

Miring Grounds

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Preface

Through the presence of an unstable earth, swampy sites disturb land-water binaries while also creating imaginaries that offer an otherwise to colonial fictions of territory. Representations of swamps tend toward the wasted, the toxic and the untamed. Swamps are sites of alternative temporal configurations of muddy-matter that persist throughout histories of resource extraction, management, draining, and burying. Reading these peaty grounds throws up uncommon stories of swamp/human relationships, recasting the swamp as interstitial landscape, reflecting saturated illuminations of turbid social and material entanglements (Giblett 47). The specific spatialities of swamps create the conditions for an emergence of material and imaged fictions. Drawing on thinking from feminist geophilosophy on permeability and saturation, queer materialist understandings of toxicity, along with contemporary critiques on the myths of colonial representations of land, this text explores cultural figurings of muddy grounds to posit swamps as producers of both material and representational imaginaries. Analysing a pairing of wetlands—Lachlan Swamp, on Gadigal/Dharawal Country in Sydney’s Centennial Park, and Kooragang Island, on Awabakal and Worimi Country in Newcastle, NSW—‘Miring Grounds’ engages material porosity and speculative image-reading to frame swamps as sites of marshy resistance that enfold their own representational logics into unique material and ecological compositions of ground.

The following text is structured as two letters between friends and collaborators—an artist and a landscape architect—relaying observations, readings, and imaginings of Lachlan Swamp and Kooragang Island. Drawing on our ongoing creative, place-based research practices, this epistolary practice speculates connections between discrete narratives of the swamps, working to ‘capitalise on the confusion between fiction and reality permitted by the epistolary form,’ as written extension of swampy matterings (Macarthur 24). Responding to the slipperiness and unfixed nature of wetland ecologies, these letters position themselves in the transitional, littoral and muddy grounds of swamps, where, as Elizabeth Macarthur writes, an ‘epistolary method forces the narrative into discontinuity ... it fragments it [the narrative] and disperses it’ (9-10). Here, the form of letters adopts the material and ecological fragmentations present in each

swamp, and the processes of leaking and reforming that swampy-sites offer in thinking narratives of land and water.

Dear T,

Lately, we have been talking about swamps again; we first connected over murky mud when you shared a copy of the comic, *The Swamp Thing*, a humanoid/plant elemental superhero created by Alan Moore who battles to defend his swamp home and the broader environment from the social institutions that maintain its destruction. The stories spoke of radical green politics which oozed from the swamp and a thick misty ongoingness that gathered around places with buoyant groundwaters (Gray 43). The character's reedy features appeared as a thoughtful provocation for reimagining the dank, dark, and subversive spaces of sodden landscapes, and so here we are.

Marshlands (sodden grounds) figure so often in Western literature as places of disease, filth and impurity (Giblett; Postmodern Wetlands). Fens have thus been storied historically by so much 'swamp speak'—the rhetoric of swamps as sources of miasma and other disorganising forces (Coles 4). Rod Giblett has been thinking with swamps for many years on the incongruence of swamps and notions of space within narratives of western progress. Within such logic, he proposes, 'cities and wetlands are fraught, and they are even inimical to each other: where the city is now, there the wetland, or wasteland once was' (Giblett; Cities and Wetlands). Wetlands, swamps, and bogs have been filled and disciplined in various ways throughout modernisation.

I'm also interested in how swamps themselves story landscapes through the prose of undoing, rendering territories absorbent. To write on the swamp and, in return, allow ourselves to be written on by the swamp. You will recall I have been trying for a few weeks now to describe, with some accuracy, the borders and territorial spaces of Lachlan Swamp. But the swamp denies any attempts to map its limits accurately; like most landforms, whose sediments are regularly moved by water, their 'unpredictability exceeds full knowability' (King 3). Fluctuating ground-plains, such as bogs, simultaneously deny Cartesian capture whilst also presenting to us an 'emerging space of becoming' (3). So, instead of attempting to give a clear description of its mushy whereabouts, I will attempt to story for you how the swamp leaks, escapes, and trickles, expanding its territory beyond its demarcated boundary. To share some instances of persistent liveliness, accelerated depletion, and benevolent recharges that swamp grounds make possible.

Standing atop the Centennial Reservoirs, gazing towards the Junction as Oxford Street veers eastwards, the urban landscape below, now transformed into a large urban park, is surrounded by a built-up area. As eyes drift down to a vast water body, Botany Bay serves as one of the tail ends of this swampy story. The bay's crystal blue waters form a middle ground between the blue-grey mountain range far in the distance and the lush plumes of green in the foreground. The water pulls laterally against the ground below, its undertow drawing sweet water towards the salty horizon. Rows of houses lie in lines, running pole to pole, with occasional criss-crossing paths that follow the sun's path from sunrise to sunset—built with hard bricks and soft mortar, tall with concrete columns that are flat, thick, and sometimes vertical. Tufts of greenery peek out between terracotta roofs, adding to the vibrant mosaic of the scene. Although the ground plain seems fixed and unchanging, insects and other pollinating agents move between the immovable as the wind brushes against pods, shells, and husks, dispersing the innards and moving plant life from garden to garden.

At the edge of the parkland, turning my head slightly east, the urban grid is disrupted by a dark, deep hollow, absorbing light and carbon-rich city air. Within the void, the pulsating centre of a subterranean being, spreads appendages laterally, covering old rock shelves and depressions. A tentacular, gummy-like organism resounding with intense liveliness through the thick air, the swamp is the tip of an iceberg-sized wet sandy balloon. Ground fog is most likely to develop when skies are clear, and the earth is soaked from recent rain. The mist on this day is diffuse but still lingers close to the canopy of swamp melaleuca.

Lachlan Swamp's currently documented environmental history began over 200 million years ago when the heavy sandstone underlying Sydney formed. The Botany Basin occupies an erosional depression formed in the Triassic Hawkesbury Sandstone (Griffin 6). Erosion during the Quaternary (2.58 million years till present) created three deeply incised valleys in the sandstone, forming an ancient paleo river system that flowed south. The water flowed north to south between the uneroded high rock of the eastern ocean beach's cliff edge and the hard rock of the CBD area (Hawke 9).

An impossible river somehow flowed across and over Sydney harbour, intersecting with the saltwater mass. Since that slow trickling event, the land has deformed and folded, and all directions have reorganised the topography over time. Either way, the incised river afforded the

perfect foundation to inhale sandy matter, collecting to make the porous sponge of the aquifer. Water ran southwards from the higher areas, pooling in lower places and networking to form swamps, pools, and creeks that seeped into Botany Bay. The lateral spread of the dunes, still today pushed gently by wind and water, sink deep into the eroded folds of the sandstone, moving inland as far as Central Station, slithering across and underneath city blocks. The sand holds groundwater, resting in an aquifer under Sydney's eastern suburbs. As the groundwater perches out at the surface in Centennial Parklands, pooling on the ground, we find the site of Lachlan Swamp.

Warm contact zones such as swamps are important places to re-story. Could sinking into the swamp accumulation of partially decayed vegetation, animals, insects, and pollutants elucidate how their volumes adhere? Alexis Shotwell proposes a 'settler politics of memory that does not stand outside the past in all its horror, that does not individualise the possible response to how we are implicated in that past, and that opens possibilities for collective action' (46). Through alternative modes of remembering, we acknowledge the value of the rich material histories of places but along the paths of a speculative account to find new agential capacity for present-day marshy areas.

Within seven years of invasion, The Tank Stream, a tapped water body that flowed from a small wetland in Hyde Park towards Sydney Cove, had become one of the first sites of environmental disaster. Settlers-colonialists continuing the logic of extractivism sought alternative water sources close to the perimeters of the encampment. Driven through 3.6 kilometres of solid sandstone, Busby's Bore connected, via pump and conduit, the swamp's water from the southwestern end of Centennial Park, to the settlement at Sydney Cove. Once syphoned, the flow crept along the ridgeline of Oxford Street, gurgling along the high contour (Lees 7). The bore ran along the area of Victoria Barracks, transecting across Oxford Street to a reservoir in Hyde Park. Once completed, the flow mobilised 1.5 million litres of water daily from Lachlan Swamp, pouring into the town.

Interference with the aquifer signalled a moment in the colonial project when extraction infrastructures began to affect water ecologies at the territorial scale. Dallas Rogers suggests that '[u]nderstanding the centrality of water, much like the centrality of land, is critical to understanding settler-colonialism in Australia' (87). Infrastructures, such as hydrologic extractions like the bore, are some of the tools of dispossession and colonisation in Australia.

The turning toxic of the water, combined with intensifying issues with flow capacity, as the natural cycles of drought and wet confirmed the inadequacies of a single source of freshwater for the growing population, the ephemeral nature flows continued to undo temporalities desired for growth and progress.

The natural cycles of drought and wet confirmed the inadequacies of a single source of freshwater for the town, as ephemeral flows continued to undo temporalities desired for unending growth and progress. The bore also moved the swamp along with its sweet water, carrying to the park the microscopic inhabitants which had called the swamp home. Minuscule swamp life, unlit within the subterranean expanse, bloomed and transmuted. Without enough daylight to enable proper energetic flows, creatures made new unions, fouling the water for human drinking. Under intensifying problems with flow capacity and toxicity, the bore was eventually decommissioned.

As macro-invertebrates and diatoms mutated and died off in the polluted waters flowing from the bore, they acted as sentinels for system-wide water and ground pollution. The effects of extraction infrastructure persist long after the activities have ceased, as neglect allows the interface of groundwater, surface water (streams and wetlands) and the toxic excesses disturbing the ground to converge and move down into broader hydro-geologic zones.

After its decommissioning, the bore continued connecting the park's territory to the urban centre and still flows approximately 1.3 kilolitres of water daily (Lees 11). Resisting the urge to flow down towards the low-lying elevation of Botany Bay, the Swamp territory, now extended through the bore, carried the life from the original swamp further afield, continuing the lateral spread of the swamp. Intersecting with the unused St James Station tunnels, two additional platforms and tunnels, for a planned eastern line that was never built, the bore has seeped into Hyde Park, percolated down through the soil, dribbling into the tunnels to make St James Lake, one kilometre long and up to six metres deep in parts (Jones).

The diffuse boundary of the swamp's soggy field, which had rendered it so precarious when toxins flowed in, also makes possible affirming journeys of creatures that desire saturated terrains. The subsurface lake at St James is home to a large population of long-finned eels (*Anguilla reinhardtii*). The animals have slithered around the tunnel system and across the land from the swamp to their new permanently dark underground home at St James. The long-finned

eels (lovers of the dark) will live their adult lives—up to sixty years—in the bodies of water scattered around the leaky territory of swamps, wetlands and marshes.

Driven by instinct, the long-finned eels of the disused tunnels will return to the place they spawned, believed to be deep in the Coral Sea in the South Pacific Ocean, some 3,000 to 4,000 kilometres away (Chong, et al.). To breed, the eels journey back through the tunnels and drains to Lachlan Swamp. Here they collect with their eel kin and move down towards the mouth of Mills Creek at Botany Bay. Their noses prick, and sensing the saltwater, fins expand in size as gills transform to prepare for ocean breathing. With eyes enlarged and pigments distorted, enjoying the new salty buoyancy, the eels take off northwards, following the allure of warmer waters. Little is known about the middle part of the ocean journey; however, it is believed they must disappear deep into the ocean as they are rarely caught at sea (Shiao et al). The females lay their eggs deep in the sea in an unknown location near New Caledonia (Saunders). Some months later, juvenile glass eels, translucently glistening through the sapphire waters of the Coral Sea, begin their return to Lachlan Swamp. Following the East Australian Current south, they return to the bottom, towards the river, up a creek, through pipe and tunnel, returning to the swamp's leaky territory.

I hope my elucidation has painted for you an unclear image of the swamp—clarity, in this case, would not be a success at this point in the project. At the same time, I hope you have encountered some of the quieter corners of Lachlan, where water slips away from the rock.

Hope to hear from you soon,

Louisa

Dear Louisa,

Thank you for the letter. I've been turning it over and over, thinking with your words and their relation to swamps as sites of disorganising and undoing. I want to sit with your writing for a moment, and your gestures toward the storied landscapes that story us. In reading your letter, connections were drawn in my mind between some of the material imaginaries of Kooragang Island that I've been rambling about to you of late; the transmutations and reconfigurations

present there, and the modes of ingestion playing out in the mud. Here are a few of those fragments, and their readings of each other, in the hope of shedding some light on changing states, imaginaries of excess, and a correspondence of vulnerability. This vulnerability, I'd like to suggest, operates as wasted matter: infrastructures of power, and representational logics are folded into the marshy grounds of swamp systems.

I'll begin briefly in response to your mention of Shotwell and the opening up into possible modes of collective action she proposes; a collective action against purity that pulls into itself the dregs of colonial violence through which it is formed, and through which we must find ways to live together. In pausing on the leaky geologies present in the swampy sites we've been discussing, I'd like to add to this some of Kai Bosworth's thinking on permeability as a ground condition. Bosworth writes that

permeability is an active force of composition that gathers a 'we' into being... The 'we' being invoked here includes both the human and drastically inhuman. It includes the communities of people on the surface of the Earth and the Earth itself, riven with fractures (23).

In the case of Kooragang Island, a place materially composed by permeable forces, this process is ongoing, with agglomerations of anthropogenically discharged excesses intermingling with glacial sediments to create a muddy ground defined by toxic leakages across time. The ecologies produced here work against the possibility of easily defined categories; the swamp itself offers ways of thinking through the contaminations of a 'toxic present grounded in conceptions of queer relationality' (Shotwell 78). This toxic relationality might help us to grapple with the collective potentials of a ground matter that churns together complex social and geological histories into a process of 'unforgetting', an 'insurgent remembrance [that] reveals salient lines of history, dwelling with how the past shapes the present' (40). When I move through your writing, your narrations of eel migration and microbial lives, mixed with the unending catastrophes of colonial infrastructures and the slow sickening of fouled water, I think about the toxic 'we' materialising in the swamps, the bore and the subterranean lake.

I want to share with you two stories of Kooragang Island. The first is a short note on the transformations of insects in the swamp, and the works of two sisters, Helena and Harriet Scott, who recorded the insects' metamorphosis through scientific illustration in the mid-19th Century (Stories of Our Town). The second is the material transmutations of the coal industry and the proliferation of documentation that accompanied each stage of development into what is now

Kooragang Island. These two stories fold together the material and representational imaginaries of the island, reconstituting its histories to propose competing futures based on the self-regulation and reflexive ingestions of waste. Through a close reading of the Scott sisters' entomological illustrations, paired with an abundance of documentation produced in the swamp's industrialisation, these two stories engage the recordings of ecological and geological vulnerabilities that reimagine the swamp as a site of geochemical and environmental collaboration, building into the marshland new possibilities of economic and ecological growth. Like Bosworth's permeable 'we', such collaborations play out at the volatile intersections of surface and subterranean, economy and ecology, land and water; a transformation of collective matter that institutes a vulnerable exchange.

From the 1840s, sisters Helena and Harriet Scott began scrupulously recording the then-ecologies of Ash Island—soon to become amalgamated into Kooragang Island. Living on the island with their father and entomologist, Alexander Walker Scott, the sisters used scientific illustration to build visual archives of the lives of plants and insects surrounding them (Thompson). They developed techniques of drawing from living specimens (unusual for the time). In the case of their studies of insects, drawing from life meant they were able to document moments of transformation that would be otherwise impossible. This included imaging butterflies emerging from their chrysalis, a cordyceps fungi growing underground from the head of a lucindae beetle larva, insects burying, shedding, metamorphosing (Gilchrist). Insects grow by way of a number of methods, including ecdysis—the moulting of the cuticle that forms an exoskeleton—and pupation—the transition between larval and emergence undergone in the chrysalis. The process of generating growth in the insect's body creates a material remainder that retains the shape of the previous life-stage. In the drawings of the Scott sisters a shed skin holds the form of the insect's prior shape/size, and a cocoon is leftover like an empty shell.

The shed skin and discarded cocoon are slightly crisp and wet—a pre-moult discharge of liquid assists the insect in bursting out of their old casing. This is all part and parcel of arthropodic and lepidopteric life, where transitions from one body into another necessitates a discarding of layers of hardened skin that house and protect each insect during a time of extreme vulnerability (a vulnerability induced in material transformation). The sisters recorded insects in their shifts from one life-stage to the next. For an arthropod, the energy exhausted in the process of shedding is intense. Their new skin is supple and tender, adjusting to the sudden flood of atmosphere. They are exposed. Their wasted crust hangs alongside them, still clinging to the branch, empty and

translucent. In this intensification of growth, the insect expels the outer layer of their body. Often an arthropod—energy depleted—will turn to the skin (still in the form of its prior body) and eat it. They recuperate their own waste, generated in growth, in order to fuel a subsequent energetic intensification. Similarly, the chrysalis leftover by a butterfly will often be eaten by a caterpillar, in the lead up to their own metamorphosis.

I'm interested in the ways in which bodily and material metamorphosis depicted in the Scotts' drawings produce both an excess, and also the conditions for vulnerability. Shotwell describes a process of 'understanding vulnerability as not something we must (or can) defend against, but instead as a constitutive fact of our lives, a world-shaping mattering, [that] offers us something' (86). The bugs perform this exchange of vulnerability and productivity multiple times throughout their lives, in their transformation from one body to another. But I wonder also about how the island itself might be thought of in terms of a transmutational vulnerability that opens out onto possibilities for a different kind of world shaping. This leads to my second story, that tends to the formation of the island itself, as a composite ground composed of the overflows of industry. Kooragang Island is a collective noun sedimented in silt; an archipelago of land masses 'glued together' with the residues of extraction. The internal seams of the islands, formed by largescale land reclamation initiatives, have consolidated the smaller intertidal wetlands into a single landmass for industrial development.

Near the mouth of the Hunter River—bordering Awabakal and Worimi Country—the eight or so islands were made up of mangrove ecologies, analogous to those that Natasha Ginwala and Vivian Zihler state

invert potential models of entangled affectivity, enfolding fertile matter in detritus.

They do so while performing exuberant cycles of re- and decomposition. However, in British colonial occupation and settlement, the problem of the mangrove was often solved with another: the problem of waste (6).

Beginning with ad hoc piles of dumped ship ballast and slag in the 1800s—the same time the Scotts began their visual archive—continuing with approved infilling by agriculturalists and companies like BHP, and finally formalised as a recognised 'island' with the passing of the Newcastle Harbour Improvements Act in 1953, Kooragang Islands became Kooragang Island (Hunter Living Histories). With each stage of land reclamation (a ground 'reclaimed' from the river, the swamp, the mine, and the global trade routes of ships), this continuous forming and reforming of ground matter, and complicating of the islands' leaky geologies, has recomposed

the swamp/s into new configurations that fold material and representational imaginaries into each other, reinscribing narratives of extraction toward the wasted, the excessive and the toxic.

Kooragang Island—in its current singular form—is an imaginary, propping up the weight of the world’s largest coal port. The island imagines solid ground where there is none. It is an imaginary that requires constant maintenance, in order to uphold an illusion of land as independent of the water table that formed it. These imaginaries are underwritten by systems of colonial cartographic representations that reproduce spatial distinctions between land and water in practices of legislated theft. Fictions practiced upon lands and waters through the representational logics of mapping and surveying—that imagine the impossible borders of swamps that you mentioned earlier in your letter—are materially maintained through draining, infilling, and shoring, which is then fed back into a continuous cycle of representational documentation. This circuitous cartography of imaging and matter recalls Tiffany Lethabo King’s work on the unmappability of shoals, as resistant geography to colonial logics of land. King writes that such cartographic systems map ‘the limits of the imagination and the epistemological systems that the conquistador-settler relied on to create spatial representations of empire,’ where the disjuncture between the material conditions of the ground itself (in this case Kooragang), reveals the limits of the representational logics employed in the ground’s material-economic appropriation (124).

The river valley that cuts through Wonnarua, Awabakal and Worimi Country was formed by Cainozoic deposits, which have undergone phases of accretion and erosion over the past two million years. Following Quaternary glacial periods, three cycles of sediment fill—the Tertiary, Pleistocene, and more recently the Holocene—created estuary land masses—including the Kooragang Islands—and provided the conditions for the wetlands and floodplains made up of a combination of marine fill, central basin fill, and bayhead delta/fluvial fill (Branagan et al). Fine-grain mud, sandy channels, bars, and floodplains come together to create complex ground conditions, agglomerated in a broad range of thickened matter, becoming, and remaining important cultural, social and economic sites over millennia. Today, anthropogenic infilling from dredging and reclamation attempts to stabilise the many different unstable grounds of the islands, by dumping the excesses of industrial geological transmutations back into the geologies they came from. Material used in the filling includes silt and gravels from further upstream, slag from the steel smelter, and spoils from local mining projects, further complicating the multiple geologies and sedimented compositions already at play. Like the insects so carefully illustrated by

the Scott sisters, Kooragang eats its own excesses, reabsorbing its wastes in the creation of a ground aimed at supporting a proliferation of energy and growth (Bataille 117).

With both the insects and the swampy grounds of Kooragang, representational logics have been fed back into the material composition of the island. In the case of the Scott sisters, this process has happened literally in recent years, where their prolific recording of island ecologies has been instrumental in reimagining the swamp into its current state. Attempting to undo the destruction of wetland habitats lost to land reclamation, increased industry, and mangrove deforestation over the past two centuries, local Landcare groups have strategically reintroduced species illustrated by the sisters (Friends of the Schoolmasters House). Their immense archive of wetlands on the cusp of largescale environmental change have provided a functional mapping of Ash Island's (now Kooragang's) botanical terrain. These images have then been folded back into the disturbed ground, through ongoing replanting and regeneration initiatives, producing new ecological compositions (where insects burrow into soils laden with trace metals, and mangrove leaves are often left sticky and blackened by coal dust). Unrecognisable from its nineteenth century state—due to the fusing of many estuarine islands into a single landmass—today the northwest end of Kooragang Island is made up of novel ecologies grown from the images and imaginaries of Helena and Harriet Scott.

The southeast end of the island, providing value as a ground for industry, is directed by a proliferation of documents aimed at surveying, charting, and planning further development (Hunter Living Histories). Extending King's explication on the colonial imaginaries of mapping, such representations demonstrate what Paul Carter describes as

The subsequent fossilization of these marks of intellectual movement, as well as historical movement in space, into an authoritative style of earth writing in which the world's surface is reduced to a pattern of continuities — continuous rivers, definite islands, and continental masses (52).

Here, Carter brings into dialogue the abundance of cartographic inscriptions written in geographic movements through space, with the idealising of surficial continuities of land and water upon which colonial earth writing relies. On Kooragang, maps, satellite images, aerial photographs and administrative papers create a sprawling and continuously accumulating archive of the island's past, present, and future attempts to stabilise the earth. By way of representations of the ground, the industries that cover the south-east half of Kooragang Island created a system whereby the islands became a site of self-ingestion, filling up with the excessive matter of

extractive economies in order to shore a continuous plane upon which to operate—Port of Newcastle, Orica, Port Waratah Coal Services, Cement Australia, and Incitec Pivot Fertilisers all operate from Kooragang. The instability of the ground means that swathes of lawn—not solid enough to support the weight of buildings—are interspersed between chemical manufacturing and fertiliser plants, and after heavy rains or king tides, the water table re-emerges to create sinkholes within the industrial sites themselves. Here, the material fiction of solidity—demonstrated in the continuing use of a swamp as the site for the trade and transformation of coal—is paired with a representational fiction of control—demonstrated by the fixing in place of borders and planes that (despite an abundance of charts to the contrary) are muddied by the ground’s saturated position in the water table. This wasted matter, buried in the muddy crevices of the swamp, threatens to undo the organising forces of industry that it supports—a collective fiction of solidity at constant risk of collapse, taking with it the national economies of theft built upon its unstable surface.

To return briefly to Shotwell, the ongoing slow collapse of ground compositions underpinning the industrial complex of the port, opens out onto a vulnerable reading of matter and a reshaping of worlds built in the image of a swamp, where toxic amalgams and wasted deposits undo their own imaginary logics. I’ll sign off now with a short note on volatile collaborations and vulnerable imaginings. The island shapes and is shaped by a proliferation of representations; competing, conflicting, contradictory. Like your descriptions of Lachlan Swamp, and the temporal configurations of lives and waters present in the depths, Kooragang Island brings to the fore its own ingested histories, its instabilities and toxicities that create the grounds for a reimagining of what it is, what it has been, and what it might be.

Speak soon,

Tx

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