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21.3 JOURNAL OF
VISUAL CULTURE

Dust against the Anthropocene: Yhonnie Scarce's nuclear geo-fictions

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Abstract. Against the universalizing of the Anthropocene, radioactive dust affects specific communities more than others. At the same time, it carries particles from local sites to cosmic horizons. Uranium dust encodes deep timescales of planetary formation and extinction as they intersect with histories of violence and extraction, myth and current politics. This article analyses artwork by Yhonnie Scarce, descendant of the Kokatha and Nukunu peoples of South Australia, arguing for a particulate geo-fiction as method of engagement with colonial politics of deep time. By *sampling* and literally unearthing nuclear histories, Scarce's work traces more-than-human toxic ecologies. Through a condensation of uranium-scale temporalities, the present moment of its exhibition is prised open. This becomes a speculative ethical encounter with responsibilities to deep histories and futures beyond itself, the lingering after effects of British colonial violence inscribed into the materiality of the work.

Keywords. • Anthropocene • colonialism • contemporary art • deep time • Elizabeth Povinelli • Gabrielle Hecht • nuclear culture • Reza Negarestani • Yhonnie Scarce

Daniel Browning:	You call them 'time bombs'.
Yhonnie Scarce:	They're waiting to be unearthed, or ready to go off. (Yhonnie Scarce, in discussion with Daniel Browning, available at: https://ocula.com/magazine/conversations/yhonnie-scarce-at-acca-melbourne/)

Local enfolding of radiological deep time

The half-life of uranium-238, the most prevalent isotope in uranium ore, is around 4.5 billion years. Present in the formation of the Earth's crust, it references the deep history of the planet. Decaying so slowly, its scales of measurement anticipate the future explosion of the sun and death of the

journal of visual culture [journals.sagepub.com/home/vcu]
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Vol 21.3: 495–514 DOI 10.1177/14704129221136217

solar system. Histories of uranium include these timescales, beyond human species existence, as they intersect with other scales, histories and futures – of mining and exploitation of resources, of weapon development and testing, of energy demands, of ongoing toxicity and of high-level radioactive waste, increasing globally at a rate of around 12,000 tonnes a year (WNO, 2016). Uranium materializes deep time not as something magnificently other to human lives in the present, but as a more-than-human scale entangled with existing processes of capitalism, environmental vulnerabilities and harm.[1] In addressing the general question of what role art could play in relation to the asymmetric damage of the so-called 'Anthropocene', I focus on this materiality of the nuclear. I explore the possibility of art practice attuning to radiological deep time, connecting local sites to planetary scales and tracing toxicity as an extension of practices of colonialism. My focus on art practice is not to propose it as privileged method for knowledge in this context, but to consider the role of aesthetic experience in relation to subjectivity and ethics within radiological deep time. This draws on art's materiality, its production of concepts and affects, and critical relations to its institutional contexts and parameters. Thinking deep time through art necessitates a recalibration of art subjects and objects, focalized in this article through the encounter with artwork as a sample of nuclear toxicity.

Waiting to be unearthed, or ready to go off. In June 2022 in Birmingham, UK, a constellation of dark cloudy glass pellets hang suspended between the ceiling of Ikon Gallery and its floor, like 600 stretched yams caught momentarily ascending into the skies or collapsing to the grey painted gallery ground (see Figure 1). Moving around the glass swarm, its edges shimmer. Its form re-arranges like vapour as eyes shift between awareness of a turbulent entirety or individual glass sculptures, hand-blown and dense, capturing and condensing surrounding light into glossy surface. The installation, *The Near Breeder* (2022), is a seductive and complex work by the artist Yhonnie Scarce. Born in Woomera, South Australia, Scarce belongs to the Kokatha and Nukunu peoples. Her work uses glass as a way to explore the political and poetic qualities of the material, in particular in relation to the crystallization of desert sand as a result of British nuclear tests on her homeland during 1956–1963 in Maralinga, formerly part of the Woomera Prohibited Area. The work draws on a residency with Ikon 2020–2022, production at the University of Wolverhampton and research into documents in the University of Birmingham archives, relating to the scientific research of German physicists Otto Frisch and Rudolf Peierls, which led to the development of the atomic bomb (Ikon, 2022). Considering this work and research in relation to Scarce's practice more generally, it traces an extended ecology of the nuclear, one that includes personal history of displacement, development of atomic technology in the context of Second World War and Cold War geopolitics, the UK's relations with America and Australia, and deep times of toxicity exceeding viewer

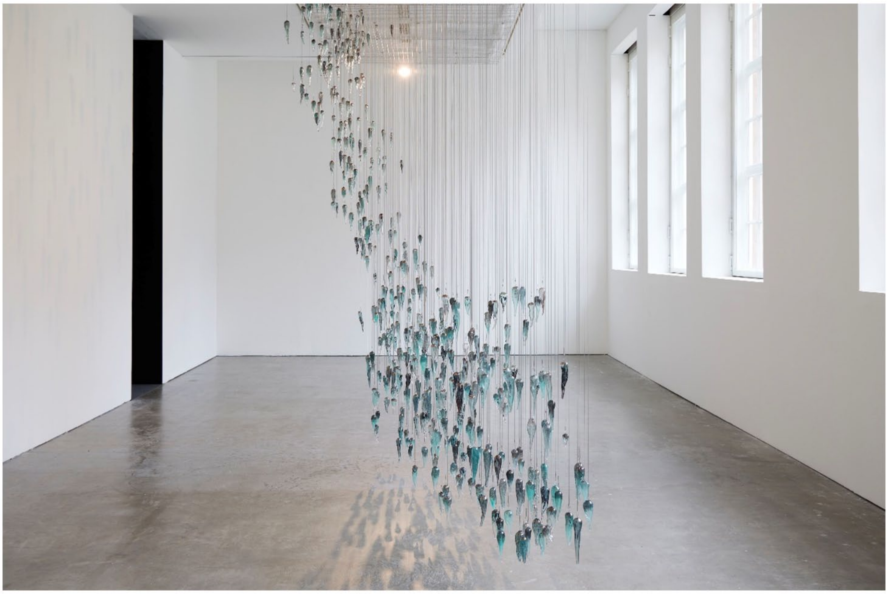


Figure 1 Installation view, Yhonnie Scarce The Near Breeder (2022) Ikon Gallery. Courtesy of Ikon Gallery. © Photography, Stuart Whipps.

lifetimes. It is this extended ecology that is materialized through the work. Through the specificity of its materials, the work alludes to local challenges faced by Indigenous peoples and lands in Australia in the wake of Maralinga, representing these not as a distant other to the UK but as something its institutions and art viewers become implicated within. There are moments, walking around the installation, when it takes shape as a mushroom cloud, or poisonous rain cloud, glass as seductive surface and horrific repellent where one sees only oneself, recoiled, looking back. Within the current UK political context, where a right-wing government actively resists challenges and processes of decolonization by propagating an idealized nostalgic national identity,[2] the work is given antagonistic force through its return to centres of military power, invoking colonial history to explore ongoing exploitations of the Anthropocene.

My own interest in the nuclear has developed from another angle, where I have been working as an artist within the specific context of ‘marking’ nuclear waste sites for future generations.

My *Pazugoo* art research project has focused critically on questions of what it could mean to ‘mark’ nuclear waste for imagined long-term futures,[3] and I have been drawn to this strange and specific context as laboratory for problems and potentials for art methods within the Anthropocene. I am interested, then, in how work such as Scarce's can challenge an existing imaginary of the nuclear marker. Through art practice methods, tracing ongoing toxicity, the work addresses questions of what is being recorded and remembered in this context, how and for whom, what histories and narratives it excludes. In order to take this analysis further, I will first of all outline what I mean by this context of the nuclear waste marker.

Dangerous to humans and the environment, high-level radioactive waste must be contained for durations up to hundreds of thousands of years, or longer. This has led to the development of deep geological repository projects around the world, testing possibilities of safe long-term storage and monitoring of waste at immense scales.[4] Alongside technical questions of nuclear waste storage, such deep timescales also open up questions such as how the hazardous toxicity of these materials could be communicated to future generations of people, or even how such long-term futures could be imagined from a present perspective. An ongoing project that aims to 'mark' sites of buried waste, for example, has focused on communicating danger to future generations for safety purposes. Drawing on discussions since the late 1980s, the Nuclear Energy Association launched an interdisciplinary initiative in 2011 named the Preservation of Records, Knowledge and Memory across Generations (or RK&M) project. Increasingly, this initiative has expanded from a focus on practical communication, coming to involve artists interested in more general theoretical questions it raises.[5] Inherent to its understanding, for example, are relations between sensual experience and unknowable timescales, extinction and current politics of extraction, as immense scales become entangled with specific communities, material processes and histories around the planet, raising questions of whom and what are included in narratives of long-term nuclear futures.

One problem for the project is its relation to a universalizing discourse. Historical designs for marking dangerous sites of nuclear waste for future generations have tended to leave critical questions of addressee unexamined. They assume to speak *for* 'all of humanity', in other words, *to* a future 'all of humanity' loosely understood as the same as is it is now.[6] This misses the question of who is speaking now to whom, or *what*, in an unknown deep time future. It also misses the specific power relations of the present, as they entwine with those of past and future. A project of marking something as safely buried 'here', in other words, can obscure its ecological entanglements in ongoing harm and vulnerabilities 'elsewhere', missing ways that the local is imbricated unequally with the planetary. Analysis has shown how settlements at abandoned uranium mines remain exposed to high levels of radioactivity long after sites are abandoned, and waste has been exported to be stored and marked as 'dangerous' in other parts of the word (Hecht, 2018). Such universalizing of specific Western experience reflects problems for Anthropocene discourse more generally. The term's reference to 'all humanity' has been criticized as masking inequalities, when it is the case neither that all humanity equally causes environmental damage nor that all humanity is equally affected by it. Métis anthropologist Zoe Todd, for example, describes how the Anthropocene term 'blunts the distinction between the people, nations and collectives who drive the fossil fuel economy and those who do not', missing the 'ongoing damage of colonial and imperialist agendas . . . when the narrative is collapsed to a universalizing species paradigm' (Todd, 2015: 244). Studies have examined this in relation to race (Yusoff, 2018), feminism (Grusin, 2017) and capitalism (Demos, 2017), while it has also been considered as an historical and epistemological gap, as Elizabeth de Loughrey (2019: 2) argues in her discussion of allegory and the Anthropocene: 'The lack of engagement with postcolonial and Indigenous perspectives has shaped Anthropocene discourse to claim the novelty of crisis rather than being attentive to the historical continuity of dispossession and disaster caused by empire.'

Within this framework, the project of marking sites of buried nuclear waste as claim to speak for and communicate to a universalized future humanity tends to miss the continuation of existing historical narratives of colonial extraction of resources and planetary toxic effects. The idea of artwork as monumental site marker can be complicit with this, its static localization disconnected from drift, contagion and radioactivity as more-than-human agency at planetary scales. On the other hand, artistic responses that focus on deep time through its immense non-human otherness can get lost in the seductively sublime affect of this scale, detached from its ongoing relation to specific communities and experiences in the present.

The materiality of uranium, in its sometimes immense half-lives, indexes temporalities of the solar system. This challenges anthropocentric thinking, reframing human thought and culture through radically ungrounding scales of the planet and beyond. At the same time, however, theories and practices of deep time must be considered in relation to their enfolding through other scales and localities, shaping political realities of the present. The aim in this article, then, is to consider how this radically scale-shifting relationship could be thought differently, how universal scales of uranium could be considered not as something separate from planetary politics today, but embedded within it, and how art could be a method for this. This involves expanding from site marking to consider other ways that art could trace contagious nuclear processes. It means asking how art could connect and navigate, conceptually and materially, between and within complex scales, offering a way of thinking art entangled within the deep times of the Anthropocene, and critical of it. To do this, I focus on the poetics and materiality of toxic *dust*. By bringing together work by sociologist of 'nuclearity'[7] Gabrielle Hecht and philosopher Reza Negarestani's theory-fiction work *Cyclonopedia*, I propose dust as particulate connector between specific local sites and universal-scale currents, embedded within the earth and within mythic fictions. This is expanded through analysing Scarce's artwork, which materializes and transforms toxic dust, exploring its histories and its aftermath. Her work is thought alongside analysis of unearthing and the relic object in anthropologist and philosopher Elizabeth Povinelli's work, and the logic of the sample. It leads to a conclusion where the art encounter is proposed as a de-subjectifying attunement to deep-time ecologies. The material reality of radioactive half-lives challenges the centrality of the viewing subject, as the present moment of encountering the artwork unfolds into non-anthropocentric scales of power and politics.

Materiality and mythology of dust

Against the universalizing claims of the Anthropocene as being about all of humanity, the materiality of toxic dust is located within specific communities affected by it. At the same time, rather than being restricted to one location, it drifts, reshaping landscapes. The drifting contagious materiality of dust is a problem in legacies of nuclear disasters.[8] It relates not only to disasters, however, but is also inherent in planetary nuclear production cycles and its residues. Gabrielle Hecht (2018), for example, describes enormous piles of tailings (leftover residue from mining) being blown by winter winds, entering water and food chains, damaging communities and reshaping the topography of the mineral-rich Rand area of South Africa. Indeed, taking Hecht's focus on pollution processes further, one of the effects of her analysis of the uranium trade in Africa, *Being Nuclear* (Hecht, 2012), is to connect disparate narratives through geographies of dust flow. Dust is an ever-present hazard of inhalation for miners in Madagascar (p. 37) and Gabon (p. 229), for example, while in describing histories of South African mining, 'everywhere always there was dust' (p. 257). It disperses, crossing borders, as sediments from the Mitembe river system in Gabon pass into the Atlantic, and dust dispersal from the Sahara is global (p. 241). Hecht's argument here is that such particles are not always categorized and regulated as 'nuclear', escaping definitions and so demands of monitoring and safety. Dust coalesces and it exceeds. As De Loughrey (2019: p.74) has argued, it breaks down barriers between human and more-than-human bodies, embodiment of nuclear atmosphere. An extended diagram of nuclear toxicity, then, could start from the materiality of the waste itself, tracing its complex entangled histories and lifecycles, through deep time and across planetary extraction processes. This offers a counter-image to the monumental and static imaginary of the repository site marker, radioactive waste conceptualized instead through its ongoing contagion via particles of dust.

It is such analysis of dust as border crossing, undoing and reshaping landscapes in its wake, that recalls philosopher Reza Negarestani's (2008: 88) descriptions in *Cyclonopedia* of the 'earth itself composed of dust particles and fluxes . . . its terrestrial bedrock, its concrete ground, is progressively eroding and degenerating into dust.' While writing from different perspectives, Hecht's *Being Nuclear* and Negarestani's *Cyclonopedia* share an image of the Sahara as global dust pile. What Negarestani highlights is that dust, as well as being specifically local, is also universal in scale through its materiality, entangled within deep time, as it 'swarms planetary bodies as the primal flux of data' (p. 88). One of the images running through *Cyclonopedia*, a work framed through the discovered notes of fictional Iranian Professor of Archaeology Dr Hamid Parsani, is dust understood as both Middle-Eastern realism and planetary force, 'involved in the formation of stars and planetary bodies' (p. 88). Parsani's dust narrative combines with Hecht's sociological analysis as an apt figure for an ontology of radiation, attuned to its flows that escape and exceed repository locations, temporalities and the regulatory frameworks of nuclearity.

In *Cyclonopedia*, dust is destructive and boundary-crossing, while also, like uranium, a condensation of all matter from its planetary formation to cosmic horizons, 'a crystallised data-base or a plot ready to combine and react . . . emerging from domains of invisible hazards carrying crystalline waste matter (p. 88). Its nomadism, however, is also its recombinatory virtual potential, 'when dust particles are composed, they combine countless terms, languages and materials belonging to entirely different kingdoms' (p. 88). It is radical in its 'utter collectivity' (p. 89). Shaped by climatic flows, dust is continually ungrounding and forming new territories, connecting local sites to universal horizons. It is destructive force but also has potential in reshaping thought and knowledge. Dust, as media geology theorist Jussi Parikka (2015: ch. 4) has also highlighted, connects realities of present pollution to the cosmic through a more-than-human-agency that encompasses both economics of labour and the slow melt of glaciers. Dust flow becomes a particular geography, one not restricted to local sites, while also not jumping to a seductively detached aesthetics of cosmic scale.[9] Instead, it overlaps these scales, a distributed geography of unequal causes and effects of toxic damage.

This particulate materiality, in its grounding and ungrounding, acts as an indifferent connector to narratives sometimes kept apart. De Loughrey's (2019: 74–77) analysis, for example, traces a history of radiation which includes both the exposure of workers in the US to radium through industrial manufacturing in the 1920s, and legacies of nuclear testing in the Marshall Islands and French Polynesia in the 1950s. Microparticles drift through time indifferent to military and industrial uses and territories at a macro-level. Following this, De Loughrey turns to the Indigenous Pacific to address the question of how to narrate climate crisis apocalypse and the extinction of the human as species, and from whose perspective: ‘[It is here] we see that the world threatening apocalypse has already occurred, whether we consider the (ongoing) history of Euro American empire and settler colonialism in the region or twentieth century nuclear colonialism’ (p. 78). Her analysis emphasizes this continued line, where the extractions of the Anthropocene are not a new conceptual struggle for cultures dispossessed and damaged by it, but a continuation of existing trajectories including histories of atomic testing, legacies traced in its dust.

Interestingly, in *Cyclonopedia* (Negarestani, 2008: 113), dust is given agency through the conceptual persona of its scavenger, Negarestani’s/Parsani’s reading of the Sumero–Assyrian demon of epidemics, Pazuzu, ‘Pazuzu specialises in scavenging the stratified earth and its biosphere in the form of dust, which is then uplinked to alien currents flowing in the universe.’ This demonic figure becomes dust carrier, connecting the materiality of the ground to the cosmic continuum it inhabits. Pazuzu is a navigational figure connecting local sites to their universal horizons, or the present moment of encounter to its implication in deep times future and past, through dust. De Loughrey (2019) also evokes the demonic in her discussion of the Anthropocene, discussing its importance as tradition of allegorical passage between worlds, ‘in contemporary narrative these may be figures who move between worlds and knowledge systems’ (p. 4), while it resonates with Hecht’s call for ‘interscalar vehicles’ as ‘a means of connecting stories and scales usually kept apart’ (p. 7).

Indeed Negarestani’s invocation of Pazuzu as conceptual navigation suggests a response to the question driving De Loughrey’s study, ‘what kinds of narratives help us navigate an ecological crisis that is understood as local and planetary, as historical and anticipatory?’ (p. 3). The demonic dust carrier enacts flight between and through divergent, complex and compressed scales of time and space, through fictions and through the materiality of the earth, scavenging the past and grounding new potential futures.[10] I draw on this figure to guide the role of art here. I turn to art as a practice and method involved in mythic narratives, fictions, allegorical resonance and lines of flight, while also embedded in material registers – made of particles, or materializing social relations – art as geo-fiction. It is art’s particulate materiality that can force an engagement with the Anthropocene not as novel crisis for the Global North but in its embodied relation to power and colonial legacies, through the histories, futures, mythologies and affects of its materials. Developing these ideas, I now go on to look at how a geo-fictive method has been developed by Yhonnie Scarce.

Dust crystallization sample method: Yhonnie Scarce's *Hollowing Earth*

Artist Yhonnie Scarce has been described as 'a leading exemplar of contemporary Australia's political, cultural and aesthetic mediators' (Rey, 2021: 42), amassing a body of work over the past decade that 'holds each injustice up to the light, from colonial genocide to domestic slavery, "stolen children" land degradation and bodysnatching'. Bundjalung and Kullili journalist and artist Daniel Browning describes the power of Scarce's work in its beauty subsuming unease and environmental destruction, telling stories of displacement and dispossession (Ocula, 2021: para 1). This doubleness is highlighted by others, such as the Arrernte and Kalkadoon curator of Scarce's work Hettie Perkins who has described it as a 'tender trap', seductive and repellent, not just about Country, but '*of* Country' (Perkins, cited in Convery, 2021.[11] Scarce describes the background for a body of work exploring the toxic materiality of the nuclear precisely through dust:

> About 15 hours west of Woomera, where my family lived, is Maralinga, where the British conducted nuclear testing in the 1950s. Dust and clouds travelled from the site across the state making many people sick, and the infant death rate was high during and after those tests. (Ray, 2020: Section 3)

Woomera, the word imported from the Dharug language of the Eora people of Blue Mountains, where it describes a spear-throwing device, names a closed military complex in the northwest of South Australia, established in 1947 by the Anglo-Australia Joint Project. It occupies Kokatha land, Scarce's maternal grandfather's Country, while to the South are the Nukunu lands of her maternal grandmother (Rey, 2021: 43). Maralinga, from 'thunder' in a southern Pitjantjatjara dialect, is known primarily as a site of British nuclear testing between 1956 and 1963, actions which caused devastation to the environment and local indigenous peoples, the health of military personnel and continued contamination of land (Behrendt, 2020; Hall, 2018; Taylor, 2021). Curator Una Rey analyses the background to the operation,

> in the wake of their Second World War defeat in Singapore and the military power demonstrated at Hiroshima and Nagasaki, the United Kingdom's aspiration was to keep the fire of Empire burning: keeping pace with the United States and Russia in their escalating arms race was a matter of urgency and Commonwealth honour. (Rey, 2021: 42)

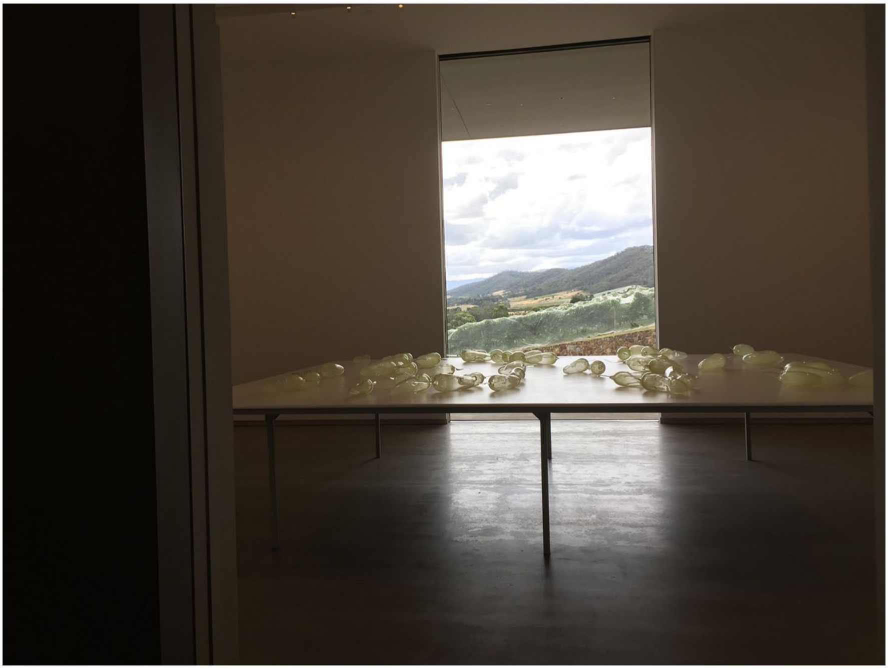
The testing was promoted by then Australian Prime Minister Robert Menzies (later Sir) as 'in the national interest', claiming it took place in the supposedly empty 'vast spaces in the centre of Australia'. Britain carried out 12 major atomic tests in Australia between 1952 and 1957, while, for a decade, 'minor' trials left toxic levels of plutonium, cobalt-60 and other radioactive waste across Maralinga Tjarutja Country (Rey, 2021: 44). Rey's analysis, while highlighting the importance of the dust locality as far from an 'empty space', also draws attention to its climactic drift:

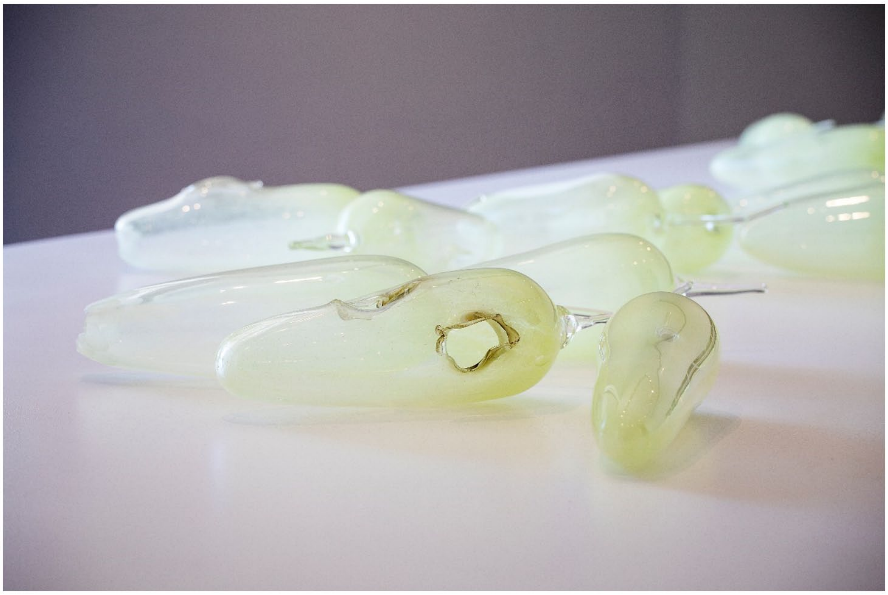
> It is well established in both Aboriginal knowledge and meteorological science that prevailing winds blow west to east across the inland of Australia. These are the wild 'westerlies' that can bring extreme dust-storms to coastal metropolitan areas . . . Radioactive waste drifted and settled across vast tracts of Australia during the tests . . . In every atomic test, the immediate fallout area was on Aboriginal land (including Scarce's Kokatha land). (p. 44)

Counter narrative to the ideology of testing in 'empty space', Scarce describes her own memory of toxicity spreading through dust far from the test sites, penetrating bodies and causing irreparable harm (Ray, 2020), discussed later as intergenerational trauma (Ocula, 2021). This narrative of exploitative colonial history, where land of the Maralinga Tjarutja people was poisoned through the damaging radiation effects of the testing, is inscribed into the land and climate itself, spread through clouds of particles after the event. To encounter these particles, as a vulnerable body, is to be forcibly entered into this harmful collective assemblage of military colonial power, reflecting the 'environmental racism' of toxic nuclear legacies affecting Indigenous territories described by Kathryn Yusoff (2018: 49–52). Scarce's response to this embodiment of history through dust is to evoke the geology of the [specific] site, where desert sand was crystallized and turned to glass through the extreme heat of the explosions. She describes returning to Woomera and to the Maralinga site:

> At the Breakaway bomb site [at Maralinga], I was told by an academic at the University of Birmingham that a lot of people think that because that particular bomb test was low to the ground, they thought the ground had turned to glass before it had actually gone completely off . . . The topsoil of that site was elevated into the air, and it became molten and then it was slapped back down on the ground. That's how intense it was. (Scarce, cited in Ocula, 2021)

It is this transformation of matter that she has drawn upon in work such as *Hollowing Earth* (2016–2017, see Figures 2 and 3). The work, anticipating future work such as *The Near Breeder* (2022) installation at Ikon in Figure 1, is made up of a collection of objects, each around the size to fit into a human hand. The objects are made from a glass mix containing uranium (Ikon, 2020),[12] hand-blown and hot-formed into the shape of the Australian native plant known as the 'bush banana'. Each individual object is scarred and deformed with irregular eruptions, craters, scratches and scorch-marks, emphasizing the violence of the transformation process. They are displayed scattered across





Figures 2 and 3. Installation view, Yhonnie Scarce Hollowing Earth (2016–2017), TarraWarra Museum of Art. Courtesy of the artist and THIS IS NO FANTASY. © Photography, Andrew Curtis.

a table as if found on the desert floor, uncanny in their transparency, tinged with a slightly sickly glow. Glass forms, shaped by breath, capture a gasp of life, while alluding, as Scarce describes (Ray, 2020) to a decomposing corpse. By referencing the bush banana, common in the diet of Indigenous peoples of Central and Western Australia, through the crystallized uranium sand, Scarce brings together competing relations to the land of her ancestors.[13] On one hand, the land sustains life. On the other hand, it is exploited and riddled with death.

As such, the work operates as a critique of extractive uranium mining practice on Aboriginal land, the pockmark melted surfaces of the objects described as metaphors for the 'desecration of country, gaping holes and scarred surfaces' as aftermath of exploitative practices (Scarce, cited in AAR 2017, para. 4) By referencing dust flow and the transformation of sand to glass, Scarce draws attention to the particulate make-up of the work, which is not only a metaphorical image of toxicity but also a material *sample*, indexing the site of its collection, *of* Country, not only about it, as Perkins had suggested.[14] Science or historical artefact displays are more familiar than art exhibitions with the logic of the sample, a material object taken to reference another site, a larger whole of which it is a part. The sample is a partial model as it maps and stands in for something outside of its own appearance, acting as evidence. Scarce's work performs this sampling procedure, while also alluding to the mythic quality of material transformation. This is highlighted by Browning in discussing Scarce's work, focusing on its transformation of glass as a 'transmutation into the celestial realm' (Taylor, 2017). Something happens, in other words, through the crystallization of desert sand, which connects the materiality of the ground to its entanglements in more-than-human scales, also echoed in Scarce's practice. The work coalesces the desert as particles, while giving it flight through drawing on local cultures and mythological transmutation. Through this method it navigates between the local site of Maralinga, the long-term effects and planetary reach of radioactivity, suggesting an alternative type of 'marker' for nuclear legacies.

The sample has a specific relationship to its viewing subject in that its presentation becomes a point of contact with something and somewhere else, indifferent to its viewer.[15] Browning's analysis captures the sense of material transformation as a ritualistic and performative moment, and it is this that I will extend to the relationship between the work and its viewers. I am interested here in how encounters with the work extend colonial toxic ecologies to include its hosts and viewers, drawn into its celestial scales. I will elaborate on this in the final section, arguing that this geo-fiction method, rooted in sampling and myth, can draw on and rethink the viewer–object relationship of the contemporary art exhibition in relation to a speculative ethics of the Anthropocene.

Encountering unearthing

There are two key moments of earthing and unearthing in Povinelli's book *Geontologies* (2016). The first comes early on when she is discussing a conversation with elder Indigenous friends and colleagues about what to do with the archive they have developed working together as part of the Karrabing collective at Belyuen in the Northern Territory of Australia. The conclusion they come to is that, rather than digitizing and storing in a library, the archive should be given a *Kapuk* (a form of burial), 'A hole should be dug, sung over as the remains were burned, then covered with dirt and stamped down' (p. 18). What is emphasized here is that this is not a form of forgetting or erasure but, on the contrary, a way for the knowledge to be transformed through its becoming earth:

> my archive should be treated like all other remains of things that existed in one form and now would exist in another . . . The knowledge would not disappear. Rather, it would be transformed into the ground under our feet, something we stood on but did not attend to. (p.18)

The burial is neither a forgetting nor an anticipation of future reclaiming, time capsule style. Instead, through the ritual, present knowledge enters into a shared territory of past experience and future communities when 'others might have a vague feeling that the site was significant' (p. 18). The ritual of burying stages the present moment as something encountered from an unknown future vantage point.

Later in the book, this process of earthing is mirrored with an unearthing when Povinelli describes the encountering of a manifestation by her friends and collaborators Gracie Binbin and Betty Bilawag. It is the movement of tides that reveals what they describe as a *durlgmo*, or sea monster fossil, connected to the patrilineal dreaming of Binbin's husband, John Bianamu. For Binbin and Bilawag, as described by Povinelli (2016: 61), the manifestation of ancestral bones acts as a connector to shared histories of territorial belonging and dislocation. Its encounter makes an ethical demand on them:

> A certain obligated co-responsiveness . . . into an ongoing mutual orientation and involvement (cognitively, sensory, materially) within the landscape . . . embodied obligation was not a completed event, but rather ongoing efforts of attention to often nuanced interactions between human actions and other modes of actions. (pp. 79–80)

It turns them to objects, as Binbin and Bilawag become objects for the bones they unearth, which think about them, remember them (p. 61). It re-orients their position within their ecological relations, while it becomes a connecting temporal event. The present moment of the encounter extends to deep times of ancestral histories while opening towards re-oriented speculative futures. Povinelli describes an encounter with an object then, but it is an object understood in a specific way, not in terms of the conventions of a modern or contemporary art object, but something more akin to a *relic*. The relic is a leftover, which won't go away. It acts against the separation of deep time as other to now, enacting it instead as an eruption in the present,[16] which, for Povinelli, is understood as a 'mode of showing care' (p. 67).

The fossil encounter, in this sense,[17] invokes the 'ethic of historical consciousness' discussed by Papaschase Cree scholar Dwayne Donald, drawn on by Zoe Todd (2015: 250) in her analysis of his theory of Indigenous Métissage: 'This ethic holds that the past occurs simultaneously in the present and influences how we conceptualize the future. It requires that we see ourselves related to, and implicated in, the lives of those yet to come.'

As Todd goes on, Indigenous Métissage is an epistemology as an ethical imperative to recognize relations. This includes those of humans to the more-than-human networks they are implicated within, the present moment as it relates to history and to non-anthropocentric deep time futures, and the power relations encoded within these networks. It is unearthing the relic that activates this process, its beholder coming to recognize their own subjectivity as distributed through these 'reciprocal, ongoing and dynamic . . . meshworks' (p. 251). While being aware of Todd's highlighting of the danger of extracting and appropriating concepts, approaches and worldviews from indigenous perspectives, I am interested in how this understanding of an encounter between human beholder and object can be drawn upon to analyse art's objects and subjects in relation to discourses of the Anthropocene. Care must be taken, Todd argues, to examine contexts of debates, focusing the Anthropocene through 'locally informed responses to in situ challenges around the globe' (p. 252). Scarce's work is informative in this context. She has described the glass yams of *Hollowing Earth* as time bombs, waiting to be unearthed, or ready to go off, capturing this sense of condensed time as well as speculating a future unearthing (Ocula, 2021). Through its materiality, the work is rooted in locally informed 'in situ' response to the Maralinga context, while this sense of locality also drifts and transmutes, tracing how sites are entangled at multiple scales, leading to an engagement with nuclear colonization and also memorial practices more generally.[18] This leads to her research in the UK and *The Near Breeder* work discussed at the start of this article. where it was described as a challenge, drawing attention to UK colonial history's networks through the deep-time aftermath of its materials.

In one sense, through the use of conventional exhibition format, such politics of the work could be defused as exoticized art spectacle.[19] What I propose here is that something else also potentially happens – that the ethical imperative of 'unearthing' is shifted to the gallery encounter. The conditions of the art viewing experience are themselves drawn upon to create a specific production of subjectivity. Understanding Scarce's work here as condensation of the 'crystalline plot' of toxic dust, its encounter in the present as unearthing, becomes the opening up of these histories, trajectories and power relations that their human viewer is implicated within. The work acts as indexical marker of the ongoing toxicity of Maralinga, both challenging an understanding of site in the history of nuclear waste marking, and staging artwork as index, connected to other planetary localities. It is conceptualizing artwork as nuclear site marker that allows it to exceed its exhibition. Povinelli (2016: 59) describes the importance of being hypervigilant in recognizing and attending to a manifestation, which itself acts as bait, 'the purpose was to lure, seduce, and "bait" a part of the world to reorient itself toward you in order to care for you . . . while it makes a demand on persons to actively and properly respond.' In this case, the conditions of the gallery experience create their own historically specific mode of vigilant attention, inhabited by artwork as bait. Beyond reading the artwork as metaphor, viewers are also lured by its affective force. The sheen of the blown glass reflects the light, interrupted by seductive irregular glitch, installations of objects form shimmering patterns that shift, depending from where they are perceived. Scarce herself describes the trickery of glass as lure, 'a beautiful material to use in order to bring people closer . . . making you feel uncomfortable at the same time' (Ocula, 2021), while through confronting the thought of deep times of toxicity, viewing subjects become contingent objects within extended scales of the nuclear.[20]

The work re-orients relations like the relic described by Povinelli. Half-life temporalities will outlive its viewers, who come to see themselves as objects from unknown long-term future viewpoints. In the case of such nuclear aesthetics, the relic is not only an eruption of deep times of the past but also of the future, yet to be unearthed. Such a process recalls what Maria Puig de la Bellacasa (2017: 141), in outlining a background to her project of speculative ethics, has described as 'naturecultural visions', those that 'desubjectify the human by trying to thinking it as a form of ontological agency among others'. She describes a theoretical background to this,[21] while I am interested in it also as a performative ritual – how the shift from a subject-centred situation takes place, involving affective relations between humans and the materiality of things, in their entanglements within deep time. The artwork here acts as a catalyst. The affective experience of its encounter feeds on the viewing conditions of the exhibition in order to enact such a vision. The experience of its viewing subject is drawn upon in order to be unfolded into a larger ecology of human and non-human things. This includes histories of colonial exploitation, nuclear testing, non-human scales of half-life futures and, through myth, connection to ancestral histories and the building of new myths for unknown futures. The work in its materiality cannot be consumed without the residue of this discomforting objectification. This includes the structural violence of its particulate make-up, colonial nuclear legacies returned to the UK through geographies and transformations of dust.

Conclusion

This article began by considering the vast temporalities of nuclear waste, an ongoing real planetary problem. Thinking about the nuclear opens up scales beyond human-species existence and thus demands engagement with relations between human and more-than-human things. I asked how this could be addressed by art without falling into the universalizing logic of the Anthropocene, where the actions of and impacts on some humans come to stand in for a generalized humanity. How could art conceptualize deep time, not as sublime otherness, but as it enfolds through asymmetric power relations and politics of materials? The work of Yhonnie Scarce suggests an important method for this, focused on the contagious ontology of toxic dust. Both specifically local and universal in scale, dust connects complex overlapping scales of ecological experience. Drawing on a combination of Gabrielle Hecht's sociological analysis and Reza Negarestani's theory-fiction, I proposed the demonic dust carrier as figure for the potential of art here, rooted within materials, while given flight through myths and fictions. Scarce's work performs this role, its cosmic transmutation of dust from Maralinga tracing colonial ecologies through the logic of the sample, extended to its appearance as exhibited object.

Finally, I argued for this staging of the art object nuclear marker as a process of unearthing. Rather than prioritizing an interpretive viewing subject, the art encounter is invoked as a performative moment of de-subjectification in radiological deep time. The exhibition as speculative ethical unearthing process suggests one direction for art within and against the Anthropocene. It draws on contemporary art's historical institutions and conditions of attention and spectatorship in order to extend and unfold them as they become implicated in more-than-human ecologies. The art object performs as a future relic, re-orienting, taking care of and making demands on its viewers, crystallized eruption of deep time in the now. To encounter the relic in the present is to be opened through that moment into its implications beyond itself. Present experience unfolds, extending to deep times of inscribed histories while opening towards re-oriented futures to come.

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Notes

1. I use the term 'more-than-human' throughout to capture concisely the sense of a temporality that includes scales indifferent to humanity invoked by radioactive half-lives, alongside timescales of human lives and species existence, and their relations. Maria Puig de la Bellacassa (2017: 1–2) discusses how the term, while widely adopted, has been criticized for 'its abstract unspecificity, and for the moral undertones that invite us to "transcend" the human for something "more than"', as well as the way it 'starts from a human centre, then to reach "beyond"'. At the same time, in choosing to use it, she embraces its possibility to 'speak

in one breath of nonhumans and other than humans such as things, objects, other animals, living beings, organisms, physical forces, spiritual entities and humans.'

2. Examples here include the depressingly named 'Common Sense Group' of Conservative MPs accusing the National Trust's 'Colonialism and Historic Slavery Report' of denigrating an idealized image of Britain's past, threatening to review funding (Adams, 2021; Mitchell, 2020), while attempts to pressure arts and heritage organizations to support Government views have also been reported (Savage, 2021). A more specific recent example relating to nuclear colonial history is the 2021 censorship and removal by Southend's Conservative Group of Councillors of Gabriella Hirst's *An English Garden* artwork, commissioned by The Old Waterworks, installed in Gunner's Park, Southend. The work included a garden of Atom Bomb roses and a plaque that made reference to the assembly at a nearby site of the UK's first atomic bomb as well as the history of nuclear testing at Maralinga (Ferguson, 2021; OWS, 2021)
3. This has developed through a range of contexts including the *Perpetual Uncertainty* series of exhibitions curated by Ele Carpenter, work with Z33 House for Contemporary Art, Design and Architecture in Hasselt, Belgium, and ONDRAF/NIRAS the Belgian National Agency for Radioactive Waste Management, see Weir (2022) and https://www.andyweirart.com/pazugoo
4. I visited the H.A.D.E.S underground research laboratory of ONDRAF/ NIRAS, the Belgian National Agency for Radioactive Waste Storage and Managementin 2016, where waste being tested for long-term storage contains isotopes with half-lives up to 704 million years (Van Geet and Depaus, 2016).
5. The 'International Conference and Debate on Radioactive Waste Management and Constructing Memory for Future Generations' (Verdun, 2014) suggested some opening up of critical questions around the process, such as reflecting on the role of artistic practices in the project. The (2017) 'Arts, Culture and Education' component of the Key Information File (KIF), drafted by the Expert Group on RK&M, takes this further, discussing the importance of art in terms of its 'critical awareness of visual culture . . . exploring conceptual and invisible concerns' (p. 2), as well as its role in transmitting knowledge.
6. See Holtorf and Hogberg (2020) for a critique of this from an archeological perspective.
7. Radiation is a physical phenomenon that exists independently of how it is detected or politicised. *Nuclearity* is a *technopolitical* phenomenon that emerges from political and cultural configurations of technical and scientific things, from the social relations where knowledge is produced. (Hecht, 2012): 15.

   Discourses of nuclearity regulate what is seen to matter as nuclear and not.
8. Following the Fukushima–Daiichi nuclear disaster in 2011, for example, the surrounding area had to contest with the widespread accumulation and dispersion of radionuclide particles, dangerous to be inhaled or ingested, causing widespread contamination (Itoh et al., 2014).
9. The deep-time sublime (Weir, 2016).
10. A method of mythic personification taken up in *Pazugoo* (Weir, 2022).
11. 'Country' as a capitalized, proper noun is in regular usage to refer to Aboriginal people's traditional or custodial homelands. Being 'on Country' is shorthand for clan estates, inherited through ancestry and identification with local language groups. 'Country' also implies the sentient landscape and metaphysical world-view of Indigenous Australians, often referred to as 'the Dreaming'. (Rey, 2021: 53)
12. Uranium glass was a popular decorative material in the late 19th and early 20th centuries before its dangers became recognized and its use restricted in the 1950s.
13. 'They're bush foods cultivated and harvested by our mobs in the inland over millennia. They have a special power, these objects' (Browning, in Ocula, 2021).
14. This includes the traces of uranium in the glass, reference such as in *Thunder Raining Poison* (2015) to specific climatic patterns and toxic dust cloud formations, and research into material transformations of the earth at the Breakaway nuclear testing site (Rey, 2021: 45–47). Scarce discusses how the materials for *Hollowing Earth* are not sourced directly

from Maralinga but that she selects silica and powder from specific Australian sources (Ocula, 2021), thus maintaining a genetic reference to mining and resources in Australia. Scarce's work references material features of these specific sites, as they intersect with others.

15. The sample is not exhausted by its encounter with a viewer, which it always exceeds. It suggests a mode of viewing that does not necessarily prioritize its human viewer. See the 'alreadymade' as exhibited real object not fully afforded by its interpretive parameters, revealing its own frame of viewing as contingent, discussed in Weir (2014).
16. The relic 'confounds chronological time by connecting Now with abyssal timescales' (Negarestani, 2008: 242).
17. Povinelli draws on the fossil example as a contrast with philosopher Quentin Meillassoux's (2008) influential 'arche-fossil' thought-experiment, where the object incites thought of meaningful statements about a time anterior to terrestrial life, which acts as a challenge to post-Kantian anti-realism. Povinelli (2016: 73–4) argues that this is premised on a sense of detachment, the feeling of the object as a distant outside, while missing other narratives and understandings bound up with it. From this, she is critical of Meillassoux's claim for a particular definition of 'the human' as universal. See my analysis of the *el chaco* artwork at Documenta 13 as 'alreadymade' (Weir, 2014).
18. Browning frames Scarce's practice in this way in discussion with her, 'over the years, you have gone from talking about Maralinga and the Prohibited Zone and Emu Field, to talking about nuclear colonization more broadly.' She goes on to talk about her interest in and research into memorial practices more generally (Ocula, 2021).
19. See Loewe (2015) for an example of critical analysis of art exhibition as spectacle defusing politics. My focus on aesthetics and subjectivity develops a trajectory from Claire Bishop's belief in the antagonistic possibilities of encountering art as aesthetic experience, through forms of participation including materials, which I have previously explored as 'ecologically extended antagonism' (Weir, 2014).
20. Facing 'the truth of extinction' described by philosopher Ray Brassier (2010: 224) as 'that which levels the transcendence ascribed to the human'.
21. Before going on to analyse 'ethical doings' including permaculture (Puig de la Bellacasa, 2017: 145).

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