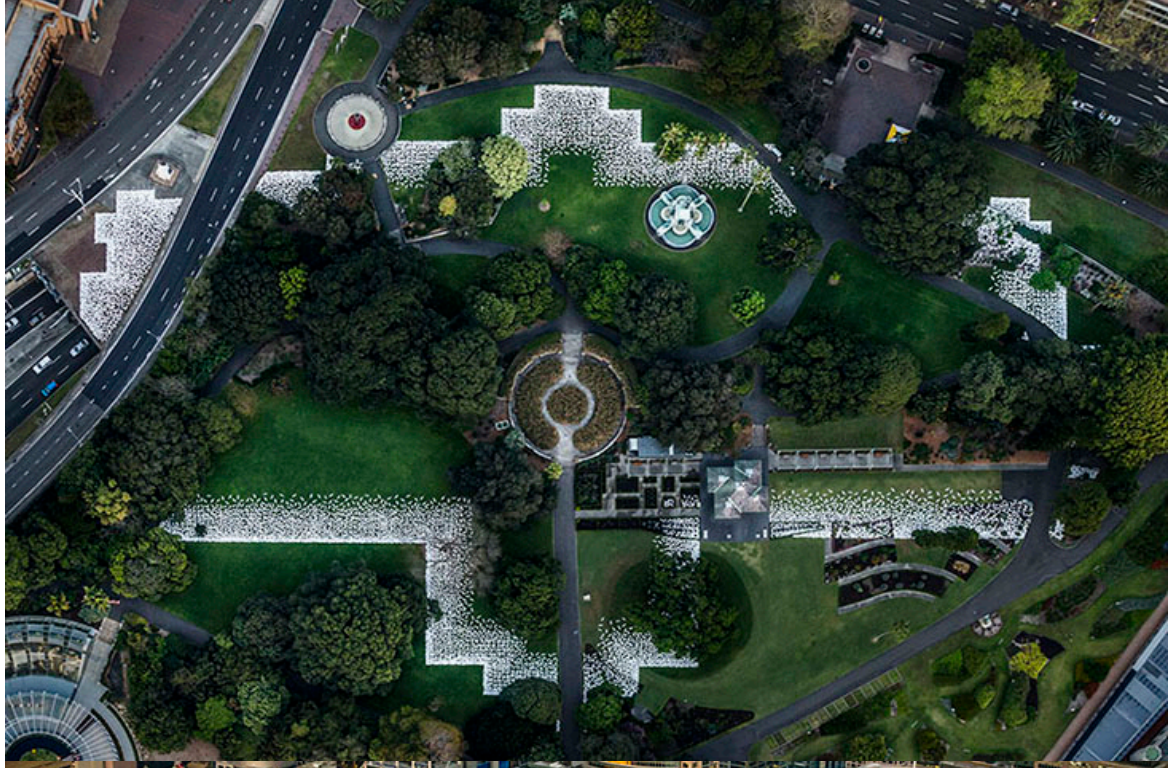
Jonathan Jones *barrangal dyara (skin and bones)*, 2016

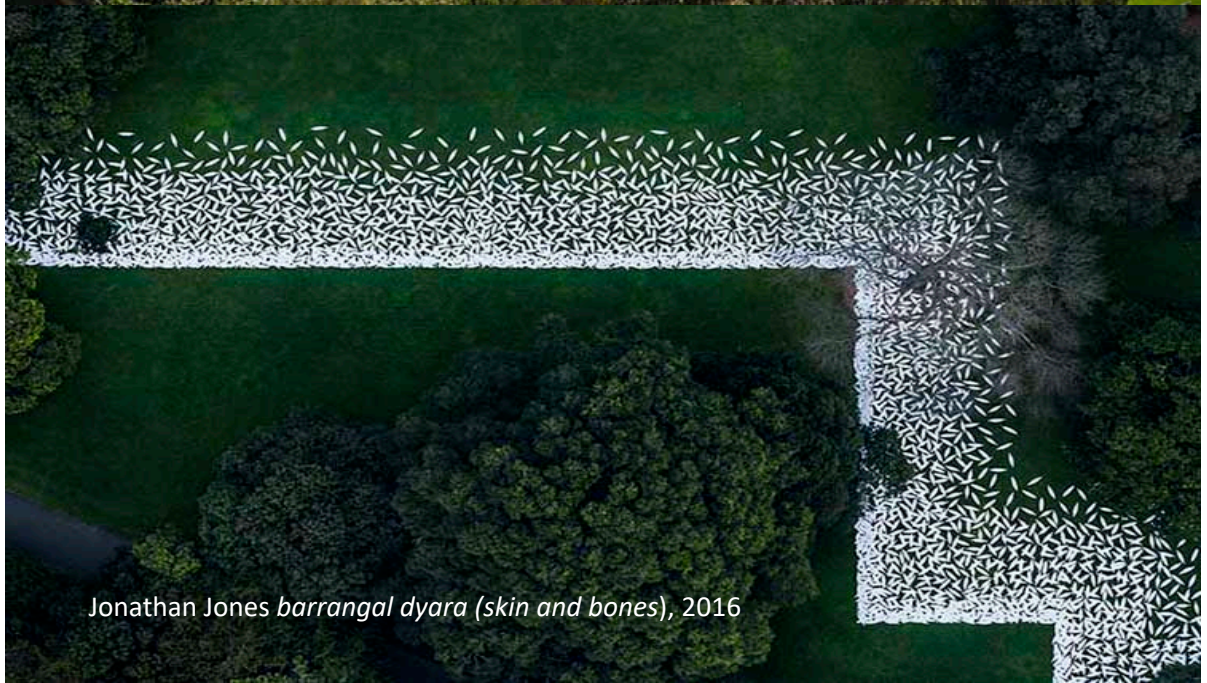
For the 32nd Kaldor Public Art Project Wiradjuri/Kamilaroi artist Jonathan Jones presented *barrangal dyara (skin and bones)*, a vast sculptural installation stretching across 20,000 square-metres of the Royal Botanic Garden.

The Project recalled the 19th century Garden Palace building where it originally stood in Sydney's Royal Botanic Garden, before it devastatingly burnt to the ground along with countless Aboriginal objects collected along the colonial frontier.

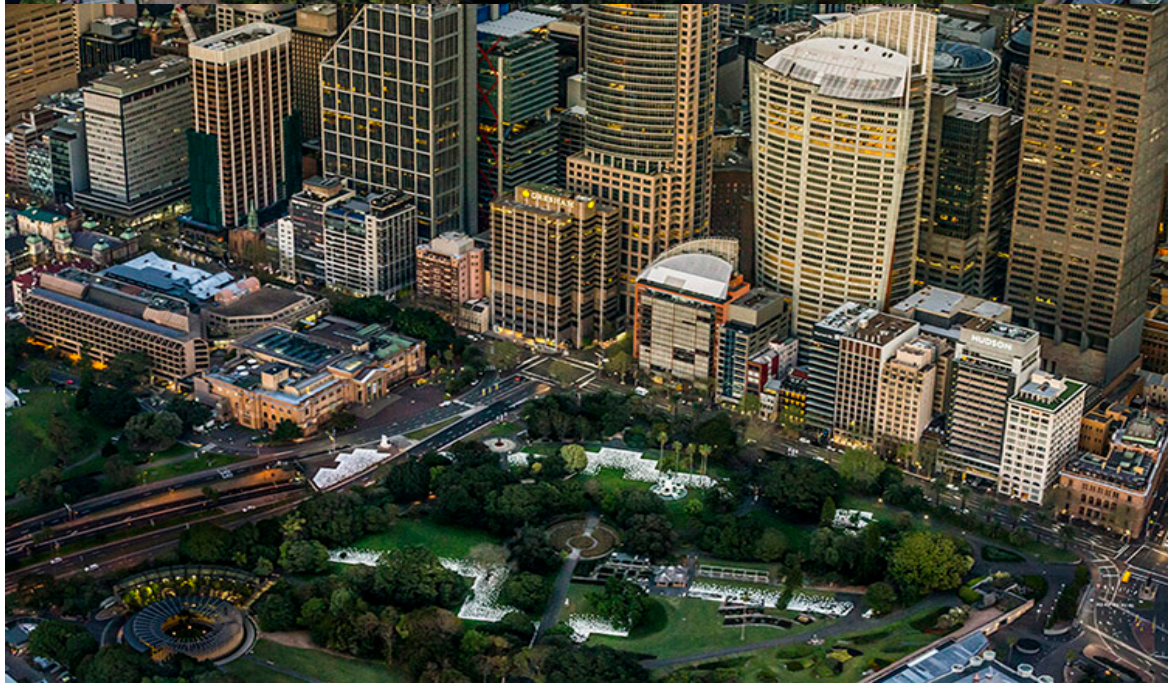
Thousands of bleached white shields echoed masses of rubble—the only remnants of the building after the fire—and raised the layered history and bones of the Garden Palace across the site..

http://kaldorartprojects.org.au/project-32-jonathan-jones





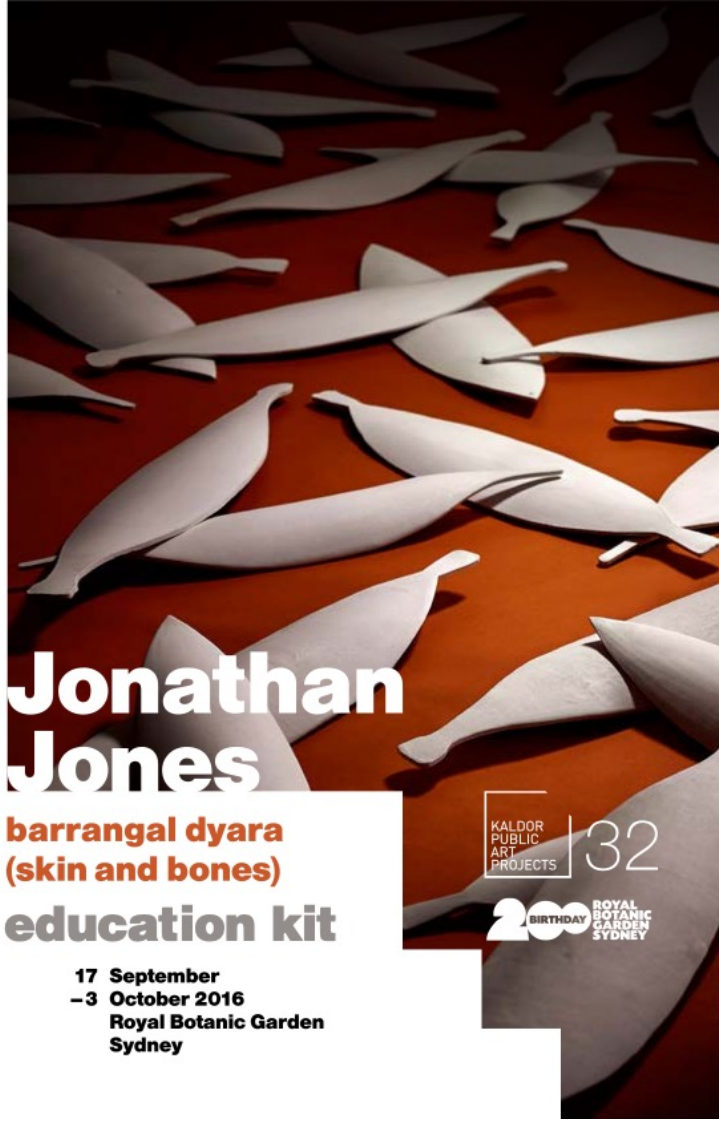
Jonathan Jones *barrangal dyara (skin and bones)*, 2016



The shields became absorbed by the garden's lawn

And a native kangaroo grassland formed the heart of the installation, and was enlivened by presentations of Indigenous language, performances, talks, special events and workshops each day.

The project connects directly with many Aboriginal communities throughout the south-east of Australia, who collaborated to reframe local history. The artwork took its name, *barrangal dyara*, meaning 'skin and bones,' from the local Sydney Gadigal language, on whose country the project took place with approval from the community.



Using this education resource

- This education kit is designed to help students and educators understand and engage with the themes of the 32nd Kaldor Public Art Project, Jonathan Jones' *barrangal dyara (skin and bones)*, the first produced with an Australian Aboriginal artist. It was created to be used in partnership with the exhibition catalogue, *Jonathan Jones: barrangal dyara (skin and bones)*, published by Kaldor Public Art Projects in 2016 (see p. 21).
- The kit comprises information on the project and artist's practice, classroom activities, a glossary and references, with online links to additional information and resources.
- Available for free download on the Kaldor Public Art Projects website, the kit can be used both before and after a school visit to the project, or as a stand-alone resource.
- The glossary includes terminology to assist with student literacy, build vocabulary and provide background to a range of relevant topics.
- Spellings of Aboriginal language words can vary; those used in this resource follow the relevant community's standard spelling or reflect the artist's preference.
- Terminology such as "language group" and "nation" varies and this resource respects the advice from each particular group.

Members of Aboriginal communities are respectfully advised that this exhibition recalls the loss of cultural objects froms across the south-east of Australia.

We welcome feedback and enquiries about this resource.
Please contact us at schools@kaldorartprojects.org.au

Charles Stedall and Company, printer, *Burning of the Garden Palace, Sydney*, 1882. Colour lithograph, 44 x 57.2 cm. Museum of Applied Arts and Sciences, Sydney, P2239.

Project overview

For the 32nd Kaldor Public Art Project, Jonathan Jones presents *barrangal dyara (skin and bones)*, a vast sculptural installation stretching across 20,000 square metres of the Royal Botanic Garden Sydney and beyond, from 17 September to 3 October 2016.

The project emerges from Jones' winning entry for YOUR VERY GOOD IDEA (2014), our first Australian open call competition, and marks the first Kaldor Public Art Project to be produced with an Australian Aboriginal artist. It is a centrepiece of the 200th anniversary celebrations for Sydney's Royal Botanic Garden, the oldest western scientific institution in Australia.

barrangal dyara (skin and bones) recalls the 19th-century Garden Palace on its original site in the Royal Botanic Garden Sydney. The magnificent colonial edifice, which dominated the Sydney skyline, was constructed to host the prestigious 1879 Sydney International Exhibition.[1] Just three years later, the entire building burned to the ground along with its contents, which included countless Aboriginal objects collected along the along the colonial frontier, at that time, largely the south-east of Australia.

The palace was a turning point on the "highway to nationhood",[2] launching the Australian colonies onto the world stage, while embodying the doctrines of **terra nullius** and **Social Darwinism** that served to legitimise British colonisation and the dispossession of Aboriginal nations.

Responding to the immense loss of culturally significant Aboriginal objects, *barrangal dyara (skin and bones)* is a celebration of the survival and resilience of the world's oldest living cultures. The project began with Jones' search for Aboriginal objects from his traditional homelands, in order to connect with his own cultural identity.

I first went looking for cultural material from where my family is from, so Wiradjuri and Kamilaroi in central New South Wales … only to find that much of this material was lost in the Garden Palace fire. Ever since, I've been struck with the loss of our cultural material, what that loss means for our communities and how you can move forward as a culture when you can't point to your cultural heritage in museums.[3]

Jonathan Jones (Wiradjuri/Kamilaroi), artist

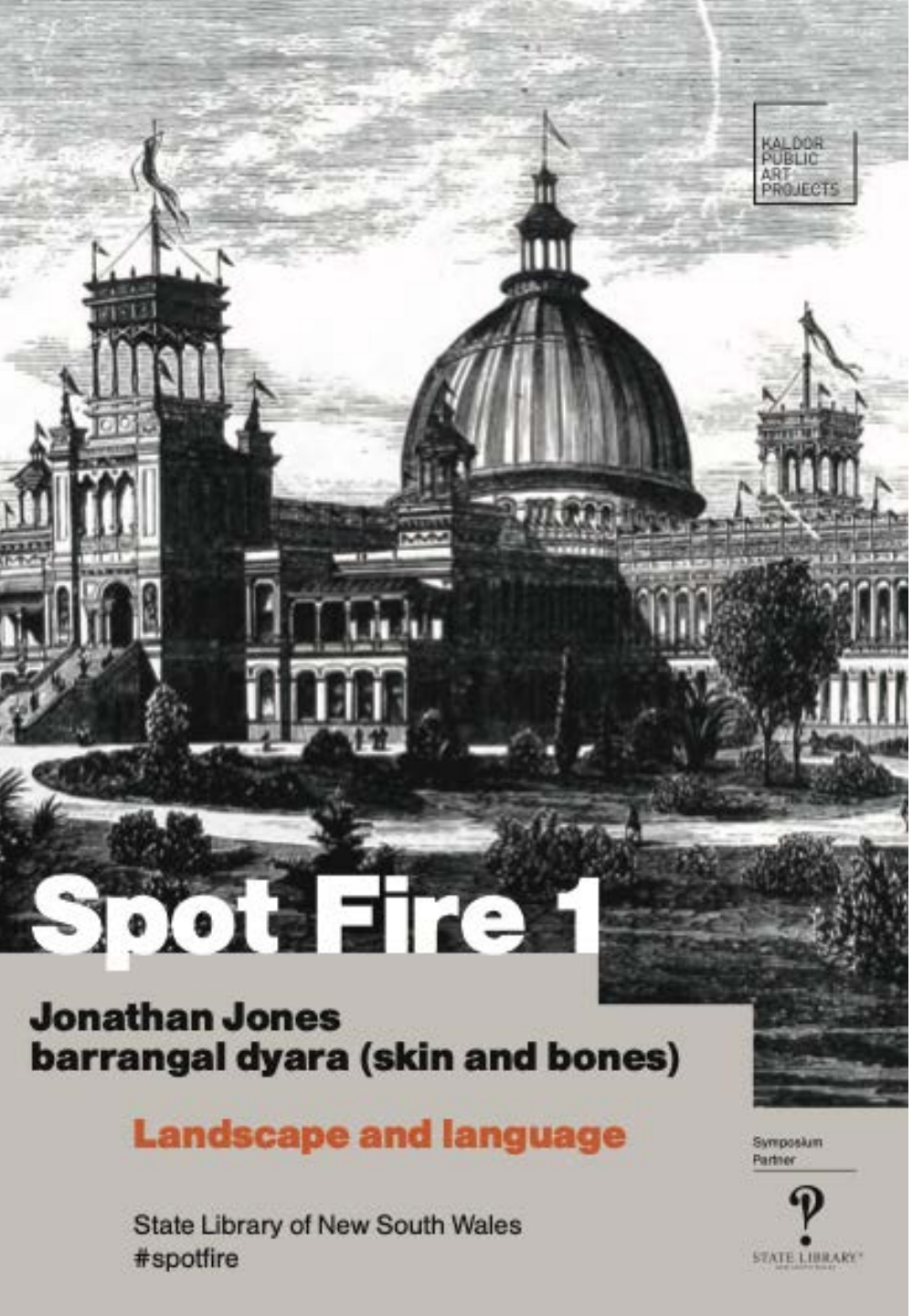
Jones presents the history and legacy of the Garden Palace from an Aboriginal perspective. A native meadow of kangaroo grass forms the heart of the installation, reinstating Aboriginal agriculture and symbolising the regenerative role of fire. Thousands of bleached-white shields echo the masses of rubble that lay strewn across the site in the aftermath of the fire, representing the bones of the Garden Palace and its layered history. The voices of south-eastern Aboriginal communities naming the objects that were destroyed by the fire, and those excluded from the display, form a multichannel soundscape throughout the site. Stories of Indigenous objects, languages, cultural practices, artists and communities from across the south-east region of Australia are revealed and celebrated in a series of talks, workshops and performances.

barrangal dyara (skin and bones) embodies Jonathan's personal artistic charter of holistically engaging with culture, community and country, and represents the creative accrual of his ongoing collaborations with artists across the south-east. The presence of a soundscape including the Sydney Language, Wiradjuri and Woiwurrung, for instance, is an opportunity for communities to celebrate their cultural survival through language. These partnerships play a crucial role in forming a complete expression of the cultural regeneration of Aboriginal communities within the context of a traumatic history. Like the destruction of the Garden Palace, this is a history that many would prefer to forget or ignore.[4]

Hetti Perkins (northern Arremte and Kalkadoon), independent curator

The project title "barrangal dyara" is from the local Sydney Language – barrangal meaning "skin" and dyara meaning "bones". It is used in consultation with Gadigal **elders** Uncle Charles Madden and Uncle Allen Madden and acknowledges the **country** on which the project takes place. Through this landmark project, Jones raises the skin and bones of the Garden Palace, and uncovers forgotten histories and legacies of colonisation, loss, survival and resilience.

1 International exhibitions were also referred to as world's fairs.
2 Jonathan Jones, "Introduction", Spot Fire Symposium 2: Spectacle, manifestation, performance, Art Gallery of New South Wales, 16 July 2016, *http://kaldorartprojects.org.au/projects/JonathanJones/spectacle-manifestation-performance*.
3 Jonathan Jones, "10 questions with Jonathan Jones", ***Kaldor Public Art Projects Blog***, 17 April 2016, *http://kaldorartprojects.org.au/blog/10-questions-with-jonathan-jones*.
4 Hetti Perkins, "Foreword", in Ross Gibson, Jonathan Jones and Genevieve O'Callaghan (eds), ***Jonathan Jones: barrangal dyara (skin and bones)***, Kaldor Public Art Projects, Sydney, 2016, p. 14.



Spot Fire 1

Landscape and language
State Library of NSW
Saturday 7 May 2016
10am - 4pm

Welcome to the first of the three Spot Fire Symposia, developed in collaboration with Dr Ross Gibson, Centenary Professor of Creative & Cultural Research at the University of Canberra, in anticipation of the 32nd Kaldor Public Art Project, Jonathan Jones' *barrangal dyara (skin and bones)*. This first Kaldor Project by an Aboriginal Australian artist will transform the site of the historic Garden Palace in Sydney's Royal Botanic Garden over 17 September – 3 October 2016.

Crowning a high ridge above the city, the impressive Garden Palace dominated Sydney's nineteenth-century skyline. It was erected in the present-day Royal Botanic Garden, a final inner-city vestige of grassland and Indigenous country scraped clean. Announcing Australia to the world, the palace welcomed international visitors and their goods to the Sydney International Exhibition, 1879–80. Indigenous languages seemed to have been silenced on the ancient ground, while a chatter of other languages, currencies and philosophies from all round the world were ushered in.

The ferocious fire which consumed the Garden Palace in 1882, ignited spot fires throughout the city, some reaching as far as Woolloomooloo and Balmain. The Spot Fire Symposia series raises themes that have emerged from the ashes of the historic fire, and is presented in partnership with three cultural institutions with profound historic connections to the Garden Palace and International Exhibition: the State Library of NSW, the Art Gallery of NSW and the Australian Museum.

Spot Fire 1: Landscape and language, presented by Kaldor Public Art Projects and the State Library of NSW, features award-winning authors, cultural leaders, story tellers and performers, revealing the cultural landscape and built environment that led to the Garden Palace, and asking what configurations of country are still active on this site at the edge of the city?

The Spot Fire Symposia will be livestreamed on the Kaldor Public Art Projects website

kaldorartprojects.org.au
#spotfire

Cover Image:
The Garden Palace, Royal Botanic Garden Sydney, c.1879, detail
City of Sydney Archives

Spot Fire 2

Spectacle, manifestation, performance
Art Gallery of NSW
Saturday 16 July 2016

Housing the Sydney International Exhibition of 1879–80, the ostentatious Garden Palace completed the Chief Colonial Architect of New South Wales, James Barnet's, vision for Sydney. Gesturing out to Middle Harbour and the Heads, it was the city's way to boast of its burgeoning colonial enterprise. But the Garden Palace's magnificence was fleeting, lasting only three years. In 1882, in an ultimate spectacular display, the palace and all its contents were destroyed by an intense fire that took only a few hours to obliterate everything except the gates at the south-west entrance to the grounds.

Spot Fire 2: Spectacle, manifestation, performance considers the history of spectacle in Sydney and interrogates the grandiose cultural vision that promoted the Australian colonies to the world.

Gibbs, Shallard and Company, Burning of the Garden Palace, Sydney, 1882, detail
Museum of Applied Arts and Sciences, Sydney

Symposium
Partner

ART GALLERY NSW

Spot Fire 3

Loss and resilience
Australian Museum
Saturday 6 August 2016

When the grand Garden Palace burned down in 1882, vast stores of archival and cultural material were lost, including an ethnological collection assembled by the Australian Museum – a loss that is felt to this day. But out of the void, new modes of display and public cultural engagement developed and Sydney began to recover. The burning palace was generative too, causing the growth of several fledgling organisations that may well have failed to emerge if the great centralised vision of the post-exhibition Palace had managed to prevail.

Spot Fire 3: Loss and resilience will celebrate the resilience of the many cultures impacted by the Garden Palace fire, showing how communities can heal and then find ways to thrive after catastrophe.

Remains of the Garden Palace after the fire in 1882, detail
Museum of Applied Arts and Sciences, Sydney

Symposium
Partner

AUSTRALIAN MUSEUM

Pilar Mata Dupont. *Shuffle.*
Panoramic video for LED screen.

In *Shuffle*, the character of the Dancer navigates through this historically layered tap dance and arrives at a clinically white museum, under bright lights. Sculptures made from sallow porcelain – also a material with a complicated history of violence and appropriation – sit on red earth, compacted to hold the shape of museum plinths. The porcelain pieces sit, pale pink burnt as if exposed to a blazing sun, salt encrusted, peeling, grazed, flaking and bruised, wilted and precariously perched on their unstable hosts. The Dancer, wearing black tails encrusted with shells, salt, lace, and pearls, and donning a laced mask over their face, pirouettes through the unfamiliar space.

The film hinges on the tension created between the porcelain pieces, earth plinths, and Dancer; the precarious balance between the percussion of the tap steps and the tenuous structures. The dance begins cautiously, but becomes confident and dangerous in the Dancer's efforts to engage with the structures – the objects move and shake, and the earth plinths begin to crumble.
When they collapse, ceramics shatter, and together they create a new landscape, seemingly broken, but in fact a new arrangement made from the same material. Through the Dancer's vain attempts to create they have unsettled the space they perform in, and created something that is everything it was before, but in a newly appropriated form.