

Granular Geographies of Endless Growth:
Singaporean territory, Cambodian sand, and the
fictions of sovereignty

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Declaration of Authorship

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

Signed: 

Date: 03/12/21.....

Abstract

This thesis writes the site of Singapore's prosthetic territory: sand, a covert and critical seam of the city-state's political economy of which it can never seem to rid itself. Sand is a crucial ingredient of the city-state's land reclamation project, which has expanded its total area from 581km² in 1959 to 728.3km² in 2020. Between 2007 and 2017, 80 million tonnes of sand made its way from Cambodia to Singapore. The remote coastal province of Koh Kong was the principal frontier, whose porous opening and closing pockmarked the underbelly of Singaporean statecraft with the livelihoods and ecologies of one of the largest mangrove forests in Southeast Asia. These 80 million tonnes posed the most explicit and intimate enveloping of Singapore's spatial governance – the seemingly unproblematic and awe-inspiring reclamation of *tabula rasa* – and Cambodia's authoritarian plunder of territory.

This thesis argues that sand's mobilisation in the production of territory materially and semiotically inverts the logic of colonisation. Instead of invading, occupying, and dispossessing another territory of its resources, territory is extracted as a resource to expand an internal frontier. Adapting geographical practices of place-writing and architectural site-writing, this thesis formulates a mode of critical-creative writing to reconnect the fragmented landscapes of extraction and reclamation. It does so by integrating aspects of political geography with literary theory, providing a methodological account of how capitalism 'reads' and 'writes' space. Sand, in its granular materiality, is a text extracted to unwrite one place, and reclaimed to write another. The writing of this thesis maps the interconnection between Singapore's model of global city with Koh Kong through sand to reveal how the speculation at the core of Singapore's statecraft is premised on chaotic, wanton extraction: how the fictions of its sovereignty bind and fragment into reality, tonne by tonne.

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1. Granular Geography: promiscuous state(s) of matter

Sand has a way of getting into things. Take any day at the beach. Holding a single grain in the palm of your hand is already a cliché; think of sand for more than a moment and you picture it slithering through the neck of an hourglass, already standing in for something else. The only guarantee is that the grain has already been elsewhere, its angles and edges an archive of its peregrinations. Gathering seemingly of its own volition, it moves and spreads according to the still sparsely understood properties of granular materials (Behringer, 2001; Guyon et al., 2020). It is shaped by air and water and shapes them in turn. Beyond the liminal allure of the landscapes contoured by it and the well-established study of its geomorphological properties, sand has acquired a conspicuous profile in contemporary urbanization, and through its construction as a resource has become an uncanny interlocutor between new constellations of capital, nature and territory. The world is running out of sand, as numerous alarming articles and journalistic exposés declaim (cf. (Beiser, 2018), while environmental scientists are posing the question of a looming ‘tragedy of the sand commons’ (Torres et al., 2017). In terms of quantity, sand is only exceeded in consumption by water (Peduzzi, 2014); non-metallic minerals employed primarily in construction (the majority of which are sands of various categorisations) are the fastest growing category of extracted material and have increased six-fold in the Asia-Pacific region over the last two decades (Schandl et al., 2016).

Unlike other extracted resources, the use of sand in urbanization derives not from a unique chemical composition or latent reactive properties (such as with oil or rare earth minerals), but from its size and its shape. Precise demarcations between sand, silt, and gravel vary across standards of measurement (ASTM C778-17, 2017; ISO, 2017), problematizing strict definitions of what constitutes ‘sand’ or ‘gravel’ or ‘silt’, as they are primarily differentiated in their consumption. The arbitrary demarcation of its size range, between silt and gravel, reduces its more complex qualities and abstracts ‘sand’ from the heterogeneous ensemble of granular aggregates that form part of its milieu. Sand can be

composed of different rocks, minerals, or bones, pulverized and eroded over thousands of years by waves or winds. It is filial. Grains gather with those of their 'type' determined by geographic specificity, composition, and the forces and flows that formed them; the geology of the planet parsed by its elements over disparate timescales and geographies (Welland, 2009). And it is always on the move, only ever temporarily arrested on its course elsewhere, enacting a processual performance as the simultaneous product and mediator of a mesh of geophysical forces (Nieuwenhuis, 2018). It is in number that sand has the uncanny ability to bind things together, but it is also treacherous: through liquefaction, the minimal presence of water in a sandy soil can, when shifted, cause the entire ground to roil beneath your feet. It can scatter and gather, aggregate and disintegrate, become ground and unground. This thesis locates the significance of sand's materiality in its granular symbiosis with littoral and fluvial flows as it mediates (and is mediated by) solid and fluid, land and water.

Recognising the arbitrary nature of official definitions of sand, we have to admit that sand, as a resource, is something of a fiction already. Taxonomies of sand shift uncertainly from standard of measurement to standard of measurement. Archimedes, in 'The Sand Reckoner', employed a grain the size of a poppy seed to calculate the maximum number of grains it would take to 'fill' up the universe to prove that such a number exists. Already, the humble grain is employed in the work of fabulation and calculation. The fabulation consists in imagining a mass of sand so massive that it doesn't just fill up 'all the seas and the hollows of the earth ... up to a height equal to that of the highest of the mountains' (Archimedes, 2009: 221), but that it also fills the sphere of the universe, all to prove that there was a number big enough to 'exceed in multitude the number of the sand which is equal in magnitude to the sphere referred to' (ibid: 222). As soon as this hypothetical grain is imagined, it is enrolled in a work of demented duplication and deluge, all in the service of intellectual endeavour (or hubris). Not only can the dizzying number of grains in the world be quantified, but also the magical grains from nowhere that would fill the negative space of the universe. Where would this absurd quantity of grains come from? This work of apocalyptic calculation would entail a concomitant labour of extraction and sorting, acquiring those of the right size and discarding the rest. This impossible work of filling in the gaps, of unfathomable completion rising into its own smoothed and harmonious

plane, would have as its own relief, its own negative space, a vast and filthy infrastructure of dredging, scraping, harvesting, and discarding. For each tonne of 0.2mm grains there would be seven or eight tonnes of silt and gravel, smaller or larger granular material that would not make the cut. This muddy remainder would have to take place outside of the sphere of the universe, which may as well not exist. Every grain consumed in some form of extended urbanization undergoes a likewise, if less extreme construction, provoking greater or lesser degrees of turbulence at the site of extraction, each tonne with its own negative space, its own imprint on fluvial or littoral flows and the ecologies that form around them. This thesis reckons with the grisly extraction of eighty million tonnes of sand, and its ongoing transmutation into territory elsewhere, to fill in the gaps and the cracks in a decades-long effort of urban fabulation and logistical calculation.

This thesis foregrounds the potentialities of the granular to interrogate the construction of sand as a resource. The granular is the thread that connects sand's fluvial and littoral mediation of geomorphology, in concert with other sediments, gravels, and aggregates, to its instrumentalization as an urban resource. It does so by following the illicit commodity chain of sand from Koh Kong, a remote coastal province in Cambodia, to the city-state of Singapore. Between 2008 and 2016 around eighty million tonnes of sand were extracted from Cambodia to reclaim land in the city-state, with the bulk of the dredging concentrated in this province. Based upon several months of fieldwork in Singapore and Cambodia undertaken in 2018 and 2019, this thesis maps how sand is transformed in its journey down the commodity chain, from remote and marginal 'cheap nature' (Moore, 2015) in Cambodia to projection of sovereignty in Singapore through land reclamation. In doing so, it seeks to answer several questions:

1. How can sand's transformation as a resource from Cambodian frontier to Singaporean territory be mapped?
2. How has the Singaporean state instrumentalised sand as a resource through its production of territory?
3. What can sand's granular materiality tell us about Singapore's speculative model of global city, and its relation to the Cambodian frontiers of sand extraction?
4. How did the granular frontier manifest in Cambodia to the inhabitants of Koh Sralao, and how was this frontier resisted and ultimately closed by villagers and activists?

5. How can geoliterary methods of critical-creative writing be used to cognitively map the transformation of sand from geomorphology to expression of sovereignty, and reconnect its fragmented geographies?

This thesis proposes granular geographies to reconnect landscapes of extraction and reclamation and present the commodity chain of sand from Cambodia to Singapore as a systematic, if porous and unpredictably unfolding process. It posits granular geography as an intervention into materialist geography, thinking with the granular state of matter as a dynamic and non-deterministic model of materiality that can critically situate value's unpredictable transmutation of matter and frontier in the commodification of sand. Like Lamb *et al*'s incisive portrayal of the syncopation of sand's fluvial and coastal rhythms with everyday livelihoods in Myanmar (Lamb et al., 2019), and Dawson's exploration of small-scale and informal sand mining in Accra (2021), this granular geography seeks to accommodate the heterogeneities that the sand market obscures as an immanent critique of its discontinuous operation. Like Brigstocke's aesthetic excavation of reclaimed land in Hong Kong, it develops creative methods for teasing out the colonial afterlives of this historic and contemporary expansion of territory (2021). Part of this work of reconnection means reckoning with the gaps, opacities, and cracks engendered by the sand trade itself, as well as the reticence of the sovereignties it troubles through its operation; specifically, Singapore's successful model of global city, and how its speculative and anticipatory statecraft is dependent on dirt cheap sand, at any cost. But this granular parasitism entails its own kind of disruption, and has cursed the city-state with the gift of endless growth; there has not been a decade in Singapore's existence when it has not been reclaiming land from the sea. In light of the Prime Minister's recent reformulation of the city-state's land reclamation project as the ultimate self-defence against sea-level rise (Lee, 2019), it is crucial to contest the mystification of reclaimed land as *tabula rasa*, as a blank slate ripe for inscription by the state, when this projection of sovereignty is in fact smuggled from another frontier, another people, another ecology.

Building on existing work in place-writing, literary geography, cognitive mapping, and creative methods, this thesis crafts a geoliterary methodology to approach these landscapes of extraction and reclamation as sites that are bound together by sand as a

granular text, legible in both its absence and presence: in the calculative fabulation of the global city and the muddy negative space it carved into its undeclared hinterland of Cambodia. It takes as its point of entry the construction of sand as a resource that abstracts a specific scale of aggregate from a wider milieu, piecing together its journey down the commodity chain to delineate how it subtends Singapore's speculative model of global city, and ultimately how it might reveal the latter as a fiction that masks social and ecological devastation.

Granular materials are so itinerant that they do not constitute one single state of matter, but express characteristics of solids, liquids, and gases, depending on the energy available to each grain (Jaeger et al., 2000). They are made up of macroscopic particles whose interaction is defined by friction, losing energy with each collision, making their modelling by thermodynamic and hydrodynamic variables difficult, such that they are classified as a dissipative dynamic system (Ottino, 2006; Duran, 2012). Through granular geography, sand is transformed from a 'mere' resource for urbanization and reconceived of as a hydrodynamic inscription that is smuggled from one frontier to write another into being. Sand itself is the granular site that binds together extraction and reclamation, a geomorphological text that interanimates the landscapes of Cambodia and Singapore. It is not fully a site but a para-site, because it forms a relay of pathological dependence between incommensurable territories. The granular is always 'next-to' in the way the parasite is 'next-to food' etymologically (para-sitos), as noted by Serres (2007). Like Serres' notion of the parasite, it not only latches itself to a host, but interrupts a relation, reconfiguring it through interference. Part of the argument of this thesis is that sand is a para-site that has reconfigured Singapore's spatial governance, rendering it dependent on a precarious regime of endless geographic growth through a material and semiotic inversion of colonisation: territory no longer invaded, occupied, and stripped of its resources, but extracted as a resource to expand an internal frontier. So far, the fiction of the city-state's parasitic sovereignty has been masked by its private network of subcontractors that procure the sand, the non-disclosure agreements that cloak the sand trade in secrecy, and the opacity of its governmental bodies that supposedly regulate the trade and execute the reclamations with these ill-gotten g(r)ains. The opaque public-and-private transnational machinery will be subsequently termed 'the sand complex', to both

name a hitherto unnamed apparatus of geographic extraction and expansion, and as a diagnosis for the symptoms expressed by the city-state's reliance on dirt cheap sand for endless growth. Sand as a para-site, or quasi-object 'that is a marker of the subject [and]... an astonishing constructor of intersubjectivity' (ibid: 227), requires a kind of situated writing to elucidate the fragmented and repressed intersubjectivity woven by the granular between landscapes both existing and not-quite-yet-existing, and enact a geographic criticism of the speculative material practice of the sand complex. The next section will broach what I mean by the 'geoliterary' in relation to this form of situated writing that can accommodate sand as a constructor of intersubjectivity and the fragmented geographies it puts into relation through its granular interlocution. Sand is counterposed with the granular because if sand is the haphazardly constructed resource extracted from geomorphological multiplicity, then its granular relationality is what becomes focalised as a result of this extraction, and becomes excessive to its construction as a resource. It is what paradoxically makes sand so valuable to urbanization but so cheap to extract, and by focusing on sand's granular expressivity, its construction as a resource can be better evinced and undermined through its material and semiotic performance.

Structured into two sections, Extraction and Reclamation, this thesis maps the trajectory of sand from the 'upstream' to the 'downstream' sectors as a transition from one sovereignty to another, to use supply-chain jargon that emphasizes the hydrodynamic continuity of sand's construction. What follows is a brief empirical overview, followed by a theoretical outline of the disparate landscapes already interconnected by sand, and the conceptual and methodological considerations this granular geography reckons with. To illustrate the disparate granular landscapes connected by sand, this thesis begins with the number one per capita importer of sand in the world: Singapore (Simoes, 2016).

Mapping the granular frontier

Sand is a resource intimate with the underside of Southeast Asia's geopolitics. The main driver of sand extraction across the region over the past 30 years has been Singapore. This is in large part due to its land reclamation project, which has seen the

country increase its land mass by approximately 24%, from 581km² at the time it achieved self-governance from the British in 1959, to 728.3km² in 2020 (Singapore Land Authority, 2021). Initially, it used its own foreshore sand and levelled its hills for fill material, flattening land and sea alike. From the late 1980s onwards, after exhausting its own shores, Singapore began importing sand from Malaysia and Indonesia (Topalovic et al., 2013). The sand trade between these neighbours has always been marked by informality and corruption, calling the veracity of existing statistics into question (Schandl et al., 2016). Once Malaysia banned sand exports to Singapore at the advent of the Asian Financial Crisis in 1997, Indonesia opened its coastlines to Singaporean dredgers. They exported millions of tonnes to Singapore until they too banned sand export in 2007, after it was discovered that Pulau Nipah, an island that forms their maritime border with Singapore, sank beneath the water at high tide after being heavily dredged, with unconfirmed reports of a handful of less strategic islands vanishing from the map (Topalovic, 2014). Since 2007, the frontiers of sand extraction have extended to Cambodia, who banned it in 2009, 2016, and again in 2017. Myanmar, the Philippines, and China have variously picked up the slack while both concession holders and dredging companies have attempted to work around these bans.

Sand extraction in the Southeast Asian context has often been facilitated by local- or national-level government corruption. Malaysia's 'Sex for Sand' scandal in 2010 was one notable example, where local officials accepted bribes and 'sexual favours' in exchange for permits approving sand exports to Singapore, circumventing the ban (Murdoch, 2016), while less high-profile but long-standing rumours of an untraceable black-market trade in Indonesian sand have persisted (Kog, 2006). The proximity between the ownership of companies that control sand-mining concessions in Cambodia and ruling party senators, such as Ly Yong Phat and Mong Rethythy, the directors of the eponymous L Y P Group and Mong Rethythy Group (Global Witness, 2010), align the opening of its granular frontier with the country's history of natural resource capture by elites. The mining itself is often done on a quasi-informal basis, often without environmental impact assessment, or with fabricated assessments. The toll on local ecosystems and livelihoods has been difficult to account for: fishermen notice catches declining, or have their nets torn by the dredgers, precipitating greater financial strain within communities and, in the case of Koh Sralao that

this thesis will explore, the displacement of a fifth of the village's families to find work elsewhere (Marschke, 2012: 73; Leng and Retka, 2018). The bans on sand export to Singapore and their recurrent circumvention are indicative of the economic and geopolitical tensions that arise as sand is transformed into a resource and extracted in massive quantities.

All the while, Singapore has been expanding. Topalovic has estimated that 75% of Singapore's reclaimed land has been built using foreign sand. Reclaimed land has always acted as a recurrent, malleable 'puzzle piece' Singapore has relied on to realise its much-vaunted model of statecraft (Topalovic 2014), its trajectory from developmental to neoliberal state made legible in the instrumentalization of reclaimed land, with many of the city-state's strategic industries and spectacular sites integral to its construction as a global city built on sand. For a resource so integral to the Singaporean state's projection of its sovereignty, and for a state so renowned for its ownership of critical industries, infrastructure, and sovereign wealth funds (Chua, 2017), the procurement process of sand is curiously fragmented. A patchwork of around forty private dredging companies licensed by the Building and Construction Authority liaise with local concession holders in upstream territories to purchase and transport the sand that they have dredged. Once it is transported to Singapore, it either arrives at one of the Building and Construction Authority-controlled aggregate terminals: kept in a statutory board reserve for reclamation, or in the private stockpiles of construction companies within the terminal, or more often dumped directly into a reclamation site. The Ministry of National Development (MND) oversees the planning of reclamations in conjunction with the subordinate Urban Redevelopment Authority (URA), often decades in advance, with the reclamations themselves executed by one of the statutory boards: either the Housing Development Board (HDB), the pioneers of this mode of geographic expansion on the east coast in the 1960s, the Jurong Town Corporation (JTC), who oversee the industrial areas around the west coast, or the Marine and Ports Authority (MPA) (Lim, 2017). All statutory boards put reclamations through a tendering process, whereby engineering companies compete for exclusive contracts by putting together the most cost-effective and high-quality bid possible.

The sand mining bans that have proliferated across Southeast Asia, and their irregular enforcement, attest to the unsettling implication sand holds for territory. While

Cambodia had implemented numerous bans on sand mining within nature reserves, the companies resumed mining within months or weeks of those bans, as detailed by the NGOs Global Witness in 2010 and Mother Nature Cambodia in 2015 and 2016. The regulatory ataxia which marked the entanglement of the Cambodian and Singaporean state with sand extraction spilled over from local into international politics when activists brought to light the \$740 million discrepancy in sand exports reported by the Cambodian government between 2007-15 (approximately 4 million tonnes versus 75 million tonnes) (Thul, 2017). And yet, despite most suppliers having disavowed sand export to Singapore at some point over the past twenty-two years, the sand still flows . . . In his 2019 National Day Rally speech, Prime Minister Lee Hsien Loong announced that Singapore will spend \$1 billion Singapore Dollars a year to reclaim land until 2100 as part of a strategy to mitigate anthropogenic sea level rise (Lee, 2019); what he neglected to mention was where Singapore will find the sand.

Tens of millions of tonnes form the unaccountable (and uncountable) bulk of this thesis' para-site, dredged and spirited away from Koh Kong between 2008 and 2016, with the village of Koh Sralao, this thesis' upstream case study, bearing the brunt of the extraction. The sand's upstream origin is singular, but not less complicated by the construction of sand as a resource and the undercover frontier slipped into the environs of Koh Sralao and other villages like it as the sand was sapped, year after year, from the rivers and the estuaries of Koh Kong and Kandal. But downstream, the para-site of this thesis is implicated in the formation of other sites that are currently not-quite-existing. Given the timeline of the sand extraction in Koh Kong, the most likely candidates for the consumption of sand downstream, are two of the biggest (still) ongoing reclamation projects in Singapore: the Tuas Megaport reclamation and the Pulau Tekong reclamation. The former, scheduled to open in phases from 2021 to 2040, will serve to consolidate all of Singapore's disparate port infrastructure and integrate it into the industrial and logistical zone of Tuas, freeing up more centrally located former port infrastructure for redevelopment. In one fell swoop, Singapore's maritime logistical supremacy will be guaranteed at the same time as valuable waterfront real estate will become ripe for redevelopment. Similarly, the Pulau Tekong reclamation, effectively doubling the size of the island, which currently serves as a military training camp, will likewise shift several other military installations currently on the

main island of Singapore onto the island of Tekong. National defence and the military-preparedness of its citizens will be strengthened, and precious space in the interior of the main island will be free for development into Housing Development Board New Towns. While it is possible some of Cambodia's sand was dumped into other, smaller reclamation projects, such as the reclamation of an additional nub of land at Changi, or to finish the works at the dedicated petrochemical complex of Jurong Island, I believe that hundreds of thousands, if not even a few million tonnes of Koh Kong's sand made its way into these larger reclamation projects, as they were in their early stages, and reclamation works often source quantities in advance so as to secure the timeline of the works themselves, lest their hard work go to waste and a perimeter bund bursts. It is likely, if unverifiable, that the sand dredged from Koh Kong is still sitting in dunes stockpiled in Tuas and on Tekong, so reclamations can proceed apace long after the imports stop. Moreover, these are the two flagship reclamation projects that are of paramount importance for the Singaporean state, and which, perhaps, goes some way to explain why the sand complex latched its tendrils onto Koh Kong for so long and with such amoral disregard: a particular quantity needed to be secured, at any cost, years of protracted protest, contestation, struggle, and widespread media condemnation be damned. Part of the problematic this thesis seeks to address is the spatial and temporal asymmetry between the sites interanimated by its parasite: how does one reconnect the landscape of a fishing village and its mangrove environs to speculative infrastructures that are yet to fully disclose themselves?

And beyond that problem, we have to account for the fact that the reclamation itself is not the entire story, but that other landscapes in Singapore shift and are planned around land that is essentially speculated into existence, and made necessary, through its planning system. At the highest level of abstraction, sand is textualized by the Singaporean state: it makes its desires, anticipations, and anxieties legible in lines of sand sprayed into the perimeter of a reclamation, carving a demarcation into the water years if not decades before the land itself is reclaimed. Sites of reclamation are never completely accessible. Either because they are the tenderest sites of the city-state's paranoia, off-limits, hidden behind tall fences, guarded, and surveilled, or because of a more impassable obstruction: that the site of reclamation is itself not fully accessible to the individual. Walking upon the dusty ground towards the waterline as it is eaten away by sand is not the entirety of the

reclamation. As the sand streaks from the spout of a dredger, the para-site has already been parasited; it has been interrupted by years if not decades of prior surveying and planning. And years and decades later after it is finished, it will shift the geography of the city-state around it, as it Rubik's-cubes itself into newer and more productive arrangements, renewing its model of governance, and reaffirming its tabula rasa through the endlessly pleasurable plasticity of its earth-writing. And the sand itself has worked its way into more than just the augmented coast of the city-state; after decades of continuous expansion, and the recent volatility of sand markets, the government has piled millions of dollars into research and development into new ways of expanding its space without having to rely on sand, desperate to free itself of this vulnerability to external pressure. Reckoning with sand as a para-site means reckoning with how the granular as geomorphological multiplicity collides with the speculative material practice of a global city seeking to anticipate and tailor itself to the demands of the world market, carving out future niches through internal geographic expansion. Sand lines the cracks between the mangrove frontier and the completion of the Tuas Megaport in 2040, the consolidation of all other mainland military bases on Pulau Tekong, and the future transformation of the city-state itself.

To adequately map this process, I have undertaken a multi-sited ethnography of the sand complex. Tsing employs the metaphor of friction to conceptualise the study of global capitalism, with the latter's striving towards generality nonetheless entailing the appropriation of diverse forms of social reproduction and cultural production. Commodities are dynamic sites for observing this friction between the abstract generality of exchange and the sensuous, concrete particularity of use through their linkages:

Yet the closer we look at the commodity chain, the more every step, even transportation, can be seen as an arena of cultural production. Global capitalism is made in the friction in these chains as divergent cultural economies are linked, often awkwardly. Yet the commodity must emerge as if untouched by this friction. (Tsing, 2005: 51)

Like Tsing's methodological attentiveness to friction, this thesis employs granular state of matter to situate those awkward and frictional linkages between the geographies

connected by sand as moments for observing how Singapore's model of global city feeds off the socioecological difference of Koh Kong. Interviews and site visits were the primary modes of data collection, forming the basis of the geofictional counter-narratives as well as conceptual and empirical chapters that chart the transformation of sand. My participants in Cambodia were villagers affected by sand extraction for nearly a decade, and the activists who worked with them to resist this process. In Singapore, my participants were more varied, accounting for both the heterogenous transmutations of sand's consumption in practices and spectacles of sovereignty, and for the differential complicities of these actors inside or adjacent to the sand complex. Dredging industry insiders, reclamation engineers, and the bureaucrats who plan and administer the processes the sand complex depends on dearly for its reproduction constitute one strand of participants, forming the complicit, outward-facing front of the sand complex. According to them, any wrongdoing occurred elsewhere, and there was nothing exceptional about the immense flow of sand they coaxed into the gears and spokes of Singapore's global city machinery. Another strand of interviews consists of academic participants who have undertaken various research projects on behalf of the city-state's government into methods of reclamation or subterranean expansion that promise to resolve its addiction to sand; they frame the negative space carved by the sand complex, its experimental anticipation of the geographic expansion to come. The final strand of interviews focuses upon a burgeoning generation of artists, researchers, and filmmakers who have encountered and examined the sand complex through their work, some of them achieving international acclaim and recognition by the city-state despite the fact their work contains savage indictments of its project of territory. Through their work and their own words, I ask; is this another afterlife of the granular frontier, sedimented into aesthetic form? How does their work, celebrated as it often is, relate to the viral activism that was conducted by villagers and activists in Koh Kong? Beyond interviews, this thesis also employs archival data, derived from National Archives Singapore's copious recordings of parliamentary sessions, in which reclamation plans were announced, discussed, detailed, and approved with thunderous, unanimous applause. As Jackman, Squire, Bruun, and Thornton's feminist reconceptualization of territory and terrain aims to 'offer accounts of territory and terrain an opportunity for re-narration: of their construction, experience, and encounter' (Jackman et al., 2020: 5), the

methodology of this thesis aims to destabilize the conventional scripts of expertise and experience that characterise territory as an object of academic enquiry. It aims to unsettle the seamless ground projected by this expertise through a narration that not only centres other experiences but places the ground of that expertise under duress by opening it to those other experiences, and inviting the possibility that it might once again begin to flow.

Between these distinct voices exists my life with the sand complex as another kind of account, as another kind of data. Peregrinating in the places of extraction and the places of reclamation, or, seeing as the latter could only be accessed after-the-fact, in reclaimed spaces of transition, my autoethnographic inklings inform the odd details and digressions present throughout the geofictions. My trespasses upon the sites of extraction and reclamation were attempts to absorb the terroir of the sand complex, the oddities compacted into its flavour profile, its austere efflorescence in mangrove frontier and 'tropical garden city', as Singapore was once called. And so, enclosed in this introductory chapter, I gift the readers of this thesis a genuine sample of the sand I am speaking of (Figure 1), scooped from the outer fence of the Tuas View reclamation sand stockpile in the early hours of a Sunday morning. The pile had exceeded its corrugated iron enclosure, spilling out into the bushes and grass at the fringe of the stockpile, waiting to be claimed by a passer-by. As an expat who grew up in Singapore for seventeen years, with dim and retrofitted awareness of this process, my fieldwork in Cambodia and Singapore was driven by intellectual curiosity and purpose, but also an underlying desire to find the hidden sources of my relation to Singapore as a home I was never quite at home in. To find out why, instead of being able to see it for what it was, I saw Singapore as an infinitely extending city, a city growing as if it were alive. I had some idea of the fact it *was* extending, it *was* growing, and perhaps, at some level, aspiring to be infinite, but I didn't know how or why it was growing, or most importantly, *at what cost*. This project attempts to answer some of those questions through the humble grain, and see what a single grain of sand, travelling from Koh Kong to Tuas, might tell us if only it could be made to speak somehow.



Figure 1 A bottle of diverted reclamation sand (Author's own, 2018)

The construction of the granular frontier in Koh Kong will be introduced in Chapter 3, 'Extraction', and focalised and interrogated in the following two critical scholarly chapters. Chapter 4, 'Enclosing the granular, rewriting the river' outlines how the construction of sand disrupted the precarious socioecology of Koh Sralao, which bore the brunt of the extraction in Koh Kong for almost a decade, and what their experience and survival of sand extraction can tell us about sand's construction as a resource. Chapter 5, 'Buried up to their heads in sand' focuses on the collaborative campaign between Mother Nature activists and villagers

to resist and ultimately end the mining through both direct action and a viral social media campaign that captured national and international attention, with both forms of activism incurring the wrath of the Royal Government of Cambodia.

The metabolization of sand into the sovereign territory of Singapore will be introduced in Chapter 6, 'Reclamation', and subsequently delineated through three critical conceptual and empirical chapters, demarcating its transformation of geography in Singapore. Chapter 7, 'Falling through the hourglass' begins with the uncanny juxtaposition of alien dunes and migrant labour camps on the outskirts of the city-state and examines what both can tell us about Singapore's political-economic model and its production of logistical 'subjects'. Chapter 8, 'Learning to cope with endless growth', examines the city-state's geophilosophy of endless growth, how it has elided economic and geographic expansion, and its attempt to develop 'post-granular' technological fixes in response to the sand insecurity it has engendered in the region. Chapter 9, 'All lines flow in', touches upon the recent aestheticization of the sand complex in the work of the artist Charles Lim, and what the possibilities and limits are for art as critique in this context. Alongside Lim's work, his collaboration with the Cambodian filmmaker Kalyanee Mam is posed as a transformative gesture towards making the sand complex porous towards its 'outside'.

This rest of this chapter will outline some of the conceptual geographies connected by the granular in upstream and downstream sectors, and then introduce sand as a geomorphological text.

Upstream

The work of extraction is a work of construction, and this begins in the upstream sector. Resource geography often harks back to Zimmerman's relational insight that 'resources are not: they become' (Zimmermann, 1951: 15), but every resource-becoming is a result of a construction. The agent which constructs sand, in the upstream sector, does so by excising it from its milieu, separating from the other sediments and gravels through which it performs its granular interlocation between solid and fluid, mediating flows, shorelines, riverbanks and beds. As a resource it coheres with cement and water, compacting and consolidating into ground, and flowing like liquid as it is extracted from a riverbed or coastline.

Granular dynamics are intrinsic to sand's 'becoming-resource', but also crucial for its geomorphological and geophysical mediation of solid and fluid. Resources, conceived of as 'relational understandings of the non-human world' (Bridge, 2008: 1220) offer unique understandings of capitalism, as resource industries construct and confront the idea of an already-existing nature most explicitly (Bridge, 2010; 2013). They are the apertures through which capitalism is constructed and projected from the non-human world. Resource geography has partly developed in concert with calls for a keener focus on materiality in human geography, and partly developed out of earlier commodity geographies interested in 'defetishizing' the commodity (Hartwick, 1998; Cook et al., 2007). Commodity geography's implicit premise of 'reconnecting producers and consumers' (Leslie and Reimer, 1999: 402) is more troubled by the interconnected and intercalated ecologies of 'production' and 'consumption' intrinsic to resources. In his prolific work on oil, Bridge has made the case for the 'productive position "resources" occupy in the organization of knowledge' (Bridge, 2009: 1218), and how their management produces situated knowledge of nature (Bakker and Bridge, 2006). In particular, the way a resource is weathered by collisions with (geo)political and financial interests down the commodity chain distinguishes how these 'commodities are not *things* but, in fact *socio-natural relations* (Castree, 2003: 282). Intrinsic to these understandings of resources is the

production of knowledge of the non-human world which expedites the management and manipulation of the resource.

A departure in the case of sand as resource is the role of knowledge-production in extractive industries, and its continuity along the commodity chain. While the epistemologies of extractive industries obscure, elide, and occlude knowledge and information that are not expedient to the management of resources, either practically or politically (Kama, 2019), there is a necessary coherence of knowledge-production in extractive industries that serves to rationalise a complex and messy geo-political process and minimise its externalities (Barry, 2013). As a resource, sand's most important requirements are its low value and high bulk. Littoral and fluvial sand is usually dredged, either scraped or sucked from the bed. Dredging is an intrinsically itinerant procedure, requiring little investment (and little incentive to invest) at the point of extraction, and little conditioning of the sites for extraction (floating platforms can be tugged away to another river once local sources are exhausted), with most of the initial cost being for transportation. Dredging is not confined to a single mine, quarry, vein, well, or lode, and the sites for extraction are co-extensive with the coastlines, estuaries and rivers, with specific sites for dredging often selected on an ad hoc basis: sometimes at a rural frontier, sometimes a few kilometres away from a capital city. Though it is available and easy to extract, the varieties of sand that can be used in construction are constrained by geomorphological conditions influencing size, shape, and composition. However, these factors are ultimately subordinate to transportation costs. The overriding concern is keeping the cost of extraction as low as possible. The cases often used to illustrate the burgeoning crisis of sand scarcity, like those associated with Singapore's outsized demand, often stem from the disturbance of sand's price, which rises with any obstruction to its cheap and limitless flow. The arrangements which facilitate this flow are often precarious, and the dredging itself more difficult to regulate than other natural resources, making the black-market sand trade lucrative, which, for such a cheap resource, is astonishing.

Even before we come to the geopolitical friction and bureaucratic corruption that is bundled with sand extraction in Southeast Asia, the fundamental effect of its extraction is the destruction of environments. While all forms of resource extraction induce negative ecological externalities (damage), the extraction of sand *is* the damage: in coastal and

riparian milieus, sand writes the flow of water, and its sudden removal accelerates the velocity of the water, precipitating the erosion of riverbanks and gnawing away of coasts and riverbanks (Koehnken et al., 2020). The Mekong Delta is experiencing an accelerating rate of coastal erosion and subsidence due to a combination of dam construction, drastically constraining sediment transport, and intense dredging for construction sand (Anthony et al., 2015), causing it to sink faster than sea levels are rising. Dredging often stirs up the finer layers of silt that lie beneath the sand, increasing the turbidity of the water and changing its nutritional content, playing havoc with multitudinous ecohydrological relations.

The quandary of sand's cheapness is consonant with Moore's concept of a Cheap Nature, composed of Cheap Labour-power, Cheap Energy, Cheap Food, and Cheap Raw Materials. Moore configures capitalism's interaction within the nature as a 'double internality', a dialectical unfolding of capital-through-nature and nature-through-capital, an essential mechanism of which is the valuing of certain kinds of work and not others (Moore, 2015). Realising value from abstract social labour entails the production of an 'abstract social nature', a reification of nature that conditions it for surplus value extraction. Eventually, this results in a concomitant exhaustion of the frontier through its underproduction. The Marxian concept of the 'metabolic rift' is helpful for characterising this exhaustion (Foster and Burkett, 2016; Saito, 2017, 2020); these abstract social natures split a given natural 'product' from its ensemble, and a rift forms between its 'natural', or ecological, reproduction and the reproduction of the capital that it forms. Probing the formation of these 'abstract social natures' is crucial in unravelling the violence of capitalism's abstractions, as Huber advises, especially in how they 'discipline and shape the concrete specificities of these [commodity] chains' (Huber, 2018: 153). The abstract social nature of sand, as we shall see, is complicit in the political technology of territory.

Downstream

As the sand makes its way downstream it acquires a conspicuous character as a commodity: not simply as a ubiquitous construction material, but as the material substrate of sovereignty through the construction of territory. The friction between its abstraction as a resource and its geophysical relationality abrades its fragile frontiers, interanimating urban and fluvial and coastal processes. Sand's resource-friction is fixed into concrete by labour (lower-skilled than other kinds of building material, subtly shaping labour relations)(Forty, 2013; Elinoff, 2017), and assembled with other materials and socio-economic relations to enter cycles of accumulation and devaluation of wider construction, property, and financial markets. The friction of sand as a socio-ecological fix is translated into the wider dynamics of urbanization which, to perpetuate itself (Ekers and Prudham, 2015, 2017, 2018), partly relies on the unformalized granular frontier, forming a frictional feedback loop between sand's ecohydrological relationality and its abstract social nature as a resource. The recurring controversies caused by sand extraction in Southeast Asia, focalised by Singapore's exceptional demand for both concreting and reclamation sand, are expressions of the kinds of abrasion endemic to the dysfunctional abstract social nature of sand, as well as the improvisational measures undertaken to suppress the manifestation of this friction.

Sand can behave like a solid or fluid. In its geomorphological context, it is often a mediator between the two, shaping and shaped by land and water, both a product and interlocutor of their interaction. That both terms make sense through sand, as a flow that can become a ground as solid as any other, is enough to situate it as problematical territory. Sand, as a geological archive of fluids (formed by air, water, or ice), unsettles the terrestrial coding of territory. In their work on 'wet ontologies', Steinberg and Peters take the longstanding geopolitical denigration of the sea in the work of Carl Schmitt as a point of departure for thinking with the geophysical dynamism of the ocean through a 'wet ontology' (Steinberg and Peters, 2015). In evaluating its critical possibilities, they problematize recent, and profoundly terrestrial, volumetric theorisations of territory, through the restless and turbulent volumes of the ocean which defy conventional modes

of surveillance and governance more generally (Peters, 2014). The geophysical and phenomenological experience of the sea, and its 'wetness', have profound implications for how the sea is produced, enacted, and encountered as a territory. In Squire's work on the elemental, the wet capaciously envelops the earthly and the atmospheric with geopolitical implications (2015); elsewhere, Squire examines experiments with undersea inhabitation to centre the body within studies of terrain and territory (2016). Similarly, Campling and Colás's argument about the distinctive and dynamic materiality of the sea for global capitalism ties questions of social reproduction and embodiment to often abstract theorisations of circulation and logistics, with the materiality of the sea both facilitating frictionless circulation but also causing the cataclysmic destruction of fixed and circulating capital, necessitating historical developments in insurance and finance to accommodate it (2018). Sand's relationship to the sea, and to its 'wet ontology', is subtle, but significant. Sand's promiscuous ability to make and unmake territories is expressive of the dynamism at the core of the granular state(s) of matter. In reclaimed land, we encounter a stark inversion of sand's mediation between solid and fluid: sand is used to both demarcate and fill a volume of sea until there is no sea and consolidated to become solid ground. Granular dynamics are hijacked by the logic of the capitalist state to reinforce the demarcation between solid and fluid, and enact the construction of yet another flat, seamless, logistical surface, 'a paradigmatic space of partition and control' (Peters et al., 2018: 2). Peters' and Steinberg's further development of a 'more-than-wet' ontology seeks to understand the ocean in a way that 'exceeds its liquid form' (Peters and Steinberg, 2019: 295). The granular expressivity of sand, in its modulation of coasts, estuaries, and rivers, and thus its expedience as a resource to the opportunisms of maritime capitalism, coupled with its very mimicry of both fluidity and solidity, makes it a site of geophilosophical significance for how capitalism and the state deterritorialize and reterritorialize nature and the sea as 'more-than-wet', while also undermining political and legal conceptualisations of territory. For the Singaporean state, its governance of the ocean very much occurs 'in a vacuum', as Peters has noted (2020: 3), which can be thought of as analogous to the frictionless presentation of the commodity, but through the commodity chain of sand, and its granular excesses and recesses, the true terms and relations of its territory can be understood.

The political technology of territory, according to Elden, describes the procedures through which a state volumetrically quantifies and qualifies its space by 'weighing, measuring, surveying, managing, controlling and ordering' it (Elden, 2013a: 49). Building on both Foucauldian and Lefebvrian notions of sovereignty, space and the state (Foucault, 2007; Lefebvre, 2009), Elden identifies territory as a governmental strategy in its own right which emerged alongside an ensemble of calculative governmental techniques, alongside population and security (Elden, 2013b). Crucially for Elden is Foucault's formulation that 'sovereignty is basically inscribed and functions within a territory' (Foucault, 2007: 11). While Foucault quietens territory in relation to other governmentalities (Elden, 2007), Elden demonstrates how important a 'history of the present' for territory is if we are to escape the 'territorial trap' (Agnew, 1994). Elden's Foucauldian conceptualisation, however, risks minimizing the specifically 'capitalist articulation of sovereignty' which contemporary studies of territory reveal (Campling and Colás, 2018: 777), and which I argue Singapore's sand complex is exemplary example of. Through land reclamation, territory becomes a technical and economic object, subject to the competing (ir)rationalities of state and non-state institutions, engineering, and supply chains of labour and material, each with their own tensions, opacities, and disciplinary apparatuses. To make territory cohere analytically as a political technology (Elden, 2013c, 2017), these fragmentary and opaque practices must be located within its composition as territory, otherwise the application of Elden's volumetric formulation risks fetishizing the instrumental rationality of the state which, as a corollary, methodologically privileges the expert informant, occluding other embodied knowledges and experiences (Jackman and Squire, 2021). Once reclaimed, the extra-governmental factors become supposedly erased through the legal incorporation of the reclamation into the state's territory. For Singapore, this takes place through a 'Proclamation' issued by the President, a legal text that ultimately seals the fate of a reclamation as State land. While for Raffestin territory is already a 'text' (Raffestin, 2012), I argue that while never fully commensurable with a text, territory is inflected by text and 'textualized' by the abstractions operationalised by capital and the state. For this thesis, it is this expanded consideration of territory as a political technology that factors into a highly specific mode or model of production, Singapore's model of global

licity, making the commodity chain of sand a compelling and problematic para-site for critical-creative intervention.

The irregularity and marginality of sand extraction as a natural resource industry poses questions to Elden's volumetric conception of territory as a compound of the political and economic object of *land* and the military and geological category of *terrain* (Elden, 2010). While sand is bought and sold like a commodity, in its economic form it is closer to terrain than to land, as it is its geophysical properties which condition its extraction and commodification. As a resource, it is considered strategic and integral to Singapore's national security; however, owing to both its normative conception as a resource and the regional tensions involved in obtaining it, sand is sourced entirely by a patchwork of contractors who navigate the underbelly of its procurement on behalf of the state. When it is consumed in the reclamation of land, mostly a matter of geotechnical and soil engineering, it is entirely defined in relation to the land's prospective political and economic uses that have already been planned and determined by the Urban Redevelopment Authority. The governmental technics that generate the demand for sand in the construction of territory work through factoring in non-existent or not-quite-existent land parcels and their ten-to-twenty-year leases into the master plan (McNeill, 2019): time is not out-of-joint but turned outside-in.

To become territory, sand must undergo several phase transitions: first from geophysical relationality into a resource; then into a strategic matter of national security; then into a component part of an engineering project; then into sovereign territory, its most remarkable phase transition of all. It changes state between fluid and solid, and from one state's soil to another's. Sand's phase transition from fluid to solid is accompanied by the changes of state at the sites of extraction and reclamation, and seen as such, the global city's pathological dependence on endless amounts of dirty-cheap external territory can be understood as literally and figuratively foundational to its political economy. As Bridge noted, the politics of volume must extend to the circulation of commodities and 'the techno-political practices through which these flows are secured' (Bridge, 2013: 57). Singapore's project and projection of sovereignty is reliant upon sand's abstract social nature that is exceeded by the multiplicity of geomorphological choreographies it is product and mediator of (Kothari and Arnall,

2019: 9); thus, it becomes pathologically dependent on milieus of profound socioecological multiplicity, such as Koh Kong.

In light of the Prime Minister's recent announcement that land reclamation will continue until 2100, it appears that the extraction of territory will quietly persist into the future under the guise of moral necessity and mortal survival. Recalling Yusoff's searing insight into geology as a critical arena for the racialised stratification of the human subject and the crafting of capitalism's extractive relationality so often elided in the interdisciplinary hype and funding goldrush of the Anthropocene (Yusoff, 2018), the geomorphology of the Southeast Asian sand market may serve as an incommensurable corollary. Sand lines the cracks of a novel configuration of the 'current colonial-matter-matrix and its extractive relation to the world' (Yusoff, 2017: 3), but unearthing the granular geography of this configuration entails tracing longer histories and calling attention to the errant grains and muddy remainders and absences churned up by this process. Dixon notes that the 'unconsolidated sediments such as boulders, gravel, sand, silt, and clay that refuse to lie down quietly in taxonomic tables' (Dixon, 2018: 130) challenged the classificatory fixity and essential stratifications of the gentlemanly science of 19th century geology. Deleuze and Guattari's theory of stratification and territorialization similarly attends to the possibilities of geologic grammar to both ground and unground theories of the subject, keeping familiar humanistic essentialisms in a state of suspension (as of sediment in a flow)(Deleuze and Guattari, 2004).

Without taking into account the territory that has changed state at the other end of the commodity chain, reclaimed land is a spectacle without history. Koh Kong's territory, at least 80 million tonnes of it, is in the process of settling into the military base of Pulau Tekong or the next-generation Megaport of Tuas, while a fifth of Koh Sralao still has not returned to the village. Other parts of Koh Kong are being carved up for hotel resorts, airports, and allegedly military ports (Koemsoeun, 2018; Meng, 2017; Nachemson, 2019). The opacity and dysfunction of Singapore's sand market, through which its cheap flow is guaranteed, causes the commodity chain to be gradually riven with friction that threatens to arrest the flow of sand, forcing Singapore to seek out ever more remote granular frontiers. The self-styled global city has yet more of the globe to incorporate into itself.

I RECLAIMER

Before you left, at the beginning of 2002, sand was less than \$5 a tonne . . . lunch money. Then Malaysia turned the tap off. By 2005, sand was \$250 a tonne¹ . . . an engagement ring, if you were short on cash. You returned to Singapore a decade later, when it had fallen to a much more reasonable price, still five times what it was worth when you left. But you hadn't known its potential then.

Standing at the helm of the dredger, you survey, calculate, monitoring the flow of fill material. You ensure the load is evenly distributed, applying the first layer of soft clay throughout the site. The clay makes a horrible, gasping sound as it settles. Air escaping to the surface. It bubbles like a tar pit, the gossip of prehistory. You yearn for the serene sibilance of the sand as you remember it . . . cascading in without worry or memory. Without monitoring the levels of settlement in the soil composition.² A respectable material. Dry and well-behaved, not like this roiling, muttering, *emotional* wreck of land. Out there for eight, ten hours at a time, you can't afford to lose a single minute, but sometimes feel that you are gaining them, a headache thickening between the lobes of your brain.

¹ The price of sand leaped to this height in 2005 when the sand bans that Malaysia had announced in 1997 came into full effect. Milica Topalovic and others, *Architecture of Territory - Hinterland: Singapore, Johor, Riau* (ETH Zürich DArch, 2013).

² 'Settlement is always an issue when it comes to doing reclamation. Because we have to use more soft clays and soil, the reclamations now have higher amounts of water in them, that it is looser. So when stress is applied to them, like with a building, the ground can move under that stress. So we need to get the water out through consolidating the soil' (Interview with Darryl Soh, 2018)

The first time you came to Singapore to do virtually the same job, with virtually the same company, with virtually the same wife (because you now know that people *do* change), the same flow was golden; shades of papyrus, sunset, Soo Ling's bleached-fainted moustache that you only saw when it caught the light.

You used to stand over a pane of sea sealed off by perimeter bunds, and with the permission of panoramic and endless abundance flooded it with grains until it clouded over, grey and unreflecting, no depth visible. Kept at it. Nourished the mush. Watched on as day by day it grew around you, oil spreading in slow motion. Disbelief as you turned to see, one day, how big it was. And even then, you still fed it a steady diet of sand and sand and sand and sand until it was ready to grow up, accept responsibility and a thousand tonnes of bore-pile foundations anchored into its thin skin to support a few hundred million Singaporean dollars' worth of the freshest Executive Housing Development Board flats. This was a new kind of wealth, untraceable back to this frothy plot of water, sand, and work, that would yield to the demands of adulthood, maturity, productivity. Years, decades plottable in advance.

Like so many parts of this island, you had come from elsewhere, been incorporated without your awareness. Your work had taken you and your family around the world; you had never returned to anywhere once you left. Except Singapore. As soon as you landed in Changi again you regretted it. Soo squeezed your hand. Your hand gripped the seat rest.

—I am so glad we are home. I didn't think it would take this long.

She smiled. You tried to review your decision, squeeze the last millilitre of sense from it, as you smelled the mossy water of the koi pond on the concourse, Soo Ling giving the small of your back a push to usher you through Changi's glass doors into the afternoon and toward a cab rank.

Soo got into a cab as you stood there, and before you knew it you were breathing in the air freshener, hearing the ding of the speedometer as the driver eased over the limit. Before it can be made it must be believed, and before it can be believed it must be seen: in plans, blueprints, charts, scatter graphs; through remote sensors, geomatic models, 3D renders; measured in square footage, loadbearing capacity, sunk costs, reasonable life expectancy, and eventually the miracle of rent per calendar month. This flurry of particles marbling the water must be seen decades in advance, moulded, mapped out. The cab you were in was driving along the East Coast Parkway away from Changi airport along reclaimed land over fifty years old: younger than you. There was something in your ear; a fugitive air bubble from the steep descent, a roaming spirit level tickling your ossicles. Your cab driver asked you if you were here on holiday; Soo explained that you both live here, that she is in fact a local and grew up near Tiong Bahru.

—Ah! How long away? Eight fingers and two thumbs splayed from the hand, Ten weeks . . . months . . . years? Soo nodding and raising her eyebrows. Wah lao, why were you away for so long?

—This one lah, she croaked, nudging you in the ribs, dragging me all over the world, uncle. Working hard for the family.

—Ah, I see. Good job?

—Oh, engineer.

—Very good, very good.

—We're very happy to be back home now, after all that time.

Hardly any time at all, you think, looking out the window into acre after acre of HDB slabs lining the road: only a decade, which turned out to be nothing at all. You dug in with your finger, thinking you wouldn't reach it: a single grain of sand, its coarseness smoothed by

ear wax. As you rolled it between your thumb and finger, you thought about how it got there, when you should have asked where it came from.

The din of the dredger cuts through, it needs you to focus: this is the part you have been waiting for. A layer of sand must now be applied. Immediately you feel better. As material flows out of it, too fast to focus on any one detail, you wonder what would happen if you put your face in front of the plume of sand, cover the aperture with your mouth. There's no way that these miserable acres of slurred earth could ever become land, and much less contain its soul: rent.

Seagulls alight on the far breakwater; they circle and scoop the occasional wind before resettling. Sallow cloud is dispersed over the sky evenly, expertly.

This too shall pass. This too shall become land.

For a limited time only this country was your home. You met Soo Ling here. You were easing into your forties, ready to have children. Your buddy from the Ministry, Seow Beng, introduced her to you at a party, his eye twinkling as you stepped boldly forward to kiss her on both cheeks (*how* European!), to seal the deal before it was even made. But that was all far from you now. Marriage: a qualification like your many others, that you could admire; tilt the certificate's watermark to catch the light. The reality consisting of so many particulars dispersed in an arc: a stain in motion. Two girls, Jane and Helen, born before you had left the country, then raised all over the world

- picking strawberries just outside Whitstable, to celebrate Soo's citizenship test, but no more than a stone's throw from the offshore windfarm you were working on;
- east of the Three Gorges Dam in Hubei province, Jane and Helen trading insults in Mandarin that you didn't understand, calling each other by their

Chinese names, Soo scolding them more for their shoddy pronunciation than the profanity, their accents decaying to a generic American in an international school;

- downriver from a desalination plant in Southern California, with a baby boy (a *son!*), an accident.

—Because one day he was just there, like an oil slick, you would joke to your colleagues,

—we weren't planning on having another one, what with Soo getting on a bit, but there we go, *a son!*

- contained within a razor-wire fenced compound in Luanda, while you did your work offshore.

In the interim, Punggol 21³ had seen so many possible visions of itself slip through its eyelids:

- a New Town for the 21st Century, crammed into as many brightly laminated pages of promotional materials and fiscal projections as possible, spread across as many sketches, renderings, and handshakes as it could take;
- then a field littered with the carcasses of construction sites, doomed by financial crisis to remain unfinished for years, decades;
- an empty boulevard offering itself to the ochre afternoon, a lone construction worker resting in the shadow of a railway overhead;

³ Punggol 21 promised to be a brand new middle-class oriented HDB development for the 21st century that stalled due to the Asian Financial Crisis of 1997 as demand flagged, and was rebooted a decade later as Punggol 21 Plus. Richard Peiser and Ann Forsyth, *New Towns for the Twenty-First Century: A Guide to Planned Communities Worldwide* (University of Pennsylvania Press, 2021).

- an aspirational Luxury Executive Housing destination, sluiced by so many ferned canals and waterways it was as if the water had never left, had never needed to be annihilated so completely;
- the grey shells of future condos, honey-combed by empty windows, the towers twisting and twining between them the jeering of the men who slept and ate and shat in the temporary accommodation beneath them, at the edge of a foundation pit.

You had no intention of seeing it again. All you wanted to see again was that flow, that ground, the plane of sand spangled by the tiny footprints.

Two beautiful daughters, Jane and Helen, who are currently attending American and Australian universities; a son (a *son!*), Jeremy, currently at home, in the cube of air-conditioning that was his room, eyes clear and reflecting a computer screen.

Instead of going back to the land you helped raise, you remembered raising it. It was simple and pure:

1. *Planning*

The Ministry would draw up the plans, consult with various boards and agencies on ballpark figures. The Board would hash out the specifics, conduct a preliminary survey of the site, timeline key phases. By the time you came in it had almost all been done. The initial meeting conducted in the basement of the Ministry, a few doors down from the electric ember of a shrine unfurling incense through the corridor, with the bigwigs and subordinates of the Authority crammed around one side of the table, the Board around the other, the Ministry at the other end. When Seow Beng arrived, they all stood up; a cup tinkled as it tipped over and weak black

coffee slid across the glass top to the edge of the masterplan and into the lap of a junior project manager from the Board. After mopping up the liquid that pooled at the margin of the piece of paper that occupied the entire meeting room table, the responsible party left the room, presumably to change his trousers, and never returned. The masterplan was laminated, and apart from the empty chair, there was no way of telling a mistake had been made; perhaps that was his role. Seow Beng, your liaison at the Ministry who took a shine to you, appreciated your discretion and perhaps even a few of your off-colour remarks on the fairway of the Singapore Island Country Club golf course, began as soon as the door behind him had closed. He placed his liver-spotted hands on either edge of the master plan and leant into it, holding it down with his body weight.

2. Implementation

Urbana Inc., your employers (or, to be more precise, the company you had been subcontracted to by your real employers, who were based in the Netherlands), had a sweet deal. They had won the tender for the reclamation, as they always did. Perimeter bunds were established by grab dredgers, geotextile containers forming the foundation, and rocks overlaid until it rose above the water to demarcate the edge of the site and isolate the water from the rest of the sea. Then the hopper barges would dump the hydraulic fill, the sand and motion that was pure flow, over the base of the site. Compression, consolidation, completion. The work would commence from one side of the site and continue to the other side. In the beginning it always seemed so inconceivable. Tonnes of material dumped into the bottomless turbidity of the sea. A gentle hum of anxiety as the first few weeks crept by. It was the sand that kept you

together, arriving on time by barge, by dump-truck (or via a coolie-powered rickshaw, you joked to Seow Beng once when you were both stuck in a sand bunker on your last hole, and instead of laughing his lip curled, his nostrils flared, and, snorting a lode of phlegm into his brainstem, he dug in with his sand wedge, scattering particles all over your face and mouth). The Authority handled all the materials; you never had to worry about a thing, you could just let your attention siphon off into the flow of fill material. Weeks would pass and you wouldn't know the difference. You wanted to have a picture of what the motion looked like, that you could keep it in your breast pocket, or in your wallet, and show it to people so they could feel closer to you. But day by day, inch by inch, grain by grain, it would reveal itself. The land that was ground, the ground that was pure. Soo Ling was pregnant with Jane, your eldest, your smartest, your scariest: you had projected the first subtle bump of belly into a son: everyone around you had been expecting a son. You remember the first ultrasound but parting the murk of memory all you can see is the first hint of ground: stretching your mind back to that first spectral squib of a limb the picture is flooded with gold, khaki, bleached sepia. On one of his monthly site visits, followed by a few holes on the golf course, Seow Beng leaned into your ear after you told him the good news and said—You have plenty of time to have a son, Alan, all the time in the world . . .

3. *Settling*

The job was done. It was time to hit the golf course, you and Seow Beng could spend some quality time together before the next job. Work on your par. Even the

voluptuous velvet hills of the eighteen-hole golf course⁴ was just settling . . . it had been reclaimed decades ago and was waiting to hatch a new waterfront of sickly teal glass, after the teal grass of the golf course, after the teal water of the sea that saw its demise thirty years previously. A cluster of mixed-use developments will take root here, their deep-sea-creature translucence to be perforated by the sun, their bones and cells and executives pant-suited or sleekly tied backlit by the particulate-rich light of evening (for the annual haze drifting in from Indonesia will eventually stretch around the entire year). The ping of Seow Beng's club against the ball switched a lightbulb on in your head . . . You had been getting its promotional materials in the post: the colour-corrected gloss of a 3D render on the hoarding of a construction site, populated by wisps of faceless people traversing a plaza. . . how old would you be when the land you reclaimed would be broken, and made productive? . . . you would be an old man but you could see it coming . . . through the anticipated panoramic views of the corner offices, its image already mocked-up in the brochure, type already set in a truly tasteful spread where you can see the sea, a few degrees warmer than ideal, squeezing between the oil tankers that rim the horizon . . . through the spike in construction activity that the opening of the site to business will trigger, modelled by the finest minds in the Ministry, so they can synchronise the landfall of cash with thousands of work permits for construction workers from India, Bangladesh, Myanmar, and even mainland China, to be lodged out of sight in temporary accommodation at the furthest edges of the island . . . the leather of the chair squelched under you as you crossed your legs to hide the darkening stain on your suit trousers, your prostate having enlarged like the island

⁴ For such a space-starved city-state, Singapore is host to twenty golf courses.

you have helped to build, the piss as clear as the warmth heavy on your thigh, and in its weight, in its weight you know its colour is *golden* . . . seeing it come to fruition the entire time through the greying of the water as the sand pulses into it, resolving into the depthless pane of a screen rising beneath the water, aching for an x axis, thirsting for the corrupt stem of the y . By then you had two daughters, Helen having brought her almond-shaped face into frame a few years into your next job. You drove up to the 21st Century New Town Reclamation site one weekend and watched as your daughters flew kites by the water, running along the brightness of the flat expanse . . . it was too bright to see their footprints . . . you couldn't angle your face down towards it, as if you were in a dream. Grains of light lifting your face from the ground that had been peeled from a screen, its sections changing colour under a click as parcels of land were bought and zoned by an adequately air-conditioned Authority planner. This was the place you had been waiting for. . . this was the plane you had to retain a picture of. You wanted to hold this ground in your mind and leave for good . . . never to return, you remember thinking, the surface of the ground jiggling like gelatine at the trail this thought had left, swirling and scooped by the porthole of an airplane tilting over it as you left . . . yes . . . the good life was leaving for good and never returning . . .

The material now is so much more difficult than what you used to work with. The flow of it reminds you of flash-flood footage, a livid gush of discoloured mud levelling the water with its mess. Tonnes of soil and excavated earth mixed with just enough sand so the land, once reclaimed, wouldn't liquefy and crack under the slightest load. With soil and soft clays, the water hides inside the smoothly composed surface . . . you have to isolate it, and extract it.

You and Soo have both settled into a routine by now. Day and night lose tread. Most days you are at the helm of the dredger, watching sand stream into the site, or ten times as much soft-clay slop in, filthy, difficult. You haven't eaten lunch, yet you feel full, the sea chart, the maps of the reclaimed land, the gridded layers of geomatics in hi-def reds, pinks and purples and whites, deep ochres flicking between each other. . . soil composition, littoral flows, and tectonic scans, cross sections of a ghost and the gristle and sinew of the still breathing and sweating animal, but looking at your watch it is the tonnes of sand used per minute, the faces of the subcontractors as they stand watching this seam of ash serenely drift in vapours toward them, as one wipes some indescribably small particles from his forehead beneath the yellow helmet when it is already on the hand he is wiping it with.

Your wife spends her time riding the bus, steering it with the bones of her face along the expressways . . . the Ayer Rajah Expressway, the Pan Island Expressway, East Coast Parkway, Central Expressway, just acronyms proliferating in any triple-lettered combination, AYE, PIE, ECP, CTE. Even they don't pay any heed to water . . . the Marina Coastal Expressway just slides beneath the sea. She withdraws hundreds of dollars at a time from the joint account . . . sometimes it reappears several days or weeks later in larger quantities, sometimes it disappears for good. Every time you think of asking her what she is doing with it, you remember that after adding the withdrawals and the deposits together she isn't just breaking even, but making a profit . . . she must know what she's doing.

Malaysia had banned sand exports for almost two decades, Indonesia almost a decade, Cambodia and Vietnam quickly following suit. The contracts made before the bans were soon to peter out, you heard a senior manager at the Authority say; Singapore would have to look elsewhere for its sand, officially. *Even Cambodia and Vietnam are making difficulties for us, we will have to think laterally on this one.* You couldn't quite imagine it except as gold . . . but

it was more valuable than gold, you told others. Not literally, of course, but in a figurative way . . . in relation to its prior value, the way it swelled and shrivelled, and enabled so many things to be purchased . . . real estate, a ninety-nine-year lease, rent, a garbage dump, even a garden with trees made of metal, reaching far into the sky. It was like gold in the way it held all these things in reserve, as a medium of exchange . . . : but you could only swap your time pacing along the bow of a fume-shimmered dredger for a day-long meeting in a windowless room discussing timelines and alternatives; the endless strip lit corridor in the basement of some government building for minutes passing at a time as you watched tonne after tonne after tonne without noticing the difference; the smell of the sea for rotten earth, its minerals seeping into your nostrils; the finished plane pure and extended in your mind's grid alone for the sputtering false start of Soo Ling crying, telling you how glad she is to be home, despite how long it took, as she looked over the balcony of the hotel bar over land that was water when you had left the first time, when the cry consolidates into a full-throated laugh, 'and you never thought we would come back, you bastard, well here we are' and you clinked drinks and felt like she was your partner in whatever crime you were committing.

Sand.

The word on the lips of the senior management team at Urbana. Conference calls with the Board . . . dunes of their own personal vintage, stockpiles sitting in depots in Pulau Punggol Timor, in Tampines, that you desperately needed, but that they clung on to for dear life, keeping millions of tonnes in reserve to keep the price from spiking like it did before . . . 5000% in just under a week . . . you were sad you missed the terrifying rush of that spike. The water will take any excuse to mess with plans . . . to turn plans *into* mess. The settlement

cannot be lowballed. It must remain between 0 and 1... anything beyond is a mathematical nightmare, *terra infirma* churning beneath your feet, ground that you can't figure out. Is it undergoing some crisis of confidence or finally feeling good and letting loose, harnessing its own liquidity?

Urbana Inc. calculated that one billion dollars could be saved by the Ministry's scheme of recycling material instead of importing sand for infill . . . thousands of cubic metres of soft clays and soil, so-called *good earth*, excavated for new train stations and housing blocks, then transported by eighty trucks a day to wait in one long line as, one by one, their trailers would up-end and the maws shutter open to deliver this sensible landslide to the barges, a regulated natural disaster dutifully attended to by vehicles who have come to pay their respects and dump load after load of soft clays, degraded soils: *good earth*. It is not reused, but below your feet, just waiting to be made productive. They saved money on the material but not on your labour . . . you have cost them dearly, hammering the living water out of these soft clays, using prefabricated vertical drains the way a medieval surgeon applied leeches to the bodies of royalty. This could hardly be called engineering. It was a war against water itself, everything it stood for. This is the job now, you remind yourself . . . first the dredging, then a layer of clay, then a twenty-centimetre seam of sand, another layer of clay. Consolidation, compression, then sand, then sand, then sand . . .

The churning of machinery gives out with a gurgle. In the silence you hear shouting from the far end of the bund carried by the wind. Before you turn you hear it mirrored in the clear fluid of your ear drum . . . a loosening, a mouth opening and opening for the flowing and flowing. . . but in or out, in or out? An accident. . . from afar it looks like a diagram of a cell undergoing cytolysis, that you saw when Jane gave you her biology homework – not that you were any help, its wall bursting, the water streaming in through osmotic pressure to ensure an

equilibrium between inside and outside. The bund had burst, and water is gushing into the reclamation, feasting on it. The sand that had just settled is washed away, a screen being wiped clean. A flat gradient of mess levels out the months of work you had seen rise beneath the water, erasing the serene grey plane with incontinent burbling. The promising plot now a slurred waste, exactly what you feared before you went to sleep. Your subordinate, who was supervising that phase, looks like he is about to throw up. You want to scream at him, go ahead, vomit straight into it, it makes no difference now, why don't you just vomit straight into my mouth?⁵

The next day you are summoned to the same basement in the Ministry. The same faces from the same agencies, except greyer, more deeply lined, heftier bags beneath the eyes.

You tell them what you know . . . your liaison at the Authority had said there had been complications in the supply chain because of blockages upstream, the precise phrase you used, the contracts with the upstream partners, concession-holders that granted access to the good stuff expiring within this quarter, and a subsequent tailing off the sand. For now the deal with the upstream partners was off, we wouldn't be seeing anymore shipments from Cambodia, and so you had to up the ratio of soft clay to sand, which lengthened the settling, which meant more strain for the poor bund, as it had a whole body of water to fend off.

The Secretary of the Board stares ahead without looking at you. The Head of the Authority's throat tightens. You give your word that you will remain competitive. This will not push the deadline by much. You just need more sand, that's all you need.

⁵ 'As more and more of these other kinds of fill materials have had to be used, materials that are not granular, the timelines of these projects have been stretched out, which places more and more pressure on the perimeter bund. It's much more technical if you are using soft clays and soils. With sand, it was so easy' (Interview with Robert Gravel, 2018)

Seow Beng looks at each of his subordinates, gives a nod, and remains still as they adjust their papers and file out of the room. He is sitting across from you, on the opposite side of the table.

—The reclamation needs to keep to schedule, he says, looking straight at you. If we wait too long, we compromise the structural integrity of the perimeter bund. One has already burst: your colleague has cost us and the insurance company millions of dollars already. Of course, accidents happen . . . sometimes they need to happen. Did you hear the one about a man who didn't know he was on a ship until it started sinking?

Blood aggregates in your ears: is this the sound of your own breathing? The table seems to lengthen between you. You wish you could talk to him about this on the golf course, beside him, in the kart, along the rolling dream-slicks of trimmed grass.

—Without a steady flow of sand, we will need to use more recycled material. Of course, if we just sit around waiting for it to settle, more accidents will happen. As you won the tender, you are accountable for any shortfall in sand. It's right there, in your contract, a liver-spotted hand pointing towards the contract you haven't read yet.

—And how would I go about doing that?

—We're working on a condensed timeframe. You would have certain latitude in sourcing the sand. As long as it was procured by the book. Considerations could be expedited, for instance . . .

—Expedited . . .

—Exactly. Under the terms of the tender, you are well within your rights to subcontract as you see fit, and it is well within your remit to license your own suppliers for certain materials, especially materials of a certain size, of a certain quantity. As long

as the materials are for a reclamation, they do not have to be sampled; there are no limits on quantity. We have to be seen to be doing our due diligence. You have been subcontracted, he mutters, you no longer have business with us, officially. The paperwork has been prepared, all that is required is your signature . . . you will now liaise with the Authority from now on. Due diligence.

—But my contract, it's not with Urbana, you say in your quiet voice, looking at the floor, it's with another company and I've been subcontracted out to—

—You are now no longer an employee of Urbana. You are the CEO of Sim Enterprises, a contractor licensed by the Authority with procurement and reclamation services. You may lease dredgers and barges from Urbana at a very good rate, and you will be provided with the capital to get the ball rolling on procurement. I hear you have a son now. Good luck, Alan.

His arm moves, you go to shake his hand, and instead of the dampness of his grip you find spreadsheets folded several times . . . a list of numbers, a list of contractors working for the Group, the parent company of the concession holders, a list of extraction sites in Koh Kong, and the millions of tonnes of sand excavated per calendar month. You thought you were being demoted, but in fact you are subcontracted . . . you are going straight to the source . . . to the innumerable frontiers of sand itself. Or, to be more accurate, the innumerable frontiers of sand are going to come directly to you.

—Due diligence, you perk up, that reminds me of the one about the coolie-powered . . . by the way, are you going to hit the course later this week? I feel like I could get a few holes in . . .

He has already turned around and made his way down the corridor. No more time for golf.

Now you stand at the helm of your dredger watching the horizon, waiting for the next shipment pretending nothing has changed, that you can still see the sand come in and feel good, but your thoughts are tangled in the paths of the barges shuttling your precious cargo from inlets and coves, estuaries, and rivers. Names that mean nothing to you, that pass through you, a faint pain, a prickling that you cannot place except as time passing. You spend your time on the phone trying to get distances, tonnes, and dates right, pacing up and down the dredger supervised by a subordinate you had never met before being subcontracted . . . you are in your underwear, as suppliers yell at you down the phone with their insane demands in the middle of the night . . . they want money, money for the money they spent opening up a new frontier, money for the money they spent buying off chiefs of police and village elders and provincial administrators. Or it's the acrid voice from the Authority, whom you have never met in person, gravelled by the poor connection, calling you from a burrow, deep underground. All you can do is say yes, yes, yes of course, yes, it will be there. Yes, you say, yes, yes, yes, as you watch Soo Ling sleeping, her body expanding and contracting around her breathing, thankfully untouched by the depths you had been subcontracted to expanding to the horizon. Yes, you say . . . you always say yes

.....

The ashen torrent of sand thins from its plume, a stroke of cloud. Maybe it wants to become weather . . . but it is made to be land. It needed to be disciplined. You couldn't even use the best quality material for the reclamation you were meant to be supervising . . . you had been contractually obliged to repair the perimeter bund that had burst, day after day picking through the entrails of the accidental swamp with your cutter suction dredger for a good omen. The Next-Generation Port Reclamation was otherwise ahead of schedule . . . you could see

former colleagues working in the distant haze . . . their pixelated forms grinding away at your retinas. It is as if you have been subcontracted to sand itself . . . its demands inundating you . . . crumbling your sleep from hours into minutes . . .

How many tonnes of sand have passed before your eyes? Millions? Billions? . . . you feel sick and rush to the bathroom. You can't even picture what ten tonnes of it looks like . . . let alone a thousand. . . bent over the sink you look at your own face in the mirror . . . disintegrating as you stroke it with your hand . . . a hundred thousand. . . but it's all there beneath your feet.

2. Geoliterary Methods and Granular Geography

Mapping the granular frontier has already entailed a leap, a saltation of both value and grain (and grain-as-value). The geofiction of 'Reclaimer' took the form of an interpellation of the reader by an unknown speaker or speakers, slid into the point of view, the *you* of Alan Simm as he navigates, and then is overwhelmed, by the sand complex in the mid-2010s. Interpellation as an ideological gesture here serves not only as synoptic introduction to the granular frontier as it is made and unmade, but to the possibility that in its mercurial movement down the commodity chain (to which we will shortly travel upstream in 'Extractor'), and in the implication of its political, economic, geomorphological and ecological interlocution, it becomes a kind of geoliterary text, narrating the disparate processes it is implicated in. To make sand speak entails finding ways to listen to it, and its weaving of relations between states. At the core of my argument is the fact that the sand's material and semiotic transmutations as it travels down the commodity chain are not simply reciprocal features of a greater problem, or two sides of the same coin, but shape and hold each other in frictional tension. Gathering and fragmenting, binding and crumbling, inundating and peregrinating. This chapter will outline the methods involved in positing sand as such a text, what the geoliterary is as a category, and what the writing of geoliterary fiction can tell us about the granular geographies that thread Cambodia and Singapore together. The method presented in this thesis is a geoliterary method of critical and creative writing, adopting approaches to place-writing in human geography, cognitive mapping, and site-writing in architectural criticism, as well as trespassing upon the precincts of geophilosophy, literary geography, and geopoetics.

The latter two subdisciplines are influential engagements between literature and geography that I wish to contribute to, but from a 'novel' methodological vantage point. Literary geography, concerned with literary spatial practice, and the palimpsests of real and imaginary geographies as encountered in literature, is chiefly hermeneutical or cartographic practice (or chimera of both), which borrows and splices procedures from literary criticism with the concerns of cultural geography as a 'double discipline' prizing

the literary text as a spatial 'event' that takes place, producing its own kind of relational spatiality by virtue of its intertextuality (Hones, 2014, 2008). In Hones' literary geography of Colum McCann's *Let the Great World Spin*, this entails an examination of the novel form as a performance of spacetime. Similarly, Bertrand Westphal's related concept of 'geocriticism' undertakes a literary geography in an expanded field, one in which discursive and non-discursive spatial productions intersect, interlace, and interanimate spatial manifolds (Westphal, 2007), but which is still premised upon expanding the domain of literary criticism, rather than integrating aspects of literary practice into geography as a mode of earth-writing.

In this respect, the geoliterary method is closer to Magrane's geopoetics (Magrane, 2015, 2021), but this too isn't quite what I mean by the geoliterary as a category. A call that encompasses creative and interpretive practices which seek to register the earth on the level of 'form', the geoliterary is sympathetic to geopoetics. It shares a methodological identity with geophilosophy; as the latter takes the earth as the ground of thought, so does geopoetics seek to realise, in both lyrical and critical capacities, the poetry of the earth in its manifold forms. As Magrane states in their *ars geopoetica* (Magrane 2015), a poetics is a statement of form, a line in the sand, setting the parameters by which poetry is written and understood. Like geopoetics, the geoliterary is a category that understands geography as a writing of the earth. Unlike geopoetics, the geoliterary approaches the earth as a subject that is written. The geoliterary is an ideological account of the earth as subject, configured by the granular geographies of this thesis through a geographic analogue of the ideologeme, defined by Jameson as 'the smallest intelligible unit of the essentially antagonistic discourses of social classes' (Jameson, 2002: 61). The geoliterary situates geography through forms of literary practice that articulate the ideological inscriptions of the earth as the manifestations of abstractions of global capitalism that crumbles into regional, local, and micropolitical configurations through concrete practices (Loftus, 2015). The ideologeme of this thesis is the infinitely iterated grain of sand that, along with its billions of duplicates, forms a para-site of eighty million tonnes. For Kristeva, the ideologeme is:

the intersection of a given textual arrangement (a semiotic practice) with the utterances (sequences) that it either assimilates into its own space or to which it

refers in the space of exterior texts (semiotic practices). The ideologeme is that intertextual function read as "materialized" at the different structural levels of each text, and which stretches along the entire length of its trajectory, giving it its historical and social coordinates. (Kristeva, 1982: 36)

And so for us, sand has a specific kind of intertextuality. As a resource carved out of geomorphological multiplicity, sand is an ideological construction critical to the reproduction of urbanization and the projection of a city-state's sovereignty that relies on the entanglement and subsequent immurement of countless other relations and trajectories of difference. These ideological inscriptions, or geographic ideologemes, are susceptible to representation, and through a geoliterary method we can render capitalist abstractions and the systems they underpin perceptible through what Jameson termed an 'aesthetic of cognitive mapping' (Jameson, 1989). Proposing the geoliterary as a category requires a brief outline of what is meant by the category of the literary in relation to geography before we come to a geoliterary method, and what that could possibly contribute to Jameson's apophatic outline of an aesthetic of cognitive mapping – an aesthetic that has yet to present itself but remains a latent possibility of social totality.

Towards the geoliterary

This thesis proposes the literary as a category that exists beyond the reproduction of literary form, literary institutions, and the business of literature. As Cresswell notes, geopoetics as defined by Magrane is constricted by its formal approach (Cresswell, 2021): it proposes geopoetics through poetry, which, like all literature, is bound by its particular sites of production and reception. A poetics of form oriented towards extra-literary means, as Magrane's geopoetics implies, risks essentialising poetic or literary form to the extent that it becomes a privileged enclosure of discourse, hermetically sealed against other kinds of utterances. The artefactual nature of literary form orbits ideology elliptically; the literary work can incubate collective or ideological utterances, but cannot be reduced to them (Macherey, 2006). The difference between the literary and other orders of discourse is not simply that it is not true, either by virtue of illusion or

aestheticization. Culler's pithy observation that the literary is simply 'a mode of discourse which knows its own fictionality' becomes a canny interdisciplinary formulation (Culler, 2006: 41); as far as other forms of discourse reckon with the problems of their own 'positionality, their situatedness, and the constructedness of their schemes, they participate in the literary' (ibid). While 'fiction is not truer than illusion' and 'cannot usurp the place of knowledge', through the literary text fiction can 'set illusion in motion by penetrating its insufficiency, by transforming our relationship to ideology' (Macherey, 2006: 74). Though Macherey is speaking of the novel, numerous hybrid forms of creative nonfiction, poetry and academic monograph already point towards how the literary can be found quietly at work in the world. Tsing's narratives of the sociable ruination and survival along the commodity chain of the Matsutake mushroom (Tsing, 2015), and Negarestani's heretical geopolitics, geophilosophy, and geophysics of petroleum (Negarestani, 2008) are exemplary. Such hybrid texts pry beneath the veneer of form and generic convention, like Kapil's assemblage of poetry, performance diary, and decomposed novel *Ban-en-Barlieue* (2015), which registers the resonances of both bodily and linguistic sediments left by racist violence and displacement, and the impossibility of both disappearing into the text without remainder. Cresswell's poetic practice extends his capacious geographic thinking of place by braiding together the latent aesthetic expressivity of geological lexicons and geographic thought through poetic form, evident in the trilogy of collections *Soil* (2013), *Fence* (2015), and *Plastiglomerate* (2020) that all confront the vulnerabilities, dangers and possibilities of the interanimation of humans and non-humans engendered by anthropogenic environmental change. While distinct from his academic practice, the potentialities of language for articulating the dynamic interaction between ecological, cultural and geographic processes that informs Cresswell's poetry permeates his academic practice, evident from his long and influential engagement with place and place-writing (Cresswell, 2004, 2008, 2019).

In such work, Cresswell's approach resonates with Rendell's method of site-writing (Rendell, 2017, 2010). Rendell reconfigures the boundaries between critical and creative approaches so thoroughly as to reorient criticism into productive encounters with the psychoanalytic and architectural subject. It is on this last point that I wish to align the literary as a category with geography as a form of earth-writing. Earth-writing, according

to Chari, works by 'stretching' Marxist analysis, following Fanon, to adequately theorise planetary vectors of accumulation, extraction, and dispossession (Chari, 2019). Part of this methodological stretching requires a situated engagement with the object of analysis to recuperate what has previously been split, partitioned, and occluded: to open it to other sites. Site-writing establishes criticism as a generative mode of discourse, shifting the relation between artwork and critic from a relation of judgment and 'objective' discernment and instead 'traces and constructs a series of interlocking sites, relating, on the one hand, critic, work and artist, and on the other, critic, text and reader' (Rendell, 2010: 14). Criticism becomes an extension of the aesthetic and political encounter with the work of art into different sites: territories, terrains, and places of difference are brought into relation with the work. Spatial and psychoanalytic cartographies of the subject are produced through this 'critical spatial practice', with criticism reworked from 'writing about an object... [to]... writing as the object' (ibid: 7). By aligning procedures gleaned from the mapping of 'inner' and 'outer' space, site-writing develops these multiple sites in the text and beyond. In *The Architecture of Psychoanalysis*, Rendell writes in three distinct 'strands': an 'architectural strand'... which takes architectural modernism as its object, carefully layering primary sources to avoid 'a generalised and distanced examination of the canon of modernism' (Rendell, 2019: 222); a 'psychoanalytic strand' which explores the transitional object through the voices of the analysts themselves, as if making the concept itself speak through its genealogy; and a strand with 'specifics drawn from my own life' (ibid). As well as displaying an admirable citational ethic, this intricate interleaving of voices and subjects is also a masterful performance of the very notion of 'transitional space' that is the object of the book: 'I am imagining now how you – dear reader – might situate yourself in these transitional spaces: architecture in psychoanalysis, psychoanalysis in architecture, my life in your time' (ibid). Writing as the object, as the relation, requires finding the forms through which its appearance is embodied.

Similarly, this thesis understands the geoliterary as a category through which its objects of critique are opened to other sites through their situated and embodied presentation in the text. While hybrid texts and the practices that produce them fit no established generic configuration, they all seize upon the performativity of language and genre to enliven the fictions, abstractions, and transitional spaces we already live with,

and aim to not simply represent them, but to reformulate them, and tease other meanings and possibilities from their confines. In proposing a geoliterary method of critical-creative writing, I hope to contribute a methodology that extends the capaciousness of these creative approaches towards critical geographies, and open its sites of enquiry and analysis to those foreclosed by the abstractions, fabulations, and fictions of capitalism as a mode of production uniquely reliant on concealing its predatory and dispossessive social relation in 'the fantastic form of a relation between things' (Marx, 1990: 165). This is not to say that conceiving of commodity fetishism, as capital's germinal abstraction, and attendant mystifications as illusions, but that these abstractions become embodied, knowingly or unknowingly, cynically or naively, through the social practices necessary for the reproduction of the economic structure of capital and its political and legal superstructures (Marx, 2020: 8). Even if individuals know that capitalism is exploiting them, or that they indeed feast upon others exploitation, capitalism's imperatives shape their ability to navigate society, affect how the individual relates to others, how they relate to the non-human world, and how they relate themselves. And so they must act accordingly. Commodities, embodying the dead labour of countless expended working hours, pile up around us, eye us suspiciously, surround us at every turn (Jameson, 2014), so that we are trapped in the echoing exhibition halls of a planetary museum. But this museum is exhibiting *us*. In an object lesson in the geographical imagination, Harvey asked students to consider how their breakfast ended up on their plate, to trace its commodity chain and thus its conditions of production and distribution, as the 'grapes that sit upon the supermarket shelves are mute; we cannot see the fingerprints of exploitation upon them' (Harvey, 1990: 423). Even if only in the negative, this attempt to pedagogically defetishize a commodity entails a recourse to the object itself speaking, circling back to the source of the fetish, and trace the human labour bound up in the commodity to elicit a kind of 'prosopopoeia', the rhetorical device of speaking *as* another person, or another object: to personify. To make the object speak entails mapping the human labour that moulded and inflected its seamless appearance. In this act of political speech lies the necessity to methodologically recuperate what is erased, obscured, or elided in the production of a commodity and its sedimentation of social relations, and to

craft discursive forms to effectively *narrate* the recuperation, and reveal the insufficiency of the commodity's supposedly 'empirical' appearance.

Storytelling and fictioning have effloresced as discursive strategies for feminist and decolonial thinking in human geography and anthropology, where alternate traditions of storytelling, forms of ethnography, and counter-narratives are crafted to not only resist and undermine hegemonic epistemologies but to carve out discursive space for these marginalised forms of epistemic practice (Visweswaran, 1994; Hartman, 2008; McLean, 2017; Chattopadhyay, 2019; Pandian, 2019; Leeuw and Morgan, 2020; McKittrick, 2021;). Stories, for McKittrick, are simultaneously epistemology, methodology, and ethic. Noting the 'dynamic connection between narrative and biology (2021: 24), McKittrick suggests that stories contest the 'teleological-biocentric genre of human' through Wynter's elaboration of humans as a 'story-telling species' (ibid). While stories, narratives, and scripts are enrolled in the racial subjectivation that buttresses the category of the human (Wynter, 1987), these discursive integuments can become sites of radical reconfiguration for this category. As Nassar notes in response to Magrane, lyric poetry as generically conceived simultaneously centres and decentres the 'I' in such a way as to guarantee its sovereign durability. Through Glissant's poetics of errantry, Nassar suggests 'by splintering and rearranging the materiality of the world, word, or this white page, we might come to play in an open space of multi-vocal story that does not fail to throw the sovereign "I" off' (Nassar, 2021: 29). A poetry adequate to the Anthropocene must do more to put the sovereign 'I' under duress and throw it off as a point of departure. Hartman discusses the great difficulty of writing about the brutal subjugation of female slaves from the archive; if the archive amounts to the objectivity of their torment and nothing else, an 'impossible writing' must be attempted to 'imagine what cannot be verified, a realm of experience between two zones of death – social and corporeal' (Hartman, 2008: 12). This impossible writing defines the parameters of what the archive cannot say, and 'has as its prerequisites the embrace of likely failure and the readiness to accept the ongoing, unfinished and provisional character of this effort, particularly when the arrangements of power occlude the very object that we desire to rescue' (ibid: 14). The gaps, silences, and occlusions that shape these objects of writing must be made to speak somehow, and not simply through what we can infer from the power that silenced

them. If success is not possible, or even desirable, then an ongoing discursive performance that stretches this unfinished effort of impossible writing into new sites can produce possibilities for understanding these ‘objects that we desire to rescue’ (ibid).

Taking cues from performance studies, Krupar’s *Hot Spotter’s Report* blends creative nonfiction, fictional satire and academic monograph to critique the biopolitical weaponization of nature into a spectacular camouflage for the military-industrial complex’s transition from the Cold War into ‘green war’ (Krupar, 2013). Hotspotting, as a creative and documentary methodology, multiplies ‘documentation of the same information in different arenas for the purposes of multiplying publics’ (ibid: 17). While less explicitly concerned with notions of literary form, Krupar’s acerbic reconfiguration of both academic, bureaucratic and biopolitical forms of knowledge through a polyvocal, genre-spanning text is achieved through a *literary* performance, if we take the literary as an aesthetic category which recognises its own fictionality and can be put to critical work in delineating the fictionality of other modes of discourse.

By loosening our grip on the notion of literary form as institution and subject of individual mastery, and instead grasping literary forms as iterative and evanescent cartographies of social and political junctures, we can then proceed to the geoliterary as a category of investigation and intervention. Through recognising the critical moments of speculation, abstraction and fabulation operative in geographic practices, geoliterary figures can then be repurposed through counter-narratives which reveal the relations suppressed while actualising these practices, and how they could be otherwise. I wish to situate the geoliterary in relation to a set of critical and creative writing practices that can excavate and interrogate the ideologemes of contemporary geography, with geography understood as conscious and unconscious, individual and collective earth-writing. In this thesis, geoliterary practice is mobilised through the writing of geoliterary fictions, or geofictions, which shape the raw material of interview transcripts, autoethnography, and archival research into forms of writing that cognitively map the transformation of geomorphology into a cheap and limitless resource by the sand complex. If geography is earth-writing, then the geoliterary is the earth-written: objects, processes, and forms of knowledge which are traversed by covert forms of fabulation and abstraction, and which

then become the points of entry for the cognitive mapping of these ideological inscriptions.

Cognitive mapping and the novel as geoliterary method

Jameson's aesthetic of cognitive mapping is conceived as a prospective representation that allows the individual to grasp and locate themselves within social totality. In global capitalism's early acts of colonisation and development of transnational markets, the novel, as an ascendant cultural form, constituted an emergent cognitive map of nascent capitalism typified by 'the desacralization of the world, the decoding . . . of the older forms of the sacred or transcendent, the slow colonization of use value by exchange value' (Jameson, 1990: 349), while falling short of an aesthetic of cognitive mapping proper. The next phase of capitalism instituted a crisis of representation as the interlocking of imperialism and monopoly capitalism induced a split between the phenomenological experience of the individual in the imperial core and the source of that experience which lies in the colonized periphery and its zones of extraction. For Jameson, the literatures and aesthetic movements of modernity and postmodernity remain symptomatic of capitalism, whereas the aesthetic of cognitive mapping, smuggled into futurity as a latent potential never fully realised, is diagnostic (Jameson, 1995). While cognitive mapping itself is posited as akin to an Althusserian formulation of ideology (Jameson, 1995; 2019: 10), that is the implicit relation of individual to social structure, the aesthetic of cognitive mapping is suggested not simply as a corrective but as a reorientation of the terms of the individual and the 'conception of some (unrepresentable, imaginary) global social totality' critical for the enactment of a socialist project (Jameson, 1990: 356). For Jameson, there can only be attempts at an aesthetic of cognitive mapping, with attainment, like utopia itself, endlessly deferred. While falling short of this utopian socialist feat of representational cartography, this thesis instead posits that certain capitalist abstractions are vulnerable sites for representation, and through their representation one can map the cracks in the ideological consolidation of political and economic subjects and potentially junctures. Through geoliterary methods, the spatially and temporally fragmented expression of these geographical ideologemes can be cognitively mapped, situating the array of actors and situations that constitute these abstractions at the level of concrete practice in relation to the wider social totality.

The cognitive mapping that I am proposing, as a method and not an aesthetic, presented through geoliterary fiction, takes as its operating assumption that there are geographic forms that are underwritten by and instrumentalised through abstractions that can be made explicit by literary intervention. Part of this argument rests upon insights from literary critics, such as Jameson, Kornbluh, and Ngai, that literary forms and devices are cultural expressions of subjectivity (per)formed at particular political-economic junctures (Jameson, 2002; Kornbluh, 2014; Ngai, 2015, 2020). Some of these cultural products, such as the novel, are coeval with the birth of capitalism and the development of the colonial world system, mutating as the conditions of accumulation shifted the geography of the world. The literary permutations of these movements, I argue, can be actively engaged to intervene in ongoing geographic practices to reveal the ideological dimensions at the root of these phenomena, and not only trace longer histories of extraction, accumulation, and dispossession, but map these phenomena in such a way that their disjunctions, scissions, and fragmentations are registered not as aberrations but as the fetishizing and productive forms of appearance of these earth-writings themselves. Toscano has associated cognitive mapping with the contemporary visual practices of Allan Sekula, Trevor Paglen, and Mark Lombardi (Toscano, 2012, 2016; Toscano and Kinkle, 2015). Be it Sekula's gritty depictions of the 'frictionless' space of logistics in *Fish Story* (Sekula, 2018; Toscano, 2018), or Paglen's emblem fragments of the 'black world' of classified military programmes through their patches (Paglen, 2010), or Lombardi's vast diagrams through which parapolitical 'interlocks' of associations between individuals in the United States government, assorted corporate bagmen, and shadowy underworld figures are delineated (Goldstone, 2015), cognitive mapping remains an optical epistemology, determined to 'see it whole' but not necessarily see otherwise. What of those processes completely atrophied 'within' their fetish? Of landscapes irreparably fragmented, of irreversible transformations that have already taken place? For Paglen, the algorithmic hermeneutics of machine learning constitutes an 'invisible visibility' for corporate and state power (Paglen, 2019), but what of the underlying cognitive rationalities of these systems which escape visibility, or the modes of inscription from which the 'perception' of these algorithms derives, and through which they acquire their efficacy as mechanisms of social control? For the geoliterary, writing is preferred to

seeing, and though visual methods are utilised in some of the geoliterary fictions of this thesis, cognitive mapping is understood as not only a map that locates the subject within its totality, but as a reciprocal mapping of subjectivity *and* totality; of how a totality determines a subject; and how a subject, in turn, lines cracks in the totality.

To risk extending one of Jameson's evocative remarks, that of the novel form constituting an inadvertent cognitive mapping of capitalism's global ascendance, this thesis argues that the literary form of the novel itself can help elucidate the transformation of sand as a resource as it travels down the commodity chain, from upstream frontier to the global city downstream. The novel stands here as an anachronism whose form is, according to Bakhtin, 'plasticity itself' (Bakhtin, 1982: 39). What set the novel apart from earlier literary forms was a predilection to subsume other literary forms into itself, with its development alongside a growing (and literate) middle class and its serialisation through newspapers constituting an immanent cartography of emerging bourgeois subjectivities as a cultural technology (Watt, 2001). In the novel's potential for decoding genres into the novel form, it mimics capitalism's expansion of its outer limits through their deconstruction and reconstruction: concrete, sensuous activities are rendered into the moribund equivalency of abstract labour, irrevocably transforming them. Likewise, the novel as zombie genre consumes older and adjacent cultural forms into its vagaries of style and institutionalisation, either 'eerily prescient', 'ahead of its time', outdated, or worst of all, serving as moral-aesthetic guarantor of a conjuncture through canonisation. This is not to overdetermine the novel as a 'master form' or index to capital's inner mechanics, but to posit it as a cultural form whose genesis is historically inflected by the evolution of the value form of production and exchange into the engine of modern society. The metastasis of genre, evident from early modern novels such as *Don Quixote* (Cervantes, 2011), which satirically reconstructed earlier chivalric romances through incorporations of poetic and dramatic forms, was seen by Lukacs as the mechanism through which the novel became 'the epic of an age in which the extensive totality of life is no longer directly given, in which the immanence of meaning in life has become a problem, yet which still thinks in terms of totality' (Lukács, 1974: 56). The identity between totality and genre was also more explicit in *Moby Dick* (Melville, 2013), where whaling, as a frontier of global capitalism in the 19th century, necessitated travelogue, dream diary, drama, poetry, and

scientific essay to adequately map the diverse aesthetic and epistemological terrain of this practice of global capitalism at the time. However, this relation to totality can't be uncritically construed; as Wynter states, it is through 'fiction, ritual, and art' that we are granted access to the "“enchanted” order of discourse which must everywhere function, in the last instance, to conserve the grounding premises of inferential analogic from which its system-maintaining “truths” are stably generated' (Wynter, 1987: 241). The same fragments of social totality offered by these novels were integrated into the literary canon as humanistic representations of Man that were underwritten by the perpetuation of chattel slavery and colonialism. To remain critical, geoliterary methods must concern themselves with literary discourses and utterances as investigative and critical tools and remain suspicious of literary forms as sedimented institutions. The novel form is posited here as a site of radical conjunction, as in Ilya Ehrenburg's *Life of the Automobile*, an avant-garde nonfiction novel where the automobile's retexturing of global capitalism, from the city to the highway, from the factory to the rubber plantation, is cognitively mapped not just through geography and social field but through genre: 'This is not a novel. This is a stock-market bulletin and this is a political history. There is no room here for poetic digressions.' (Ehrenburg, 1999: 82). The novel not as a form or an identity but as a method of cognitive mapping.

In characterising the psychic economies that responded to the financial crises of Victorian England, Kornbluh analyses the novels that first encountered finance capital's uncanny precarities and temporalities (Kornbluh, 2014). Kornbluh treats Marx's *Capital* as a Victorian novel, not to denigrate it as was customary at the time, but to tease out the literary devices Marx employs to demonstrate capital's semiotic operation, as a social relation that is performed (and obscured) as an inscrutable language between things. A key concept Kornbluh employs to unpick Marx's semiotic performance of capital is that of metalepsis: the hijacking of a figure of speech by another; the ingestion of one metonymy by another metonymy; or the intrusion of a higher narrative order into a lower one. Capital relies on this seamless operation, in which one form of capital is subsumed by another inside the same object, or by subsuming existing social relations into productive accord with the wider totality. Metalepsis doesn't name a master-trope but a meta-trope that conjugates others *into* its totality, as it also names an intrusion of the

extra-diegetic onto the domain of narrative itself (Genette, 1983). However, we have to be wary of mistaking this ideological operation of metalepsis for reality: capitalism as an extra-diegetic author of the world is not construed at the level of reality but at the level of practice; people and institutions act *as if* and work towards a world in which the value form is the guarantor of reality, are incentivized to do so, and punished if they act otherwise. The Singaporean state's ingestion of alien territory relies on the tidy chain of metalepsis to happen smoothly; forms ingested, one inside the other, into the geographic ideologeme of sand, its traces and other relations suppressed, until all that is left is sovereign territory surfacing magically from beneath the water. Employing metalepsis as a narrative strategy requires re-presenting those worlds erased in the narrativizing of geomorphology *into* sand to become territory.

If sand could be made to speak, it would unravel the fiction of the Singaporean state's sovereignty that allows it to secrete itself decades into the future. However, for this act of political speech to be elicited from an inanimate object or material requires attending to the articulation of the relations it has shaped. Speech, then, is not an act of ventriloquism but the mapping of the connective tissues between the object and its ensemble; for sand, it is the grains that we find lining the cracks in the seemingly sovereign subject of territory. In Deleuze and Guattari's geological account of stratification and subjectivation, the Aristotelian opposition between form and substance is troubled by 'double articulation', which they relate through a fictional interlocutor, Professor Challenger, as he gives a lecture on the subject (Deleuze and Guattari, 2004). In a satire of interdisciplinarity as pure crankery, he begins by applying the linguistic term of 'double articulation' immediately to geology, through the formation of sedimentary rock. After this somewhat eccentric notion of double articulation is formulated, it is then let loose, escaping its original confines of linguistics, infiltrating geology, and subsequently roaming the terrain of knowledge for further stratum to subject to 'double articulation': organic chemistry and biology all become 'doubly' articulated. Geology and linguistics become entangled as the representatives of materiality and semiotics through reciprocities of content and expression that become disclosed in their performances. But there is more than meets the eye in their theory of stratification. The presentation of the theory through fiction is more than an academic satire: fabulation itself is the reterritorialization of a given

social field, as Deleuze points out in his characterisation of the term in Bergson as a ‘story-telling function’ that is a ‘virtual instinct, creator of gods, inventor of religions’ (Deleuze, 1991: 108). In Bal’s *Narratology*, a nested tripartite structure is developed for the analysis of narrative systems: the narrative text, where an agent conveys a story to an addressee through a particular medium; then, the contents of the text, which is a ‘manifestation... and “colouring” of a fabula’ (Bal, 2009: 5); and then the fabula itself, which is simply a logical and chronological ordering of events. It is this last element, the fabula, which relates to fabulation as a topological structure that is transformed and reiterated through various narratives and mediums. Perhaps ideology is simply another less whimsical name for this ‘story-telling function’, and thus can be understood in a wider context as capitalism’s appropriation of prior forms of mythopoesis (Burrows and O’Sullivan, 2019). Part of the argument for the geoliterary is that ideologemes are fundamental forms of fabula themselves, which can be subverted, and thus engender fabulation as a ‘critical fiction [that] intervenes and challenges dominant/hegemonic narratives’ (hooks 1998: 57)’. If sand is a fabula that is enrolled in the construction of territory, its latent granular dynamics also render sand as place-writing that opens this territory to *other* places.

Sand as place-writing

Sand is the text that the Singaporean state uses to inscribe its own sovereignty and claim legitimacy, but is also the recording, the pure data of grain profile and provenance, of what must be suppressed: the place at the other end of the commodity chain. And what must be suppressed is no less than its journey down the commodity chain, as it mutates from worthless dirt to a city-state’s territory. This suppression is legible in the legal statute of the Foreshores Act: ‘it is provided that the President may, by proclamation published in the *Gazette*, declare any lands formed by the reclamation of any part of the foreshore of Singapore, or any areas of land reclaimed from the sea to be State land, and there upon such land shall immediately vest in the State freed and discharged from all public and private rights which may have existed or been claimed over such foreshore or the seabed before the same were so reclaimed’ (The Foreshores Act, original enactment 1873; revised edition, 1985). It was this statute, amended in

1966, that enabled the compulsory purchase of the entire eastern coast of Singapore without compensation for the first immense land reclamation project of the independent city-state, allowing the government to erase the legitimacy of the claims of prior inhabitants and settlements, from the private swimming clubs of the elite to the fishing villages of the Orang Seletar (Latif, 2009). And with reclamation continuing decade after decade, requiring immense and surreptitious supplies of sand, this statute became even more convenient: once codified as State Land, the contents of any reclamation are beyond dispute, are illegible except as State Land.

Each grain of sand is a mark of collision, as Agard-Jones notes in her queer reading of sand in Caribbean literary landscape (Agard-Jones, 2012), of trajectories and borderlines transgressed. 'Sand gets inside our bodies' (ibid: 326) and gets into other kinds of bodies as well: it flows along the eroding and depositing boundary of solid and fluid. The sand in this case study almost suffers from surplus signification. Simply being transported off a barge and onto a larger stockpile, *it is already standing in for something else: time, space, excess, absence*. Displacement and its concomitant emplacement. Thinking through sand as a para-site requires attuning to both its absence and its presence; for the thousand-tonne stockpiles that bemuse and beguile are the sand complex's fait accompli, its point of departure, not destination. Part of why sand in this case is a para-site, and not a site proper, is that in order to adequately map its commodity chain, one has to account for the numerous distinct sites it has traversed in the course of its transformation into a resource, and then into territory. In its journey in between places, in its granular itinerance, sand assembles places and relations that exceed and undermine its construction as a resource. It produces friction that the sand complex has to work tirelessly to repress.

Metalepsis, in this thesis, works to both situate our understanding of sand as a para-site constructed from its gradual excision from granular multiplicity, setting tangential and cascading events into motion as it is extracted, and call attention to the repeated transgressions of fact upon fiction, and fiction upon fact. Why resort to fiction when facts speak so clearly for themselves? Geoliterary fiction, as a method, parallels sand's errantry. In refusing a single state of matter, sand is errant; in its interlocution of geomorphological and ecological multiplicity, in its ceaseless saltation and peregrination,

it offers us ways of thinking through its errantry, on the move, refusing states except through their provisional performance. For Glissant, the essentializing rooting of thought to territory is premised upon a mythical 'claim to legitimacy that allows a community to proclaim its entitlement to the possession of a land, which thus becomes territory' (Glissant, 1997:143). Root identity is counterposed with relation identity, which is 'not linked to a creation of the world but to the conscious and contradictory experience of contacts among cultures...[and] does not devise any legitimacy as its guarantee of entitlement, but circulates, newly extended...' (ibid). Land is not thought of as territory, but as a 'place where one gives-on-and-with rather than grasps. *Relation identity exults the thought of errantry and of totality*' (ibid). Territory, for Glissant, is a projective concept, disclosed as a political technology that always sharpens its cutting edge on *other territories* to dominate, whereas place is a site of conjunction and errantry. Place is not free of conflict or friction, but a site of contestation and co-existence. In Peters' response to Elden's development of terrain as a category for furthering the analysis of territory (Elden, 2021), place is suggested as an existing tradition of thought that resists the relentless capturing of spatial difference and sociality by the state (Peters, 2021). Place is returned to because it is where one 'gives-on-and-with', and critical for thinking spatial difference amidst competing theorisations that exult, even if critically, the instrumental rationality of the state and its administration of space. If sand is a resource summarily appropriated from geomorphological multiplicity and incorporated into territory, then mapping this process requires articulating those now-vanished granular trajectories and *places* set into motion by its movement through a methodological errantry: a geoliterary practice of critical-creative writing that represents how territory has been compromised, and rendered porous through its own performance in this case study.

Cresswell notes the centrality of montage to Pred's method of place-writing (2019), and aligns Pred's approach through the literary device of parataxis: the arrangement of sentences without conjunctions to indicate subordination, or the 'placing [of] things side-by-side' (ibid: 6). Using parataxis, place can be performed as an assemblage, a non-linear text (ibid: 8). And what is a sand stockpile but an immense paratactical assemblage? Deleuze and Guattari's geological account of subjectivity is part-and-parcel of their elaboration of the assemblage as a relational materialism. Their

assemblage is composed of a vertical axis of deterritorialization and reterritorialization, where a given arrangement collapses as the forces of its relations exceed a threshold they mutually determine, is set into motion, and then is reterritorialized into a new arrangement of relations, with its own internal threshold (Deleuze and Guattari, 2004). Assemblages are what lie between the geological, physico-chemical, and linguistic strata in Deleuze and Guattari's geophilosophy, with their relative and absolute deterritorializations travelling between strata. Critically, for Tsing, 'assemblages drag political economy inside them, and not just for humans... they are sites for watching how political economy works. If capitalism has no teleology, we need to see what comes together—not just by prefabrication, but also by juxtaposition' (Tsing, 2015: 23). For Deleuze and Guattari too, assemblages are fulcrums for a renewed critique of political economy. If stratification is an account of capitalism's powers of subjectivation, then assemblages are critical accounts of how capitalism sets relations into motion that exceed its ability to wrest them into the value-relation, but then as the assemblage reterritorializes, becomes provisionally 'captured'. Centring the granular dynamics of sand as a vector of deterritorialization and reterritorialization, its granular assemblages constitute emergent mapping of geomorphology's instrumentalization by capitalism, which like geology's enrolment as a force of subjectivation (Yusoff, 2018), renders it precarious. The geofictions of this thesis are granular place-writings, written *against the grain*, against the sedimented and consolidated territory in which the granular, as a deterritorialization of geomorphology, has been trapped. If assemblages are critical for examining political economy as well as thinking place, then the granular assemblages of the geofictions map the disparate trajectories obscured by the sand complex, and write the places traversed and fragmented by its para-site.

The geoliterary fictions of the sand complex

The fictions which will, and have already, appeared in this thesis are geoliterary experiments with genre. They reposition the ethnographic, bureaucratic, and geotechnical data through novelistic mutations of genre to register the transmutations of

sand as it wends its way down the commodity chain. Each geofiction functions as a granular assemblage convening heterogeneous material and semiotic relations, deterritorialized and reterritorialized into distinct arrangements as it makes its way from Koh Kong to Singapore. There is also another, more geoliterary, manoeuvre going on here. The metastasis of the novel form is directed towards the sand complex, following its enforced metalepsis of the granular as it travels from one frontier to another, from geomorphology into resource, from territory to territory. It refracts the plasticity of the sand as it is constructed from granular liminality. The geofictions delimit this creeping enclosure of the granular into the construction of sand as a resource, and the porosities induced in the subjects and places traversed by this process. Part of the method proposed is that the literary deterritorialization of the novel form is homologically governed by the same motive impulse as land reclamation: that is, to present its borrowed and purloined parts as its own authentic whole. Singapore's model of global city is conceived as a kindred genre, a purportedly self-reinforcing, self-optimising, self-valorising miniature of (il)liberal, technocratic governance. This has resulted in geofictions which take the disparate materials of research and find a fitting generic configuration for them. They each speak to a site traversed and transformed by sand as a para-site, its patterns of performance and enunciation. Each granular assemblage posits a different act of *prosopopoeia*. Following Krupar, the geofictions are not 'antitruth, antiscience, or antievidence', but instead favour 'a documentary excess in order to contest the ways that truths and practices become sedimented' (Krupar, 2013: 17). Through the fictional performance of ethnographic materials, the disparate geographies of sand extraction and land reclamation are put into granular relation. Sand's transformation as a resource, and the narrativization of geomorphology by Singapore's model of global city, is contested through rhetorical porosities developed throughout multi-genre geofictions. These include the introductory geofictions, 'Reclaimer' and 'Extractor', which introduce us to the world of the sand complex, using the favoured narrative form of literary fiction, the bourgeois family drama, as an entry point, as well as foregrounding the class dynamics at play in the middle-management of the sand complex. 'The Sand Committee Speaks' takes Singapore's regulatory documents around construction material imports as a genre, revised at the future date of 2030 and rewritten to satirically reflect the actual operations

of the sand complex . ‘Ma[t]ter’ takes the form of the grain itself as the granular frontier was opened in Koh Kong, representing the experiences that the participants in the village and the activist group shared with me through an austere punctuation stripped back to the bare period to reflect the mercurial and treacherous movement of the grains themselves as they were extracted. ‘Professor Soon Addresses the Sand Committee’ takes the form of a keynote address given by a distinguished Professor Emeritus of Geomorphology who has resolved the problems posed by the sand complex to government officials and industry insiders; the solution is not, however, to their liking. ‘Entrainment’ takes the unlikely form of a series of therapy sessions with middle-managers and engineers working in various sectors in Tuas, with their work disrupted by diverse mental and emotional ailments: the social scientific form of the interview is repurposed here to represent the haunting of Tuas, not by ghosts or revenants, but by its secret and fragmented source hundreds of miles away. And finally, ‘Tabula Rasa Singapura’ takes aim at the political-economic genre of Singapore’s urban model. Positing simulation as consummation of the idea of a model, this geofiction presents a brand-new virtual reality experience to celebrate Singapore’s future 2065 centennial; the technology, however employs circuits composed of silica sourced from none other than Koh Kong, Cambodia.

The geoliterary method itself is modelled on the process of extraction and reclamation. Ethnographic, auto-ethnographic, archival and discursive data is dredged and processed, and, after an inscrutable period of dust, noise, and fumes, the geofictions themselves emerge, fully formed and dripping from head to toe in dirt, mangled ecologies, and despoiled livelihoods. The geofictions are footnoted, in contrast to the traditional social scientific Harvard referencing style of the other chapters, with extracts from interview transcripts, contracts and other legal documents, archival records, and ethnographic field notes where appropriate: for these constitute the settlement, the muddy remainder of this process. To maintain the homology with reclamation, settlement is what compromises a potential reclamation project; it is the downward deformation of the soil over time when a load exceeds a ground’s bearing capacity, often occurring in poorly compacted and weak soil (Leung et al., 2019). In each section’s introduction, short prefaces, the ‘perimeter bunds’ which demarcate the extent of the reclamation, introduce the geofictions, setting the parameters for the counter-narratives that are ‘reclaimed’ from

the sand complex; grains dug out from soil long consolidated, or smuggled from a stockpile's dune, and set into motion once again.

Perimeter Bund 1: Reclaimer

The first of the geofictions, already encountered in this thesis, initiates us into Singapore's sand complex in the mid-2010s, with flashbacks to the early 1990s. An expatriate reclamation engineer relates his experience of the sand complex in Singapore. Like 'Extractor', it occupies the terrain of literary realism, but through the interpellation of the reader through the second person narration, it also serves to familiarize the reader into Singapore's murky sand market (and defamiliarize the reader on the level of narrative). Based on multiple interviews with dredging engineers and consultants prior to the fieldwork I undertook for this project, part of introducing the granular geographies of Singapore and Cambodia was to secrete the knowledge of this resource extraction and displaced statecraft within the bourgeois realism of the family drama. Making the sand speak might mean finding a way to listen to it, and in the less common form of the second person narration, the reader is immersed into the sand complex, constantly interpellated and intimately related to with its reveries, anxieties, and knowledge through the protagonist. Who is this unnamed interlocutor? It could be the protagonist of the following geofiction, 'Extractor', Soo Ling Simm, Alan's wife. Or it could be the sand itself, with the narrative and its protagonist being the inciting incident of granular relation, flitting between the unworried plenty of the 1990s and the stresses and ambiguities of the sand complex in the 2000s and 2010s. As Bal notes, second personhood undermines 'the humanist individual who ruled over objective knowledge' (Bal, 1993: 308), both through implying the 'derivative status of personhood', as well as the 'reversible relationship of complementarity between the first and second-person pronouns' (ibid).

Perimeter Bund 2: Extractor

Following on from the dissolution of the previous geofiction's narrator and the crumbling of the narration into ellipses, the narrative continues with the first-person perspective of

Soo Ling Simm, Alan's widow and the new managing director of 'Simm Enterprises'. It is not an accident that with 'Extractor' we move closer to the source of these endless and seemingly autonomous reclamations. Ironies that were implicit in 'Reclaimer' come more clearly into view: that Alan, a British expatriate in Singapore, makes an expatriate of his Singaporean wife; the time they spent overseas, bracketed in his account, creeps into her narration as an alienating domesticity. While the plot is somewhat fanciful, with the preponderance of burner phones, shell corporations, and mysteriously gravelled voices at the end of a telephone line, the narrative stretches plausibility for both comic effect and to underscore the alienating nature of the sand complex. Its business is the alienation of land, and a narrator dislocated from their land, to return to find it in some part unrecognisable, then begins on a journey to find its 'origin'. Returning to the aforementioned 'reciprocity' between first- and second-person pronouns, there is also a historical reciprocity, persisting in its thwarted symmetry, between the site of reclamation and the site of extraction, one that shapes the granular temporality of the narrative: as the journey towards the upstream sector progresses, towards the origin of this exogenous territory that composes the narrator's homeland, her past in a rapidly modernising Singapore striates the narrative structure. Past, present, and future become imbricated through a steady diet of sand. If in 'Reclaimer' Alan and the reader were interpellated by sand in the form of the second-person narration, the narrative mechanism in 'Extractor' is one of gestation, a return to an irretrievable past through the ingestion of sand itself.

II EXTRACTOR

The first time I took a bite of sand it was an accident. It had nothing to do with grief, but like everything else that is interesting in my life, it happened after my husband died. I was prepping a shipment, transferring it to a barge from a dune that crested over the tops of palm trees. Sea sand. Unremarkable. I couldn't believe that this was what Alan talked about with such reverence: the good stuff, the mother lode. Of course, I wasn't transferring anything. I was extracting. The men weren't monitoring the flow in the pipe and it sputtered to a stop like a moped engine. Alamak, I shouted, gestured at them. They just stood and stared at me. My translator shrugged his shoulders, he did not know how to translate that into Khmer. It was my first day on site, sometime after the blood in my husband's head had decided to harden one day, laying the foundations for a truly fascinating development. I peered my head over the opening of that pipe and parted my mouth to call for the engineer. I aimed it like an eye over the opening in the pipe. I thought I had cleared my throat to spit, but it was the machine

stuttering to life. A smooth digit of sand landed in the back of my mouth. An *o*. A zero. I swallowed it and it sank into the pit of my stomach, where it settled. It was nothing more than an itch back there scratched. The sand made a passage from my mouth to my stomach coated in a layer of sediment, so I was able to separate this organ and that organ as it travelled through me. It faded a few hours later. But I remembered the imprint that it left, the particles lining the shape of my insides, settling somewhere below.

And the weight stayed. It was the twin of the weight that opened in the pit of my stomach when I saw Alan lying there on the bathroom floor.

People look so stupid when they are dead, like they think you can't see them. I rushed over and knelt by his body, shaking him (his cold, cold shoulders), taking his pulse (his carotid stiff and grainy), slapping his face after I turned him over. There was something unfortunate running out of his right ear: I couldn't tell if it was a liquid or a solid. And then a flicker of noise. The gurgle of a walkie-talkie that seemed to come from him. I thought he might still get up and begin asking how much I made at the blackjack table tonight, for he could be a surprising man. *Honey, I'm dead!* I leaned in and realised that the noise was coming from his Bluetooth headset. I unhooked it from his head and placed it in mine and the line went dead. A crunching. Gravel withdrawn down the line of the dial tone. I couldn't find the phone that it was connected to. The next few weeks were vast stretches of things I couldn't find. Passwords for his bank accounts, codes for whatever was kept offshore, access to his Central Provident Fund, the words to tell Jeremy, who was asleep when it happened.

This was my somewhat inauspicious introduction to the business. Laptops, tablets, *devices* that were inaccessible to me, their generic background screens leering at me behind their password boxes. But a few days after the funeral, I heard the phone the Bluetooth earpiece that was attached to the ringing. In his *bureau*. But the drawer the ringing was

coming from was locked. So I took a hammer without thinking twice and I began hitting the lock of the drawer. The old termite-eaten wood caved in, while the lock remained spotless.

An ancient Nokia tumbled out, still ringing, and I picked it up.

—Hello?

—*Is this Simm Enterprises?*

—No, no, I mean, yes, I said.

—*Can I speak to Alan?*

—Alan cannot come to the phone.

—*Can you tell Alan that we are currently experiencing issues with concession holders in Cambodia, and so we cannot expect shipment to arrive on time.*

—What does that mean?

—*No more sand lor. And the ship brokers are very concerned, say Simm Enterprise owe outstanding payments on the lease for dredger and bulk carriers anchored outside of Cambodian waters, as they were the last shipment out of, where was it, Koh Kong? Perhaps you better talk to your, uh, contract-holder at the Authority, because unless you are liquid, cashflow will be a problem.*

—But there's still sand on the (and I had no idea where this came from), on the boats, correct?

—*What? Two bulk carriers, yes, but they have cut off concession for good, something about optics and the formation of the Sand Committee, so you need to tell Alan to contact the Authority, I am just a subcontractor on behalf of Simm Enterprises, and I am not licensed to officially liaise with the Authority my—*

—Raise the price (the space). Double it (of a sigh), double the price (opening), triple the price (at the pit), quadruple the price (of my stomach). If the concessions

have closed to us, they have closed to other suppliers. And if this is a Council reclamation, they do not have any sand stockpile. Do they have stockpile?

— *No.*

— So they need this load on time. Quadruple the price. Yes. Tell them Alan is out of town seeking other arrangements with concession holders. Quadruple the price otherwise the boats will not make it to Singapore.

—*OK lah, I will relay your message. But seriously, how, how can you expect them to pay four times as much—*

—Tell them if they don't pay the sand goes back in the sea. If they have any issues, please tell them to ring this number.

I hung up and dropped the phone on the floor. It was exhilarating. I could hardly stop it once I started, the information that my husband had told me every tedious detail of in the dark, unable to sleep, repeating weights, dates, and deadlines over and over between longer and longer silences swelling the vein in his temple, hoping to make the pieces fit, I had absorbed it all, and instead of being forgotten or perhaps because I had forgotten it, it had settled in the back of my mind until I stumbled on it again, panting and sweating. Expanding. My husband was a company man, and used to doing what he was told, which made him an excellent husband, but a poor entrepreneur. He always worried about making the pieces fit when he was actually in the business of supplying the material the puzzle pieces were made of. And these were men who dearly needed pieces for their puzzle⁶, and no threat or command could change that.

⁶ 'These reclamation projects act as flexible puzzle pieces that the government uses to make the rest of the pieces fit' (Interview with Milica Topalovic, 2015) Topalovic led the *Architecture of Territory* project Future Cities Lab, a joint effort between the National University of Singapore and ETH Zurich, examining Singapore's land reclamation project, as well as its water, food, and energy systems. Their research constitutes the first in-depth examination of the sand complex, in its complex relation to Singapore's territory and governance, that I have been able to find.

There were details I still had to find out, and to do that I needed to smash apart the rest of the bureau. I used the prong of the hammer to wrench open one of the filing cabinets, and documents came spilling out.

Sorting through the pages littering the floor I found registrations for vessels, manifests of shipments, coordinates that matched the location that the insolent chee bye told me on the phone. I crawled on my hands and knees across the floor scanning the pages as I scuttled over them. The organisation that my husband had been contracted by was a *body corporate*, capable of *suing and being sued*, of *doing and suffering* which I understood but *all such other acts or things* threw me off, because even if I was a gorblick who was a stranger to the business world these words made unkind sense to me as the acts or things were in reference to what a body corporate *may lawfully do and suffer*, as if those were the only two options for a body. And what was this body corporate constituted for but none other than the *acquiring, owning, holding* (which I thought tender) *and developing* (which I thought a piece of celluloid) *or disposing* (as in rubbish) *of property, both movable and immovable*, that seemed to me to throw the baby out of the bathroom, as I used to say to Alan knowing he would fall for it and correct me, *no, its bathwater*, because once you can own and dispose of properties movable and immovable, what is there left to hold? There was the word *sand* which was of no surprise at all to me, *a fine aggregate in any building works*, but the following words were, as they did not refer to *any unwashed or unprocessed marine-dredged sand*⁷. So the sand my husband sourced by frittering away his precious hours letting his capillaries tunnel jaggedly towards the pupils of his eyes was not even sand legally. Not according to the law of the Authority. And then I saw the letters in red, their font bold, underlined: **URGENT**, **URGENT, LATE NOTICE**, my eyes slipping through the cracks of what **PAYMENT DUE**

⁷ The document quoted is the Building and Construction Authority Act, Chapter 30A.

referred to, only able to scan **LATE NOTICE**, **URGENT**, **URGENT**, **URGENT**, and **URGENT**. The numbers I glanced over were adding up somewhere spacious and submerged in the back of my mind. I suppose he had a good reason why he didn't tell me about any of this. The odds of bankruptcy, fines *not exceeding \$500,000* or *imprisonment for a term exceeding 2 years or to both*, liquidation, and eviction were astronomically high.

The likelihood of getting my children through their disgustingly expensive schools and universities, of keeping the three-hundred-and-sixty degree views of this flat, of keeping its lines and surfaces maintained in a pristine order through Rangsei, who in turn maintained a family back in a different country that I found too sad to think about and so didn't, was slim, to say the least. But as a high-functioning gambling addict, those were the only odds I found hospitable for my future, for it meant I could use any means necessary. Fortuitous, even, that I came across a folder within which glistened photographs and newspaper cuttings of the Sands.

I began playing online blackjack when we moved to Shanghai. Something in the way that people would screw up their faces at my Mandarin and sneer at my Hokkien, in the sumptuous dirt of the city, made me want to click a small button that said *hit me* and lose real money in the middle of the night, within snoring distance of my husband, his credit card floating my wins and my losses. That was when I first saw a picture of that garish Integrated Resort and Casino. On the front cover of the Wall Street Journal right there on the coffee table and I didn't think anything of it. The internal canal of the shopping centre, replete with depressed gondoliers. Views from the infinity pool, empty and cutting a clear reflection into the panorama of the CBD. Views of the Sky Deck from below, lurid and dirigible, like it was ready to set sail for a pleasure cruise on the crowded strait. A picture of Lee Kuan Yew and Sheldon Adelson in tuxedos as handsome as bones draped in age-collapsed flesh can be. After that, it seemed to follow me around the world. Postcards of the Bay, with the Sands

lurking over the freshwater reservoir that used to be where the river met the sea, sent to me by family and friends I had no idea had my new address. Pictures of the place I had seen all over the internet, splayed across the pages of my magazines with such frequency I could only suspect that it was trying to infest all memories of my home with its seeping vistas and rank hues.

In ten years everything had changed. It wasn't like the Marina Bay Sands had eaten my home, what a stupid thing to think. As if it had devoured it whole, when it actually had slipped inside of it and worn its skin. Closing my eyes to recall the moment Alan proposed to me on a boat floating down the then-filthy Singapore river I could sense the triptych of towers tickling the corner of my eye, fixing the horizon in place, retrofitted. Seeing it again and again in the intervening years I thought it was a talisman when it was actually a poultice plastering the holes that riddled what I remembered:

Going with Mother to visit relatives in Khatib Bongsu to get away from the noise of our HDB. Soaking in the whirr of crickets by the water. Lying flat on the deck near the edge and looking underneath while my mother is talking to her sister. Looking underneath. Wondering how these discoloured spindles of wood held the rotting and rickety floor above the tide. How it kept this entire kampong from sinking into the water. The mossy musk of the jade depth peopled by translucent prawns eyeing me with their beady black eyes before I even notice them. But it is the baby-blue tiled floor of the infinity pool that has gridded itself into alignment when I bend my neck to look beneath. The surface of the chlorinated water webbed together by dimples of sunlight. The patterns cast by feet or slow breaststrokes. Arms bracing the edge of the pool for a photo. I pull my head up and the blade of the infinity pool has slit open the dirty water to reveal the 57th floor view from the Sands, just waiting to surface. A manicured hand pleating backstroke after backstroke into the pool, regulating the

rhythm of the panorama. That's it. The infinity pool is a laboratory designed to monitor the progress of this First World that lies coiled within the Third World. Twitching in and out of view, hidden in bad water. The buzz of the mist cooling system stitches itself inside of the drone of crickets in the jungle that sheltered the ramshackle outcrop of jetties and zinc roofs

I can no longer remember. Over the edge of the pool buildings are demolished. Cleared. Rebuilt. Binging and purging with an industrious *dysmorphia*. Each one lapses in and out of boniness as it is demolished and built back up, rising and falling. The bony grip of Hwei

Fan's (*Helen!* as Alan used to call her) fifteen-year-old hand in mine in our serviced apartment outside of San Francisco as she asked me *why we have to leave? Why we have to*

leave when I had my whole life there?

I have been home for years now but perhaps after a decade of jet lag I have still to feel at home in my skin. I looked up Khatib Bongsu on the web: it is now part of a military installation, at the centre of which lies dune after dune after dune of sand, guarded by barely pubescent boys with machine guns, squinting as the wind picks up.

The next day I sorted through the paperwork and found the contact information of companies that had only one employee: S.I.M. Group, registered in Hong Kong; Lansim Services, registered in Penang; Simm & Sons, registered in Yangon; Asimptote Incorporated, registered in Ho Chi Minh City; they all had the same executive officer listed (my husband) and same handphone number: the one I had in my hand. A sweet man with no place in business. What kind of simpleton named their shell corporations after themselves? The same beneficiary named for all the companies (*me*) in case of an unforeseeable event, such as one's blood turning against oneself, the ultimate internal security act. This was all mine now, I thought. I used my power as executive to fire myself and nominated Serene and Gretchen as the new Chief Executives (*it's an honorary role, I've used the additional liquidity from Alan's*

will to devote it to charitable causes, it's what he would have wanted; it would be an honour if you could chair this company, it's only a formality, I'll take care of all the paperwork). I loved him dearly but was glad he was out of the way, for he had no appetite for risk. I could finally get to work. The first step was to identify the blockage in the supply chain. After sorting through the pages by company and then by date I found the contact information members of the Sand Committee and the Head of the Sand Division at the Group, our upstream partners in Cambodia, clipped to a postcard of a picturesque beach in Sihanoukville.

With no other business to take care of on these shores, I messaged my liaison in the Group's Sand Division, booked a flight to Sihanoukville, and packed one suitcase with my some of my cashed-out blackjack winnings from a few lucky nights at the Sands' casino. I got to the hotel, and used the phone at the bar and rang my contact at the Group. There was just a dial tone:
.....

And then a click. Nothing. It must have been late.

I sat at a the stool by the hotel bar, my back to the grisly trail of sunset seeping into the sea framed by the columns of the balcony. This was what it is like to go on holiday. No luggage to lug and no children to keep in my eyeline. No *activities* plotted in advance with military precision by *Mommy*, with *Daddy* sleepwalking through the day's events. Just my hands around the glass of the drink I had finished. So empty and so cold. Without hesitation I ordered another.

—*What are you drinking Madame?*

—I already have a drink, thank you.

I replied without turning my head.

—*Her drinks are on me.*

I groaned loudly enough for the room to hear, and began to shift from my seat, when two fingers were lightly planted on my wrist. A wide face, the faint curve of a smile, a yellow tie, a cheap suit. His fingers were soft.

—*Unless you are on holiday, I believe we have business.*

—Ah! You are with the Group? My apologies. How did you know I was here?

—*You rang. Would you kindly like to finish your drink and follow me?*

—Where?

—*Outside. Please bring your luggage with you.*

As he went outside I leaned over the empty bar and grabbed a fruit knife, dropping it in my handbag, and followed him out. Down by the resort's private beach was a jetty that extended into the sea, a yacht moored at the far end. Men in fatigues holding machine guns on the deck looked out over the water.

—*We know that the interruption in supply has put considerable pressure on your business. Of course, all we want is for everything to happen smoothly.*

This is a delicate matter.

—Where are we going?

—*To our offices.*

A deckhand ushered me aboard without a word. My host led me through to a spacious living room below deck as I felt the yacht pull away from the jetty. He ushered me to sit down on a repulsive pleather sofa and I complied.

—I apologise for being underdressed. If you had given me some time I could have changed out of my travel clothes.

—*No need to apologise, Mrs . . . ?*

—Simm. And you are?

—*A representative of the Group's Sand Division and the government's Sand Committee.*

—Isn't that a conflict of interest?

—*It is how we do business. I am just a representative.*

—I am aware of how you do business.

I took the briefcase and laid it out square on the coffee table between us. I looked at the frayed tulle curtains. Cobwebs in the corners of the ceiling. Dust peppering the glass of the table. The windows grimy. Was I supposed to be impressed by this crappy *company* yacht?

—*Ah, a gift, how kind! But we should wait until we reach our offices.*

—I thought this was your office.

—*It is in Koh Kong, a short journey away. This is a nice tourist town. You should really come back here for a holiday. It is an area with lots of natural beauty. Excellent beaches that I am sure you would enjoy. But this is not a place where business is done. I suppose you are in a rush.*

—Time is money.

—*Your colleague that we worked with before, he never met with us in person. He preferred intermediaries.*

—Sim Enterprises has changed its priorities. We are committed to resolving difficulties in the upstream sector with our partners.

A man entered, wearing a vest and a bow tie, served two glasses crammed with ice with a layer of brown liquid at the bottom of each. A lizard eyed us from its perch on the far wall. It seemed to move whenever it wasn't being watched.

—*The Sand Committee appreciates the gesture. But, at present, we can't be seen to be allowing any further sand exports from Koh Kong to your country.*

There have been disturbances. Activists trying to subvert the development of the country. Tricking villagers into thinking they are on their side. Aided and abetted by their affiliates in the independent media. Some people dislike the idea of progress and are bitter. They do not appreciate that we had found a buyer that would pay hand over fist for their worthless dirt. The Authority who subcontracted you.

—They do not know I am here.

—Of course, they cannot be seen to be dirtying their hands. And we cannot be seen to be dirtying ours. We are going into an election year. Can you imagine how this will look, if we have boat after boat after boat, like a line of ants, going from our poorest province, laden with our precious land, to go to your country?

He cradled a glass of brown liquid in his hands.

—You should open your gift.

—Please, I think we both know what is in the briefcase, that can wait until tomorrow, when we arrive at our offices. There are suitable accommodations made up for you.

—Just open it, take your bribe, and read my proposal lah! Do you know how much of a hassle it is to get this amount of money in cash?

I opened the briefcase and pushed it towards him as he wriggled to readjust himself. I clipped maps of routes to the upper half of the case, while on the lower half I laid a file containing the proposal over a stack of American paper money.

—So one of my contractors already relayed to me the situation regarding optics in this sector. Primarily because every operator in your sector is siao jialat and has no idea how to do their job without making a mess.

—*You must understand that as welcome as your gift is, we simply have to stop all exports to Singapore.*

—Then stop exports to Singapore! If that's what looks so bad, these ships with your precious land on it going to this tiny rich country, that you are selling millions of tonnes of out from under the feet of your citizens, then why not send the boats elsewhere?

—*Send them elsewhere?*

—Simm Enterprises have a number of shell-companies linked with our subcontractors and project partners who report to me. They are based in Vietnam, Indonesia, Myanmar, Malaysia. Boats registered under these companies will dredge and transport the sand. Their destinations will be the countries where these companies are registered, all owned by different foreign nationals. The boats will then stop in open water outside these ports, where they will be met by vessels registered with Simm Enterprises, which will be returning from Singapore from a country where sand export is still legal. These are further away, so we just make the minimum purchase, overstate the tonnage, and transfer the cargo from one ship to the other. The losses of one company wiped out by the gains of another.

—*From one ship to the other.*

— Reclamation sand does not need to pass any tests. As long it's for reclamation, they do not care where it comes from, as long as it arrives nice and quietly. There is no way this can fail.

—I see. That is an interesting proposal. I will have to take it into consideration and consult the rest of the Committee. As I said, I am just a representative, an intermediary. But luckily, we are convening a meeting tomorrow morning. Please get some rest. We will review your proposal at our offices in the morning.

I accepted the hospitality offered to me and lay down on the bed in my room to try and get some sleep. Closing my eyes, the minutes threaded coarsely through the gigantic tent of my snoring until light stared through the tattered curtains of my room. I parted them. Mangroves were all around us. We were following the river. The trees extended identically in every direction, the same height, a wall of leaves lining the water. As the water widened out, we passed a village. Houses on stilts above the water. Boats lying in the mud of low tide. A row of roofs sloping to face the water. I must have woken into a dream. How could miles be converted into years and recovered, I thought, subtracted from the existing ones? To be so far away in time and distance but somehow the magnitudes of both slid over each other and became odds. As we passed closer, I stayed near the curtain, even though the window was tinted. A woman standing in the doorway of one of the houses stopped picking through hundreds of feet of fishnets and looked towards the yacht. She was looking towards the window I was looking at her out of. I crouched beneath the desk. A knocking at the door. There was no way she could have been looking right at me. A knocking at the door; it could have been a dream so easily. I could have woken up and muddled over how strange it was and wondered whose eyes I was looking out of, staring back at a time-bleached photograph of my

aunt's seaside village, imagine the creak of the rotten wet planks and the smell of the mud in the heat. In a dream the woman's hands would have been moving deftly through hundreds of feet of my intestines, but she kept picking through nets for bits of wood and clumps of dirt and drift. If it were a dream, I would have said *I have come to eat your land because mine has eaten itself from the inside out* but I said nothing and sat on the floor, with my back against the desk and the window that she was looking at. After a moment I peeked over the desk: she got smaller, framed by the dark of the doorway, staring at me. *But how?* Another knock at the door and I turned.

—*A fishing village. They have been causing difficulties.*

—What do you mean?

—*Blocking our boats. Sheltering activists. Making difficulties. No matter. We must continue to move forward, to progress. That is why your country is so great, so rich. You had a leader who knew the sacrifices that had to be made. Life is getting harder for them now. Some have already moved to the city. More will follow. But we have to progress, and develop, don't you agree? Leave behind this old way of life. That is what your country did. An exemplary model.*

—An exemplary model.

Turning a bend in the mangrove, a dune slipped into view, like the pale belly of a snake decided to sun itself by the river. Further up there was a wiry structure of blue metal, conveyor belts rising over it and descending to some point further in. We stopped by it and boarded a small dinghy that brought us to the shore of the dune. Walking up the first dune I felt its surface jitter and resettle under my feet. At the top of the dune I could see that it extended far into the forest, as if the river had burst and herniated an entire desert there. I could see conveyor belts extending to other dunes on the far side, where the river coiled back around, all

of the belts descending to the centre, an immense warehouse, trucks driving back and forth between it and the dunes. It was as if beneath each section of mangrove there was a construction site waiting to be unearthed, replete with men in hardhats and trucks and machinery waiting to work. We were picked up in a Mercedes which drove to the far side of the staging ground that I could smell was towards the sea. As we neared it, I spotted a large one-storey building. Not a factory or warehouse, but a sleekly cantilevered structure, with floor-to-ceiling windows reflecting what could only be described as a desert on all sides, with a carpet leading from the entrance to a helipad across the road as we arrived in front of it.

*—Our marketing suite. We sense there is great potential for this area of outstanding natural beauty to become a great asset. One of the biggest mangrove forests in the world and only one in eight Cambodians have been here. The sand mining is just the very edge of our operations. A Chinese firm has paid us quite a pretty penny to develop this into a premier seaside resort. This is the marketing suite for the development. Holiday homes, times shares, that kind of thing. In a few years everything will be different.*⁸

The glass doors slid open, and we entered. The placeless balm of air-conditioning. Scale models of terraced sea-side condominiums lining a coast encased inside plexiglass, the to-scale replica of a unit behind a glass wall to the left. Brochures in English and Chinese. A concierge behind a desk, smiling.

My host opened the double doors onto the boardroom, revealing two aisles of faces and a faint sweet mist of Johnnie Walker.

⁸ The island of Koh Rong in Koh Kong has been sold to a consortium of Chinese developers who plan on constructing a massive tourist resort, while there have been repeated, if speculative, news articles suggesting that this unlikely tourist hotspot is in fact a cover for a Chinese port and military installation. See Andrew Nachemson, 'Is Cambodia's Koh Kong Project for Chinese Tourists – or China's Military?', *South China Morning Post*, 2019.

—If you would be so kind

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Everything changed with that first bite of sand. It was an accident (I *swear*), swallowed like an oyster (a delicacy I never much enjoyed). The second bite of sand chewed with a crunch so loud I thought I had blown out my eardrums and shattered my teeth (a growing pain). The third, flawlessly executed, simply consumed for the coarseness of its flow against my oesophagus.

It settled quite nicely. I can feel a little bump in my belly. Empty and floodlit. Not a pregnancy a decade late, or a little cancer multiplying in my bowels or my liver. But the space that the sand carried with it, I am sure of it: *porous*. I can place my hand on it and close my eyes. The surface of the sand is still but through the skin of my palm I feel lines clearly traced into its surface, the murk of movement on an ultrasound translated from the trembling of liquids into light, the sound melting and dripping into a skull like a sloping droplet of mercury, murmurs and gurgles sifted through for the comma of a penis *a boy, finally a boy* Alan saying

lovingly to a squib of light on a screen a decade ago. The sound in my stomach is steady, numbers being crunched. Lines drawn on a surface. *An infra-sound*. A point of depression in the middle and particles flowing to fill it. Lines extracted from the surface threaded through the anus of an hourglass into a giddy nothing I can only describe as *anticipation*. Perhaps if I procured enough sand this city-state would saturate its own sell-by-date, and level to a plane that would stretch from the northeast to east to the west coast, to a handful of islands stitched together by sand and renamed, their histories re-imagined. And at the point where it seemed complete, the sand would slant beneath the surface of its skin and its transplanted earth slur. I am waving goodbye to this island I no longer recognise, tonne by tonne, its crowds, its gentle hum of anxiety, its selective memories poking out of the skyline and eclipsing the sea. Because if time is what it took away from me, time is what I could drown it in. And lacking time, sand will have to do.

3. Extraction

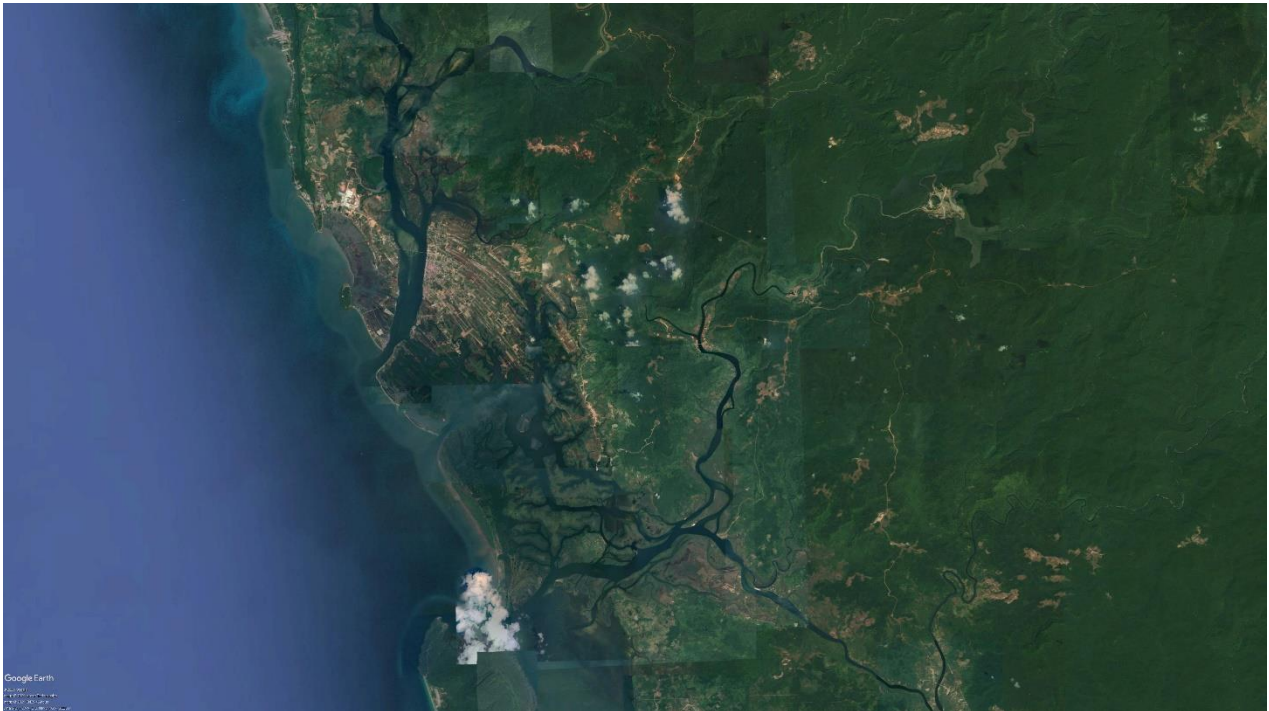


Figure 2 Satellite image of Koh Kong, 2021 (Google Earth, 2021)

Koh Kong, Cambodia (Figure 2). This is where the sand came from. Tens of million tonnes of it (Hunt, 2017). The site of extraction lurks beneath and between the surface of the water. It can't quite be seen. Seeing it piled as high as a palm tree, and higher, is not the same thing. The dunes that extend along riverbanks are already a product, a commodity in waiting. Commodification can be as simple as sucking and scraping grains from the bottom of the river and spraying them over the bend of a river until they settle into their angle of repose. A simple act of extraction: is this all it takes? To commodify is to alienate is to displace, emerging behind the backs of producers and consumers alike. But the displacement entails a replacement and creates an emplacement; the removal of sediment from a river increases its velocity, the stirred silt making the water turbid. Platforms left rusting on the water (Figure 3), stockpiles of sand like the seam between mangrove and river had burst (Figure 4)



Figure 3 derelict dredging platform in Koh Kong (Author's own, 2019)



Figure 4 Abandoned sand stockpile in Koh Kong (Author's own, 2019)

Before anything is assembled it is unsettled, water is troubled, coordinates fixed, sites set. One set of coordinates etched onto the map hatch their twin hundreds of miles away, almost directly north. Does it matter that Singapore is on the exact same longitude as Angkor Wat? Does it tell you anything more than the thousands of journeys by boat counting out time as surely as an hourglass, because hour after hour, day after day, the ships kept on coming, kept on sucking tonne after tonne of slush and silt and sediment that always became sand once it touched the bank of the river that became the staging ground, once it was scraped from the bottom of an estuary and spat into the hull of a barge, or gobbled by the maws of a crane into the belly of a bulk carrier?

To talk about sand means refusing to talk in the singular. Try touching a single grain and see what a tedious and irritating task it is. You are already touching sixteen grains, rubbing it off your finger, trying to isolate the single grain under discussion. Stick your hand in it and it is all over you. Did you notice how it happened? The grains, always plural, are a process of putting things into granular relation. The stuff which is not quite solid, not quite fluid, maybe wet, maybe dry and arid. While not the most apparent or important component of fluvial or coastal ecologies, sand's subtle mediations become legible once it is removed in massive quantities.

Horizons aren't so much shattered as they are distended and displaced. The biomes, ecologies, and livelihoods of Koh Kong that bore the brunt of this immense excavation and alienation of sand, silt, mud, gravel, sediment, the not-quite-ground to become the all-too-grounded, felt time not out of joint but winding to a point. Sediment extracted disturbed layers of silt, increasing the turbidity of the water and altering its nutritional content; crabs, sea mantis, and fish populations declined, and fishermen saw their catches dwindle; the dwindling catches translated into burgeoning intra-community and microfinance debt, as fuel still had to be bought and mouths still had to be fed; but the dredging continued unabated. The noise and the pollution fouled the waters, even at night, and fishing boats as they set out in the dead of night collided with the dredging boats carrying out their dark work; the sand bars erased, the landmarks shifted, the waters quickened; the debt accumulated until the village underwent a traumatic and inelastic deformation: within two years a fifth left to seek work elsewhere: the town, the city, another village, another country.

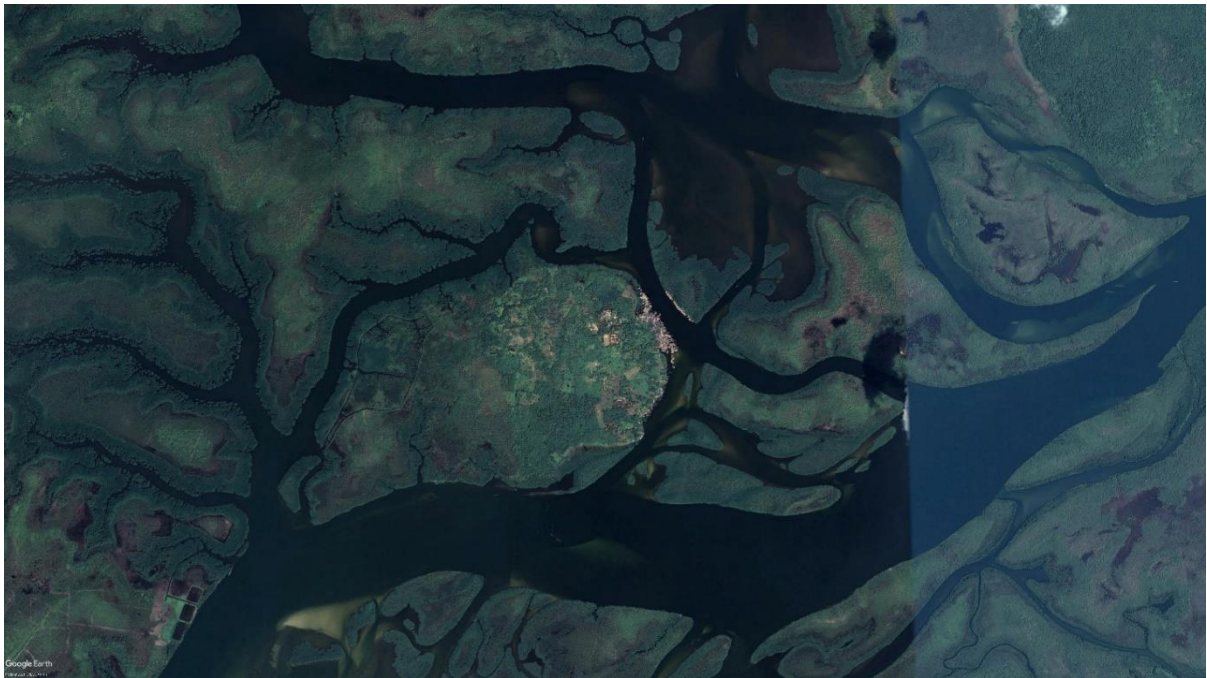


Figure 5 Satellite Image of Koh Sralao in 2019 (Google Earth, 2019)



Figure 6 Satellite image of Koh Sralao in 2014 (Google Earth, 2021)

But in the satellite map, on Google's Earth, time is flicked back and forth so that the displacements become legible only as losses patterning some slight edges of the water, so that the shaded-in regions where the sand had been is erased between clicks, when the boats that were frozen in formation in one screen are transmuted into another pattern, and then are gone (as you can see in Figures 4&5). There are only perhaps three good resolution images of Koh Kong to actually make out any of the boats and machinery at all. In the process of encountering the sand complex I had my own subject-position provisionally altered. My encounter with it, through fieldwork and my informants, meant that I was variously: a tourist, a PhD student researching eco-tourism in Cambodia, a PhD student researching the dredging industry in Singapore and Cambodia, a PhD student conducting a study of the Cambodian construction industry, a tourist again, showing his friends from Cambodia around the city-state.

In researching the illegal organ trade, Scheper-Hughes discusses adopting a 'hermeneutics of suspicion' (2016: 258) towards research subjects. While far from conducting a crusade, because most of my participants were simply generous enough to share whatever glimpses of the sand complex they had seen, I made a de facto ethical commitment to certain sites and subjects of my research that overrode others. In shifting my appearance in subtle, and maybe unnecessary ways, I had been mediated and mediatized by the sand already. Those who worked for dredging companies, cement manufacturers, statutory boards and reclamation companies, who were generous enough to share their time with me, are far from the villains in this thesis. But given the trajectory this thesis takes from the outside in, from Koh Kong to Singapore, I had to nonetheless remain wary of these informants simply because of the way they had encountered the para-site compared with how the community of Koh Sralao experienced it. The stakes of these encounters are not commensurable in a normative ethical framework, but have been practically made commensurable through the sand. My own encounter with the sand complex is not ethically commensurable with that of Koh Sralao's encounter, nor with those more complicit with its grisly commodity chain, so as a researcher I shifted myself around structures of complicity which I cannot disavow through a declaration of positionality. I went there to collect data that I took with me to transform it into a new terrain of knowledge here, and write to reveal the predatory excess of Singapore's lauded and fetishized urban model (John and

Jamieson, 2020). Hopefully, this new terrain could become the place from which Singapore's ongoing extractive excess can be better resisted, but this is a hope I do not have to pay a price for with my livelihood, so this writing remains always in unrepayable debt to others.

Plotting a course from the outside-in is to follow the trajectory of a single grain, disarticulated from its plurality. But its displacement occasions shifts in the fluvial and socio-ecological ensembles it bound together: *unwritings* of place, in and about the village of Koh Sralao in Koh Kong, Cambodia. Even beginning with the outside occasions no beginning; Koh Kong was simply the next frontier on the map in a dismal series, after Malaysia and Indonesia, to be followed by Myanmar and Vietnam, and briefly, the Philippines. Every opening and closing of a granular frontier followed the cracks in the consolidation of ground and governance that characterise these states, always in sharp contrast with Singapore, a scalar fluke, the Southeast Asian anomaly, the *inside* of this sand that had not been of any value before it was selected by the inside, differentiated, and excised. As a source of Singaporean soil, Cambodia, at first glance, is a convenient foil.

From landgrab to sandgrab

Logging, mining, and land have been subject to the grab in Cambodia. Some 90% of Cambodian forest cover has been lost through logging, a significant proportion occurring in protected areas and subject to illegal transnational trade (Milne, 2015). The Economic Land Concession system and erratic approach to land titling has led to a consolidation of agricultural land into the hands of private companies, most of whom are affiliated with the Cambodian People's Party, brutally executed through violent evictions and other forms of state repression (Diepart and Schoenberger, 2016; Schoenberger et al., 2017). Both of these issues have riven Koh Kong irrevocably, and the responsible party, or at least sitting at the top of the pyramid, has been Senator Ly Yong Phat, CPP party senator, 'King of Koh Kong' and head of the LYP Group. Alongside the LYP Group was Mong Rethythy Group, which owned the rest of the sand mining concessions in Koh Kong, another company eponymously named after a senator in the CPP.

Within Cambodia, the coastal province of Koh Kong is still considered an untapped frontier. Remote even within Cambodia, the province had notoriously poor transport links with the rest of Cambodia up until the 2000s, when the main road to Koh Kong Town was reconstructed. With the Cardamom mountains to the North, the border with Thailand to the northwest, and the largest mangrove forest in Southeast Asia to the southwest, Koh Kong is especially vulnerable to the predations of elite capture which characterises the management of natural resources in Cambodia. Illegal logging has long plagued the wildlife reserves of the province, its proximity to the Thai border making such illicit transnational trade especially lucrative. With the extra-judicial murder of anti-logging activist Chut Wutty in 2012 by military police (Milne, 2012), the question of the law in the (de)regulation of natural resources in Koh Kong is always uncertain and fraught with the possibility of violent state repression.

The formalisation of the land system in Cambodia has also been prey to these same elites. Land and resource grabs interlock and reinforce each other, with the latter driven by a series of land reforms which allowed vast amounts of land acquired by eviction, intimidation, fraud, and violence on the behalf of local and subsequently international elites (Springer, 2015; Schoenberger, Hall, and Vandergeest, 2017). The neoliberal turn in Cambodia has led to an unprecedented concentration of power, land, and resources in the hands of the Cambodian People's Party and business magnates through patronage networks such economic reforms were meant to dissolve (Springer, 2015). Instead of the promised optimization of society by the market and the individual entrepreneur freeing civil society's capture by opaque patronage (and other neoliberal platitudes), the market simply became another conduit for the Cambodian 'shadow state' (ibid). Global Witness, the investigative NGO who first conducted an in-depth study of illegal sand mining in Cambodia, estimated in 2009 that 45% of the country's land area had fallen into private hands (Global Witness, 2009a).

Combined with its own status as a frontier in relation to the rest of the country, the governance of natural resources and development of Koh Kong itself has been unpredictable and unsettled multiple times, as outlined by Marschke in her study of the village of Koh Sralao (Marschke, 2012). While the majority in Koh Sralao are fishers, a number of households undertook a series of entrepreneurial endeavours, both legal and

illegal, that took advantage of the lack of state presence in Koh Kong, such as logging, illegal fishing, and charcoal production (ibid). Throughout the 1990s and 2000s, various clampdowns and regulations were instituted alongside the development of a decentralised approach to resource governance through the Koh Sralao Resource Management Committee, composed of community leaders and commune officials. The committee led initiatives on waste disposal and mangrove replanting that formalised the bond between the community and the surrounding ecology. Even before the sand mining began, trouble was brewing in the fisheries, as illegal trawler fishing in the estuary began to diminish fish stocks and destroy equipment. Koh Sralao's relationship with the mangroves around it had changed significantly from the mid-1980s to the mid-2000s, and Marschke takes great care in highlighting the fluctuating fortunes of individual village members throughout these changes. What is interesting about Marschke's study is that, as she states in the book, she had planned on finishing the fieldwork for her longitudinal study in 2007, perhaps 2008, at the very opening of the granular frontier. While the previous 'sea changes' in Koh Sralao's fortunes wrangling and regulating the mangroves to carve out their livelihoods had been part of a chaotic, but still endogenous flux of circumstances, the arrival of the sand complex in the estuary constituted a calamitous break with that flux. Marschke clarifies that 'it is no exaggeration to suggest that the entire resource governance effort in this area has been side-swiped since the advent of sand mining.' (ibid: 120).

The regulatory disaster which opened up the frontier and kept it open despite years of immiseration and protest, has been well-charted by the NGO Global Witness in their *Shifting Sands* report, as well as the subsequent efforts of Mother Nature Cambodia. From the beginning the arrival of the sand complex was heralded by a regulatory ataxia which saw dredging permits issued for sand mining inside of protected areas within Koh Kong (Global Witness, 2009a). The situation on the ground was a confusion of buyers and sellers, Singaporean- and Cambodian-based dredging companies, that, when asked by Global Witnesses' investigators, attested that the mining was happening under the auspices of Ly Yong Phat, the ostensible 'King of Koh Kong' (Global Witness, 2009b), setting sand prices and convening the buyers and sellers. Provincial or police officials that questioned workers at a cement company operating a sand concession were then directed towards the Koh Kong Town office of

Ly Yong Phat (ibid). The usually required initial environmental impact assessments (EIA) were never conducted; several EIAs that eventually surfaced were simply rubber-stamped copies of other EIAs. The sand that was dredged near the village of Koh Sralao, was constructed like a building, a vast complex arid and aquatic in equal measure, the village and its surroundings ensnared in its site, with its obstructions and machines, pollution and exhaust, no trespassing signs and noise.

Perimeter Bund 3: The Sand Committee Speaks

'The Sand Committee' was the informal name given to the Royal Government of Cambodia's Committee for Sand Resources Management, convened by the Ministry of Water Resources and Management (MoWRaM), which initially regulated the opening of the granular frontier, until their efforts proved so disastrous that responsibility for the sand trade fell to the Ministry of Mines and Energy. No minutes of these meetings have ever been made public, and apart from the irregular, misleading, and poorly enforced bans on sand export, it is unclear what this Committee actually did. Equally unclear is what the Singaporean government, and its Building and Construction Authority which oversees the import of construction materials, did to regulate the import of sand, to ensure that such vast quantities were procured according to national and international laws. 'The Sand Committee Speaks' reimagines the Building and Construction Authority's own regulations regarding the import of construction materials as if the transnational impact of the city-state's market-making, market-distorting thirst for sand could be registered and perhaps even agreed upon in the legalese of regulatory documents. Taking the form of a provisional transnational agreement for the import of construction materials, revised by none other than Professor Soon himself at the first inaugural meeting of the ASEAN Sand Committee, 'The Sand Committee Speaks' satirizes these bureaucratic documents to exploit the legal ambiguities and political venalities that covertly and overtly signal the complicity of both governments in wrenching open the granular frontier in Koh Kong.

Perimeter Bund 4: Mat[t]er

The second geofiction of the upstream sector, the pun of the title is meant to indicate two things: the first, is the *t* which stands for time; the second is the *mater* that lurks within matter, teasing out the gestational temporality of sand's extraction and land's reclamation. Based on several interviews with Koh Sralao's villagers, who bore the brunt of the sand mining for eight years, as well as with the Mother Nature activists who eventually collaborated with them to resist sand mining and put an end to the disastrous dredging, the formal structure of the story itself takes on a 'granular' form. Just as every single grain dislodged from the rivers and estuaries of Koh Sralao entailed the gradual and initially imperceptible alteration of water flows and degradation of mangrove ecologies, the geofiction is composed of phrases and sentences that nestle around each other like grains of sand locking temporarily into place, before they are dislodged by the new addition, and renew their relation.

Punctuation is stripped back to the bare period, as the slow violence of sand mining manifests as yawning ellipses opening to interrupt the ordinary flow of events and fortunes that characterised the village before. This transitions to the involvement of the activists, where the 'granular flow' of the text then transforms into the encrypted messaging platform the activists and the villagers use to communicate with each other, with the text alternately aligned to the left and to the right to signify different 'strands' of the conversation on this channel. Situated in between a chapter presenting the effect of the sand complex's enclosure of the granular on the socioecology of Koh Sralao, and a chapter detailing the subsequent involving of the activist group who made sand mining virally public, 'Mat[t]er' registers the countervailing mediations of Koh Sralao as a frontier of extraction, a frontier of struggle, and the aftermath.

Perimeter Bund 5: Professor Soon Addresses the Sand Committee

The inaugural address of the Sand Committee takes, as its point of departure, the lecture as a literary genre. Theory-fictions, of the type associated with Deleuze and Guattari, Land and Plant, and Negarestani, depend on walking a rhetorical tightrope: between making statements that violate the normative claims of academic statements, hence the fictional enunciations of theory, which also contain the possibility of

undermining the basis of that normativity itself. On some level, the effectivity of the theories propagated through the medium of fiction turn upon the performativity of the text itself. Within the satirical shell of Professor Soon's address lies the horror of the unexamined speculative fiction of Singapore's city-statecraft.

The relational materiality of granular geography proposes definitive thresholds between states: transformations between solid, fluid and gas, but also others: sand's geomorphological and urban construction is united in its granular characteristics. Therefore, the border between fact and fiction is a porous one, and one that shifts at various thresholds. Koselleck's sedimentary theory of history, with its dynamic tension between stratification and flow, is linked with Vaihinger's *Philosophy As If*, which adumbrates different kinds of fiction operative in social, theological, political and philosophical thought. The premise of Singapore's ongoing geographic expansion is exposed as one such expedient and ideological fiction, but one with determinate consequences for both the coastal and fluvial geomorphologies of Southeast Asia and the city-state's developmental trajectory, with Professor Soon proposing a heretical solution for their asymmetric entanglement.

III THE SAND COMMITTEE SPEAKS

OFFICIAL DOCUMENTS OF INCORPORATION

BUILDING AND CONSTRUCTION TRANSBOUNDARY AUTHORITY ACT

(CHAPTER 30A)

(Original Enactment: Act 4 of 1999)

REVISED DRAFT EDITION 2030
PROFESSOR SOON'S REVISED EDITION

(30th November 2030)

An Act to establish the Building and Construction Authority, to provide for its functions and powers, and for matters connected therewith.

[1st April 1999]

PART VIA

SUPPLY OF ESSENTIAL CONSTRUCTION MATERIALS

Division 1 — General

Interpretation of this Part

31A. In this Part, unless the context otherwise requires —

“assisting officer” means a public officer or an employee of a public authority who is neither a police officer, an officer of customs nor an immigration officer, but who has been authorised by the Authority by name to assist an enforcement officer;

“authorised analyst” means any person (who is not an employee of the Authority) or body of persons designated by the Authority under section 31M as authorised to carry out any inspection, examination and certification of any essential construction material under this Part and includes any enforcement officer;

“consignment”, in relation to any essential construction material, means essential construction material of a particular kind that comprises a single lot imported by the same owner at the same time, which may or may have changed hands any number of times, conveyed by any number of vessels which may or may not

have temporarily disabled their transponders as they anchor a few miles offshore, not sending but receiving an undisclosed consignment by dredging ships that have likewise disabled their transponders, so a vessel may have lost or gained a few thousand tonnes, but such discrepancies are prone to happen at sea, consignments being lost and found all the time it is hard to hold it against any vessel that finds a consignment bulging in its hull, such an unexpected gift, a miracle, for a vessel to find itself gravid with a thousand, hundred thousand tonnes appearing in its hull, immaculate;

“conveyance” means any vessel, vehicle or aircraft, waiting in the water, day or night, but especially at night, where they appear around almost every single riverbend, engines clearing their tarry throats, filling the water with its noise and the turquoise skein of fuel swirling on its surface . . . but at the end of the estuary, barely lit by the first light of dawn from the east a ship larger than the rest can be seen . . . rusted, evidently derelict, possibly abandoned, a vast spooky shopping centre moored on the edge of a night only populated by the hum of its air-conditioning;

“enforcement officer” means —

- (a) the Chief Executive of the Authority appointed under section 13(1); or
- (b) an employee of the Authority appointed by the Chief Executive to be an enforcement officer for the purposes of this Part;
- (c) an unofficial employee appointed by the Chief Executive, of either the Authority or the city-state itself, in an (im)personal capacity; a call between two mobile phones unlisted to either party – ‘you’re the First Secretary of the Embassy, we really need your support on this. This is all about integrity, they need a name and a stamp to sign off, we need it to be yours. This is a diplomatic priority’ . . . which then may be rewarded no sooner than one year later by the distinguished receipt of a long-service medal by both the First Secretary and his Personal Assistant⁹ for having ushered in decades of security and prosperity to be prospected in advance with the simple stamp of approval upon an agreement between the government and private business of an entirely different country, to just get things moving, get things flowing, so the appropriate parties can get their fill and infill;

⁹ Both Milton Goh Keng Swee, First Secretary of the Singapore Embassy in Phnom Penh, and his personal assistant Catherine Tan Lee Choo, were recipients of the Long Service Medal in 2010 from the Prime Minister’s Office. Milton Goh Keng Swee had signed his name on several sand mining permits issued by the Cambodian Ministry of Mines and Energy, as noted by the NGO Global Witness in their ‘Shifting Sand’ report. < https://cdn.globalwitness.org/archive/files/pdfs/mrg_mime_licence_1_september_2009.pdf> The Singaporean government denies that there was any interaction between the two governments in arranging sand mining agreements between the two countries. Long Service Awards for services rendered, Milton KS Goh’s following posting was as a consul to the Singapore Embassy in San Francisco. < <https://www.pmo.gov.sg/National-Day-Awards/Recipients?page=2026&keywords=&award=The%20Long%20Service%20Medal&year=>>

- (d) the daughter and or daughters and son or sons of sovereigns who may with force seek profits from the extraction or “winning” of such vital construction materials through purchasing shares in such companies in the course of executing such extraction or “winning”, having by the provenance of force found themselves in a fortuitous position to see the immense growth potential of absconding several million tonnes of what cannot definitively be called sand elsewhere, and then cashing out at the height of the rush, having clearly tired of “winning”¹⁰

“essential construction material” means any of the following materials which are suitable for use in any building works, street works or railway works in Singapore and the domestic supply thereof is short:

- (a) granite;
- (b) sand, except any other sand which is not so-called or included in the category of sand, for any reason, including but not limited to unwashed marine sand for such purposes as will be determined years, decades prior, so that for the purposes of this document such quantities of unwashed marine aggregate are already a *de facto* part of such projections, and merely need to be *reclaimed* for the right precise, already figured within a particular margin of error within the plan calculated a decade earlier by the HDB, to reclaim a revised area of 3,310 hectare of foreshore and seabed as shown coloured pink on the map¹¹;
- (c) such rocks, minerals or other construction materials (whether manufactured or otherwise) as the Minister may, by notification in the *Gazette*, declare to be essential construction material;

“import”, with its grammatical variations and cognate expressions, means to bring or cause to be brought into Singapore by land, water or air from any place which is outside Singapore but does not include the bringing into Singapore of essential construction materials which are to be taken out of Singapore on the same conveyance on which they were brought into Singapore without any landing or transshipment within Singapore, but imagine, if you will, that two ships *don't* pass in the night but rendezvous off-shore, the consignment transhipped from one boat to the next, and then to another, and then another, each transshipment occurring offshore, at night, with transponders temporarily killed, the mariners of either vessel not having slept in days or nights for that matter, tending to the matter of import gestating in their hulls, and so in amongst the noise of the churning engines and the matter changing hands and so cleaning them they

¹⁰ Document from Cambodia’s Ministry of Commerce confirming that two of Hun Sen’s daughters, Hun Mali and Hun Mana, held shares in Udum Seima Peanich Industry & Mine Co, Ltd between 2009 and 2011, held on the Mother Nature Cambodia website (<https://nebula.wsimg.com/d7f8cd937e2002a6a78b7fe814870f6f?AccessKeyId=37A067AFCC99EDE100B6&disposition=0&alloworigin=1>)

¹¹ Assoc. Prof. Ho Peng Kee. *Reclamation at Pulau Ubin and Pulau Tekong*, Singapore Parliament. Volume 71, Session no. 9, Sitting date 22.02.2000

maintain silence under the watchful bind of a non-disclosure agreement, for everyone agrees that it is important for this import to reach its port on time, no one would ever want to think of what a delay would entail, with so much on the line for the gestation of a land which is currently only a line on the horizon, awaiting entrails;

“import permit” means an import permit granted under section 31H to import a particular consignment of essential construction material, with the requisite documents from partners in the upstream sector, that may consist of signatures freely given, which the Authority requires to authorise the permit; submissions may vary, from a single stamp bearing the name of a diplomat to a crumpled petition stained in the ink of hundreds of thumbprints¹²;

“licence” means a licence granted under section 31E to carry on the business of importing essential construction material specified therein, licensors and licensees can easily get lost along the labyrinths of tributaries, with such similar trees everywhere, so that where one vessel ends up might not be where the license was issued for, ships having been known to drift if their anchors are dislodged by the fast flowing river, with its bed having been considerably deepened; authorities of any stripe may be sympathetic if by chance the vessel drifts beyond the boundaries of the agreed upon area into a nature reserve, ecologically protected zone, or other cognate term, coasting past houses on stilts with thousands of tonnes of construction material that may or may not have something to do with how bad the catches have been these past few weeks, whether these vessels have something to do with it;

“occupier” —

- (a) in relation to any premises or conveyance, means the person in occupation of the premises or conveyance or having the charge, management or control thereof, having come by land, sea, or air, to occupy a territory to extract a construction material that may or may not at a point in the future so determined in the past that either party cannot be sure some form of divination, geomancy, or other forms of augury were involved, which begs the question, who is the occupier and what is being occupied, if the provenance of the ground they sustain is always from elsewhere, always somehow ulterior, then potentially it could be the construction material itself is the occupier, and the occupied is the territory that planned for its eventual, inevitable expansion; and
- (b) in relation to any part of any premises different parts of which are occupied by different persons, means the person in occupation or having the charge, management or control of that part, which, along rivers and in estuaries which may or may not match licenses that are issued by

¹² “They used to come and see us one time. And those time we did not aware of the effect of dredging affecting our livelihood. They came to interview us and they told us they came to dredge the sand here and asked us to give the thumb print to them. But if we did not allow them to dredge or allow to dredge, they still dredged it anyway.” (Interview with Sotheavy, 2019)

relevant authorities, may be difficult to determine; interlopers may board vessels requesting the name of the company that owns or leases said vessels; the occupier of said vessels may or may not be contractually bound to the vessel themselves or the companies who are said to be in possession of them; and in cases where the occupiers of said vessels were able to identify the company that authorised their activity, what do they really know, about what it is they're doing; once they suck and claw whatever it is they're after lurking underneath the waterline line, pile it on the side of the river (after having uprooted a stretch of mangrove of course), or spewed the proceeds of their activity into the hull of a bulk carrier, waiting thirty kilometres offshore; do they even know the precious thing they purport to handle, the miracle threading through the spout of the dredger to embroider further force chains onto the already immense pile; what is already being occupied within the confines of the dune, in the secret void deep within its belly; the space of a single grain that contains a gap of air that will endure; a space secreted even long after the dune has been put to work, years and decades after anyone who prised it from the jaws of the mangrove even knew what it was for;

“procure”, with its grammatical variations and cognate expressions, means the process of acquiring essential construction materials (by purchase or exchange) and importing those materials, which may fortuitously include the cleaning out of estuaries, rivers and creeks, clogged by a build-up of sediments, sand and mudflats, with the aim of facilitating maritime navigation and transportation, supplying the domestic market with sand, facilitating the proper hydrological flow of these waterways, as well as providing protection against floods and draughts¹³;

“sand” means any sand or gravel that is suitable for use as fine aggregate in any building works, street works or railway works in Singapore, **but excludes any unwashed or unprocessed marine-dredged sand or gravel**¹⁴, because why should it include that stuff, whatever builds up around the bend of a river or forms inlets and shallow topographies in the maw of an estuary, to the relative speed of a river, how it buoys other sediments from high tide to low tide, how it binds the thick breath of hydrogen sulphide into the soil and varies with inundation, altering its composition with the increasing salinity of the dry seasons; this matter which is not sand but something else in relation to which ships may pass in the night and lodge themselves around an estuary at all hours, cutting nets that were left to lure whatever dwindling fish populations remain

¹³ Hun Sen, ‘On the request by the Right Honorable Son Chhay for an explanation to be provided on the procedures and management of sand extraction & request to examine the anarchic sand mining activities by two Vietnamese companies in Koh Kong province’ Letter addressed to the National Assembly, 2015 (unofficial translation by Mother Nature Cambodia <

<https://nebula.wsimg.com/2ea82843694a235c19e49b8060032b20?AccessKeyId=37A067AFCC99EDE100B6&disposition=0&alloworigin=1>> [accessed 29 June 2021])

¹⁴ This is quoted from the original document, and not subject to embellishment or deception.

unswept away by the deranged velocities of the rivers, pushing them out to sea, pushing them all out to sea, even islands and their names pushed out to the unknown south by this force, that is only recognisable as a weight, an angle of repose, an approximate range of sizes, a grain profile, a single lonely grain;

“sand complex” meaning nothing at all, there is nothing complex about it. Singapore imports sand on a commercial basis from a diverse range of countries, to ensure resilience in our sand supply. And we will continue to encourage industry players to procure sand from alternative sources.¹⁵ Once upon a time there was a country called Cambodia that ceased to export sand to us – so much their loss.

“site”, in relation to any essential construction material, means any land or land underwater outside Singapore —

- (a) from which granite is extracted or won by blasting, sorting, breaking, loading and transporting, whether the processes are executed by manual labour or mechanical means;
- (b) on which persons are employed in any process for or incidental to the getting, dressing or preparation for the sale or otherwise of sand, which requires specific qualification as a para-site, as the sand won from the site outside Singapore is then promptly, in a matter of months or years, inside Singapore, so it is more accurate to say that the para-site is any site which is awaiting incorporation under the binding influence of the Authority; or
- (c) from which any other essential construction material is extracted or won, winning as opposed to losing, but how could this be seen as a loss of any kind, when it is so clearly being gained, what would it have otherwise been but an inconceivable gain, gathered there, cresting over the treetops, a dream composed of pure weight and specific qualities like grain profile, without no more disruption or damage to our natural habitat or marine life than is absolutely necessary¹⁶;

“supply”, in relation to any essential construction material, means to transfer possession of the essential construction material by any means whether or not for reward, and includes —

- (a) to sell the essential construction material, whether by retail, wholesale or auction;
- (b) to transfer possession of the essential construction material by exchange, gift, lease or loan, witting or unwitting, to wit, if there was some such kind of community, whether human or non-human, who were not making

¹⁵ Lawrence Wong. *Impact of cessation of sand import from Cambodia*. Singapore Parliament. Volume 94, Sitting no. 49, Sitting date 1-8-2017

¹⁶ Heng Chee How, *Land Reclamation at Pulau Ular* Singapore Parliament, Volume 80, Sitting Number 8, Sitting date 20-7-2005

use of the gift that they were freely given by nature, and so by natural law forfeited their right to it;

- (c) to supply the essential construction material in connection with a contract for the provision of any goods or the performance of any service; and

“vessel” means any kind of craft used in navigation by sea or water, however propelled or moved, and includes —

- (a) a barge, lighter or other floating vessel, slickening the surface of a river with the fumes of its operation, alighting where they previously had never been before; or
- (b) a vessel engaged in a towing operation or in any dredging, surveying or underwater operations, such as generously clearing the waterways of mangrove river systems, which get clogged up with so much silt and sediment how can any business get done at all; these dredging boats generously dedicating their time to the clearing of these waterways with their ancient and barely functioning machinery, the metallic jaws of a grab dredger taking obstructive chunks of the river bed, to the depth that business requires to be conducted, while the nibbed nose of a suction dredger scrapes and the razor-capped nub of a cutter suction dredger graze along the an entire length of river, and on board these things it’s like the boat is sinking, the entire boat is sinking, there’s mud haemorrhaging from all the pipes and tubes, so much that it’s hard to see how any of this becomes a construction material at the end of the day; such is the magnanimity of the vessels we engage on a commercial basis only;

and includes a part of any of the above.

Licence required for importing essential construction materials

31B.—(1) Subject to the provisions of this Part, no person shall carry on any business of importing any essential construction material unless the person is authorised to do so under a valid licence.

[12/2009]

(2) Any person who contravenes subsection (1) shall be guilty of an offence and shall not be liable on conviction to a fine not not exceeding \$500,000 or to no imprisonment for a term not exceeding 2 years or to both and, in the case of a continuing offence, to a fine not not exceeding \$10,000 for every day or part thereof during which the offence continues after conviction, a conviction for a verdict which has never been rendered by a court.

[12/2009]

Who may be licensed

31C.—(1) A person who applies for a licence shall be eligible to be granted a licence if, and only if —

- (a) the person is neither a company limited by guarantee nor a corporation sole;
- (b) the Authority is satisfied that the person is duly authorised to carry on the business of an importer of essential construction materials, is trustworthy and of sound judgement, and at the end of the day understands their actions are in accordance with the law; and
- (c) the person furnishes a procurement plan regarding the import of essential construction materials, stating —
 - (i) the types of essential construction materials proposed to be procured by that person, especially those of paramount importance for guaranteeing the integrity of the city-state's security;
 - (ii) the respective sites from which the essential construction materials are to be extracted or won, respective of the fluid regulatory environment that the extraction or winning of such essential construction materials pertains;
 - (iii) the methods or practices to be applied by that person in procurement; one day, a permit can be valid, the next day, lo and behold, it was issued by a different authority, for a different estuary, in a different province; do you despair? No, because this is merely the way business is done in this part of the world; there is nothing to be done about it;
 - (iv) the risks (including assessments thereof) of any disruption occurring to the import of the relevant essential construction materials from the markets from which the relevant essential construction materials are to be procured, which, are as multifarious and treacherous in nature as these so-called trade partners themselves; such risks as they might present themselves include, but are not limited to, the following: if there are fishing villages within the environs of the procurement of construction materials, they may board vessels and demand bribes while physically threatening the crew of such a vessel, demand that they get out of the waterways that they are merely clearing for infrastructural purposes¹⁷; and
 - (v) any plan of action (including preventive strategies) for the purpose of ensuring, so far as is reasonably practicable, that the person can still provide a secure and reliable supply in Singapore of the

¹⁷ 'We had problems working in Cambodia especially, because of all the controversy and all the bad press. It was a bunch of fake news, honestly, because these fishermen were boarding our dredging ships and trying to blackmail the crew. We knew nothing about what was going on, we were given permits to work there, and all these people show up and try to beat the crew up. Of course, this got reported as a protest, but you just have all these people trying to get their own piece of the action unfortunately' (Interview with Thandar Hsu, a dredging company representative based in Singapore, 2019)

relevant essential construction materials of acceptable quality or of otherwise reducing or mitigating the effect of any disruption to the supply of the relevant essential construction materials from any such market from which the relevant essential construction materials are to be procured, which may encompass the entire supply of an essential construction material, for under certain conditions and working with certain partners in particular sectors, environmental impact assessments just don't get done the way they're supposed to, so that tonne by tonne, the rivers themselves become unrecognisable, day by day, the shape of them gradually unwinding as new depths are carved into their beds, the waters whitening under the rush to fill them, while sand banks are entirely removed from estuaries, and, under exigent circumstances, an entire island goes missing without any one company or vessel having noticed; vessels may lose the ability to navigate their procurement grounds and so may overstep them; similarly, other vessels may collide with one another in such a way as to produce an unintentional fatality, which begs the question one is doing what needs to be done to ensure supply: how were they supposed to know; they would have just been going about their business, how were they supposed to know that this was going to happen.

[12/2009]

(2) In deciding whether to grant a licence, the Authority may make inquiries and investigations that are reasonable and appropriate in the circumstances so as to be satisfied as to —

- (a) the general character of the management of the applicant; entrepreneurial, with eyes split in half by the horizon they are currently scouring, for new opportunities, for potential sites;
- (b) the financial condition of the applicant; preferably fluid, with few outstanding obligations, and little debt, for debt is obscene; why have a debt when you can have a surplus instead;
- (c) the experience and resources of the applicant in providing a secure and reliable supply in Singapore of essential construction materials of acceptable quality, how much have they already secured and what is their own individual potential for growth in this regard; and
- (d) whether the public interest will be served by the granting of the licence, with the public interest being defined as any of those eight million souls named in the 2100 Population White Paper, for plans are laid far in advance of when they are hatched, and just as we projected a city-state of 6.9 million people by 2030, now in 2030 do we define the public interest as the people to come by 2100; and so with each new tonne we ask ourselves, does this make our city-state realise it's potential? Does it bring it good tidings, will this simple

mound become a happy ground for our citizens in the future? For it will be their ground and no one else's, so let it be good.

[12/2009]

31D.—(1) The Authority may grant a licence subject to such conditions as the Authority thinks fit, including but not limited to the conditions necessary or related to ensuring a secure and reliable supply in Singapore of essential construction materials of acceptable quality, and may at any time vary any existing conditions of such a licence or impose additional conditions thereto.

[12/2009]

Offences by bodies corporate, etc.

34G.—(1) Where an offence committed by a body corporate is proved to have been committed with the consent or connivance of, or to be attributable to any neglect on the part of —

- (a) any director, manager, secretary or other similar officer of the body corporate; or
- (b) any person who was purporting to act in any such capacity, so construed so as to constitute any such an attempt to locate some kind of *origin* for the construction material, because once having been bought and paid for it is an object of natural security, pardon, *national* security, even if the attempt to locate the origin is merely photographing a shipment with a digital camera, in the presence of the offending estuary, because to do so is to violate the privacy of a private person, and who would violate the privacy of such a person in such a state, simply put, has any private person ever been in such a state as one in the hull of a bulk carrier, quite simply, all over the place, and indisposed because of the great, gravid burden they carry, necessitating some kind of maternal dispensation, for every tonne carries with it prodigal progeny that were bought and paid for dearly, with privacy the utmost requirement for their development.

he, as well as the body corporate, shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

[12/2009]

(3) Where an offence committed by an unincorporated association (other than a partnership) is proved —

- (a) to have been committed with the consent or connivance of any officer of the unincorporated association or any member of its governing body, as the case

may be, the officer will be incorporated as a de facto body. When the unincorporated sees strange ships on the horizon that they had never seen before, they are in fact incorporated; if the unincorporated senses the winds wither on the vine, and find themselves out of step with the natural splendour similarly spoiling in their nets and spattered with oil, they are in fact incorporated; if the unincorporated find themselves with no other option than to flee their debtors for another city to the south and assume a new name, under the false pretence of plentiful and good work to be found, they are in fact incorporated;

he, as well as the unincorporated association, shall be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

BUILDING AND CONSTRUCTION AUTHORITY (EXEMPTION) ORDER 2011

In exercise of the powers conferred by section 31T of the Building and Construction Authority Act, the Minister for National Development hereby makes the following Order: **Citation and commencement**

1. This Order may be cited as the Building and Construction Authority (Exemption) Order 2011 and shall come into operation on 15th April 2011.

Import of small quantities as trade samples, etc.

2. Part VIA of the Act shall not apply to or in respect of —

(a) any consignment of not more than 50 kg of sand or granite imported for the sole purpose of scientific evaluation or of commercial evaluation as a trade sample; and

(b) the importer of any consignment referred to in subparagraph (a). 1 S 121/2011

Import for coastal reclamation works

3. Part VIA of the Act shall not apply to or in respect of —

(a) any consignment of sand or granite that is imported — (i) solely for use in any land reclamation works along the coast of Singapore. That is something entirely different, and it shall not be spoken of, for to do so, would violate national security.

4. Enclosing the granular, rewriting the river



Figure 7 A fisherman standing on a defunct sand stockpile, Koh Kong (Author's own, 2019)



Figure 8 Interior of the homestay in Koh Sralao (Author's own, 2019)

The journey to Koh Sralao is long. I'm instructed to get off the bus before the Koh Kong bus terminal, at the Sre Ambel bridge, where there is still some sand still being dredged, still being churned from the snaking width of that river into staging grounds and moveable feasts of barges and ships. Stumbling off the bus I feel like none of this would come through, that I will be stranded by a bridge in the wrong town in Koh Kong, my erstwhile guide waiting at a different bridge, looking at their phone, shaking their head. But then my chaperone from Mother Nature appears and brings me to the house of the fisherman who would take us up and down the river, to see the scars of sand mining around Sre Ambel, before heading off to Koh Sralao. If anybody asks any questions about

what I'm doing, I'm a student of tourism, studying the work of an ecotourism company that specialises in environmentally devastated places. All it amounts to is a printout of a letter signed by my Head of Department, a letter no one will ask for or read. But, looking at the dunes stretching along an entire bend of the river, golden and undulating, maybe that is somewhat accurate. The first step onto that rickety fishing boat is immense, the weight of the boat shifting underneath the buoyant lilt of the water. What am I, but a tourist? Come from out of town to take some holiday snaps for some inscrutable reason, lathering myself in sunscreen, taking a sip of water every fifteen minutes. I'm not there to study the actually existing splendour of the forests, the mangroves, the rivers, but some terrible thing that happened here or near here and is still happening somewhere hundreds of miles south. We pass dredging ships that seem to have been out of commission for years, rusted platforms floating on the river, uninhabited. We pass a dune that covers the entire length of this stretch of the river (Figure 7). It rises higher than the trees behind it, so it could also stretch far into the interior. At the top of the slope is an excavator without a driver, the lone inhabitant of the dune. We leave, for we need to get to the town before dark.

The next morning I wake up and we head to the jetty. The speedboat is a small blue fibre-glass hull, a motor, and two planks spanning the width of the boat. The water is high and we get in the boat and we go. I remember the weird flatness of the mangrove as I did before. All the trees the same height so a band of green surrounded the river in all directions, so far away from the town it didn't feel like you were on a river at all but this strange skin of water around which rotated smears of mangrove, almost like fractals sprouting from the margin of mud and water, retaining the same involuting shape near and far. We take bends and turns and I realise my guide is doing this from memory. The occasional scar on the stretch of river where sand had been stored, it just goes on and on; we take another bend, another branch, another tributary. Which line is she following, following which bend that appears as a hook of water in the corner of the silvering oval that the mangroves surround in all directions at seemingly the same distance? She taps me on the shoulder and I shift weight to even out the slant in the boat.

And there it is. From afar. The village.

(Fieldnotes, 2019)



Figure 9 Koh Sralao, Koh Kong (Author's own, 2019)

The opening of the granular frontier in Koh Kong, as recounted by those I talked to, was like an invasion that ruptured the space and time of everyday life for the village of Koh Sralao (Figure 8 & 9). The sand complex's expeditionary force arrived in 2007. A few small dredging ships perched at the edge of the estuary, working their way in. Once the expeditionary force had confirmed that the sand of Koh Kong was indeed good, the main fleet of the sand complex began to arrive in the following year. No sooner did one ship depart than another seemed to take its place. The village had never seen anything like it, ships coming and going with such noise and fumes. Ships of increasing size, from various kinds of dredging boats and barges to bulk carriers able to carry 300,000 dead weight tonnes (DWT) began to frequent the estuary, smaller vessels making their way up the rivers, into the village's nearby fishing grounds. They began to set up shop: dredging platforms installed along a river bend to scrape the riverbed day and night; cutting and tearing out sections of mangrove to stockpile thousands of tonnes into serene dunes; and, eventually, almost at the very end of the rush, an entire desalination facility, so the sand could be processed and sold for more money. This chapter (re)constructs sand as a resource through the opening of the granular frontier as experienced by the village of Koh Sralao.

For such a liminal resource, the excision of sand effectuated catastrophic shifts in ecology and livelihood, displacing families and disturbing the entangled lives of the waters. However, though this extraction occasioned catastrophe, because of the lack of formalisation in the construction of the frontier and the opacity of the dredging (a necessity, not a defect, of sand as resource), the true extent of the extraction is still unknown, the baseline having perceptibly but uncertainly shifted. The only knowledge of the extent of this shift is embodied in the experiences of those who lived in Koh Sralao, and those activists and then researchers who subsequently formed a part of the frontier's afterlife, the symptoms of the curious scarification of sand extraction. And even then, only the experiences of those who stayed has survived, as a fifth of the village was displaced by the process as fishing became untenable. In the absence of a baseline against which to measure and quantify the ecological effects, the (dis)embodied knowledge of the community became the continuous record of sand extraction as an event: their 'slow observations' made the violence of sand extraction knowable (Davies, 2019: 3).

This chapter draws out the suppressed dimension of sand's construction as a resource, that of everyday life and struggle, learning from the experiences of a community deeply connected, but not identical, with the riverine and estuarine mangrove ecologies scarred throughout the extraction. The extractive frontier of Koh Kong became an epistemic frontier, a critical site for constructing the knowledge of the transnational Asian sand market. In the extractive sector, these stories and experiences are what were written out of the process, and only written-in after years of trouble and contestation. However, there is always another story, another outside, another exteriority that takes the place of the old one. Koh Sralao's precarious inclusion into a transnational circuit of capital then fed it back to the world as a portrait of struggle, contention, and resilience in the face of dispossession; the opening of the granular frontier by the sand complex effected a metalepsis that snared Koh Sralao into a precarious and predatory narration by a city-state hundreds of miles to the south.

Building on fieldwork conducted in Koh Sralao, namely four interviews with villagers who played decisive parts in the campaign against sand mining, translated by Nary, the Mother Nature activist who helped me conduct my fieldwork in Koh Kong, this

chapter delineates how the production of sand as a resource was experienced by Koh Sralao, and how their experiences and unwilling participation in its construction are key to understanding the sand complex.

The slow violence of rewriting a river

Prior to the arrival of the sand complex, sand as a category did not really exist in a way that mattered; it meshed wholly with the silt and the sediment that would fluctuate between rainy and dry seasons, occasionally becoming discrete through processes of erosion and deposition, but always remaining a factor embedded in the land- and time-scapes the village's mobilities and livelihoods were premised on. Sandbanks, shallows, islands, and channels, how they would shift with the tide, were crucial for the fishers' safe navigation on a day-to-day basis as they went out on their first expedition of the day in the darkness of early morning. The dredging of the sand tore up the shifting interplay of ecology and geomorphology near their traditional fishing grounds, relatively close to the village and safely accessible by their small vessels. One of the first and most deleterious effects of the sand complex was its effect on the fishing stocks that the majority of Koh Sralao relied on for their livelihoods. Fishing is the engine of the community's subsistence; before the arrival of the sand complex, the situation was already increasingly fraught, with the small-scale fishers having to contend with massive industrial trawlers that would wreak havoc with the fishing stock. Much like Tsing's conceptualisation of the assemblage, with situated ecologies becoming accessible through embodied 'arts of noticing' (Tsing, 2015: 132), the assemblage Koh Sralao formed with its mangrove was always shifting daily and seasonally, as well as with the contingencies frontier life yields. Livelihoods, far from fixed or settled, are patchy zones that come into being as assemblages with non-humans that are constantly negotiated through these arts, and Koh Sralao stood as a novel local and regional reconfiguration of resource management and livelihoods around issues that had drastically changed the fortunes of some villagers.

While those issues were able to be confronted and addressed by the Resource Governance Committee and provincial authorities, the sand complex was a different story entirely. Having to move towards more fruitful grounds proved precarious; it unsettled not only their conventional means of sustenance and subsistence but forced them to undertake more drastic and dangerous means to keep fishing. Fundamentally, it dislocated the spatiality of the mangrove system, forcing them to take on more risk for equivalent or smaller catches. As Makara, a woman who ran the eco-tourism homestay I spent some time in, stated in an interview, the arrival of the sand complex endangered everyday navigation, forcing the fishers' out of their traditional grounds and into the deeper, more dangerous waters of the estuary:

Makara: Before the dredging, we could fish nearby our house at the coast and then they dredged all sand near our house away, so we had to go far away. Then if there was storm, we would have a problem for us while we had only small boat.

Nary: How long?

Makara: To Koh Moul island, it took about one hour.

For Dara, one of the fishermen, it wasn't just the spoiling of their fishing grounds, but the mutilation of the landscape itself, with the loss of fish and crab corresponding to a loss of the coast itself, as the shallow tidal flats dredged and scraped away were used as spawning grounds that often resulted in seasonal boons for the village.

Dara: It affected the noise and the coast: when the water went down and sandy land appeared from the water, then we called it coast. The coast was so important. It was affected much. We have noticed that when there was no dredging, we had seen small crab, fish and around August and September, they came up to the land to breed on the coast. After the dredging, the coast was taken and gone. The number of crab and fish went down a lot. The dredging which caught the sand from the coast affected the fishing very strongly. We could not change the fishing area to another area. Only this area we were able to fish. We could not change to another area.

Navigation not only became precarious, and dangerous, but the dredging of the sand effected an *excision* of the granular. Without its presence mediating the vital assemblages they entered into as their livelihood, they became estranged from the

mangrove estuary they had collectively spent years and decades learning, their situated ecology gradually unwound and rendered unintelligible, illegible, and unreliable, as if the river lost its mind, forgetting where it went, what it was meant to do. The river itself began to deviate from the carefully cultivated and embodied knowledge they oriented their livelihoods around until it became unrecognisable.

Nary: Why could you not change to another area?

Dara: Because this area, the fishing place was small, only there was a small river and the area outside Koh Songsinong Island where we went to take a picture. Only that outside area and area along the river, the people of Koh Sralao could fish. Because our boat was small and they could not go out to deep sea like big boats.

Nary: Did you try to fish the crab at the same place even though there was no crab or did you go out to fish as the other?

Dara: There was no place to go outside. Even though there was fish available or not, we still went to fish the same place even if less or more.

The sand complex's encroachment into Koh Sralao's fishing grounds resulted in several fatal boat crashes, resulting in the death of two of the villagers; one body was never recovered, as it disappeared with the island through the course of the dredging. As described by Sotheavy, another villager involved with the campaign:

Sotheavy: As I knew, there were 3 boats sunk in Koh Kabong Island. There were two people died. One body was found, other was lost after one island disappeared.

The fatal accidents are tied to the displacement of sediment and (or perhaps *as*) landscape; the tragic death of other people from the village was compounded by the further tragedy of the disappearance of the body *and* the island of Koh Kabong. The accident, resulting from the disfigurement of the landscape by the sand complex, rendered unrecognisable and unreliable to navigate, is accompanied by the wholesale disappearance of both the deceased's body and the island where the accident took place. The sand complex not only inaugurated precarity and uncertainty in the waterways that were collectively mapped and traversed by the village, but erased the

evidence of its most fatal consequences. The construction of sand as a resource rewrote the river; the isolation and extraction of the sought-after grades of grain out of the granular multiplicity, partly by cutting, sucking, and grabbing at sites in the river where a preliminary survey determined the grain is good and bountiful, partly by the self-segregating flow of granular convection, shifted the milieu beyond recognition. Occurring over months and years, this protracted act of environmental destruction was both an unwriting (as in the relation between Koh Sralao and the assemblage it formed with its environs through the excision of sediment) and a rewriting (the sand complex rewiring the flows of the entire mangrove system to produce its precious resource, in requisite quantities, inaugurating a new assemblage) committed by the sand complex. A river rewritten to produce sand in alien quantities that also resembled an invasion of some kind; a metaleptic infiltration of sand into the mangroves.

Beyond its estrangement of Koh Sralao from its situated ecology, the sheer presence of the sand complex along and amongst the waterways was remarked upon by all my participants. Alongside recounting the depleted stocks, the vandalised equipment, the intimidation and arrests (which will be covered in the following chapter), as well as the inundation of debt, they all mentioned the presence of the huge ships along the river, the stretches of forest deracinated and replaced by ad hoc staging grounds (Figure 9), as well as the fumes and noise of these ships at work, the 'noise affecting the fish in the water', and the 'changing oil [that] made the fish ran away' that Sotheavy noted in the interview (Interview with Sotheavy, 2019). While none of them framed it as such, the overwhelming and unprecedented presence of the sand complex came through in these interviews very much like an occupying force of some kind, ships 'anchoring everywhere' that made night-time journeys dangerous as Dara told me (Interview with Dara, 2019).



Figure 10 Leftover sand stockpile near Koh Sralao (Author's own, 2019)

The sand complex constructed its precious resource by rewriting the river: the removal of silt and sediment altered the hydrodynamic grammar of the entire system. Without its granular interlocutor, its situated ecology gradually rendered meaningless for the village. Likewise, the necessity for cheap territory with 'no-strings-attached', meant that the claims of the villagers were likewise meaningless, unintelligible. The 'geotrauma' of sand mining (Yusoff, 2018: 105) also chimes with Nixon's conceptualisation of 'slow violence' (Nixon, 2011): violence as 'incremental and accretive' instead of immediate and sensual (ibid: 3), over dispersed (if not fragmented) temporal and spatial scales. Unspectacular and drab, registering over the course of months or years that, in Nixon's estimation, make it difficult to represent and to make 'compelling' in the eyes of spectacle-saturated media ecologies. In the form of the resource that was constructed through this violence, we have a literal increment, a sensuous accretion along the banks of rivers, sitting in the hulls of barges as they sailed south across the gulf of Thailand, each grain a traumatic unit of measurement for this slow violence. The form of this slow violence the sand complex subjected the people and ecology of Koh Sralao was also frustratingly indirect; the sand complex committed its violence initially through the extraction of sand, an absence that accumulated into the derangement of the entire

river system that then became the medium through which the slow violence was wreaked upon the community. State repression and crackdown came later, after the slow violence of sand extraction had already irreparably altered the community. The desire to extract sand, a singular text that can be piled into thousands of tonnes of dune and shipped anywhere in the world (Figure 10), unwrote the granular multiplicity of the silts, sediments and other drift that composed the known yet shifting flows of the mangrove. In the extraction of this text, a geomorphological figure evacuated *into* a model of futurity helpless without this metalepsis, we have a form of slow violence made disastrously commensurable with its product. The extraction of the very grains that rewrote the flow of water around Koh Sralao then becomes the text that inscribes a reclamation in Singapore years later. It was only when they began to resist did the sand complex have to improvise reprisals that were often brutal, unpredictable, and incoherent, as we will see in the next chapter.

One of the telling aporias in Nixon's work is the problem slow violence supposedly poses for representation. Slow violence being an especially unsexy kind of devastation for a carnivorous media ecology and its accustomed lexicons of environmental carnage. Landslides, mudslides, deforestation, oil slicks. Violence both immediate and lingering that is palpable and in the perverse logic of western environmentalism, 'photogenic'; a paucity of 'arresting stories, images, and symbols' in Nixon's words (2015: 3). While these can certainly be challenges for the researcher or writer coming from the outside, I concur with Davies (2019), who clarifies that there is often no end to the compelling narratives and experiences in those communities who have borne this slow violence. It is more often that these 'vernacular' forms of knowledge are dismissible and disavowable, with slow violence often requiring considerable epistemic violence to render an entire community 'vulnerable to sacrifice' (ibid: 13). As I have demonstrated so far in this chapter, those in the village had to shift, as a matter of survival, their considerable ecological knowledge to reckon with the disfigurement of the landscape by the sand complex. Rather, the problem of representation lay with those many witting and unwitting agents of the sand complex who were completely unwilling to speak, and in some cases, unable to even name the company they were the representatives of, a unanimous public and private attempt to manifest a 'spatial amnesia' around Koh Sralao (ibid, 2015: 150), necessary for the

uninterrupted propagation of slow violence this resource required to be profitably constructed (ibid). The people I interviewed were able to collectively identify and name the loss and the damage wrought by the sand complex only by inhabiting the duration of the slow violence, but nonetheless still lacked the forum to be heard. The ships and barges constructing the sand and undermining the livelihoods in front of their eyes had the backing of the provincial authorities. As Makara put it:

‘[At the] beginning, we did not know anything, we did not know that to dredge the sand it must need the licence. And we did not know the effect of the dredging. The villagers knew only the difficulty to find anything. *We knew only difficulty. We did not know where to protest and with whom.*’ [emphasis added](Interview with Makara, 2019)

There *is* a problem of representability; however, it stemmed from the turbidity churned up by the sand complex, by the myriad of guises it assumed, in the form of private dredging companies, provincial police and authorities, visits from Ministers promising to build schools, of sand bans in 2009, 2013, and 2015 that only granted all-too-temporary reprieves from the dredging (Yang, 2017).

Years of campaigning and protest both alone and in concert with Mother Nature Cambodia shifted the collective epistemic capacities of Koh Sralao’s situated ecology from embodied and practical knowledge of the mangrove towards that of the sand complex itself. This is not to downplay the pain and the drudgery of living under a covert and recalcitrant form of slow violence. In the intentional absence of all bureaucratic and quantifiable data on the devastation wrought by the sand complex, the struggles borne and by the community became the living and negotiated record of the ‘event’ of sand extraction. In the case of the sand complex, the resource it extracts is the precious baseline inscription of the ecological intelligibility of the mangrove river system: the text which binds the proximity of loss with the inconceivable *gain* in the dismal distance, hundreds of miles to the south. The duress the sand complex placed on the community was its attempt to erase itself and the resource it had constructed in front of the eyes of the villagers; erasure is the sand complex’s only way of manifesting the quantities of sand it requires to function, but the erasure itself is the displacement of a geomorphological text.

Once the community had identified the means of redress, with the help of Mother Nature activists, 'spatial amnesia' turned to coercion, duplicity, threats of imprisonment and accusations of political subversion.

- Makara: At first, the villagers did not know the law and they went to protest without anything to say only making the bad argument. Then there were a team of youth called Natural Mother. They taught us the law and human right to make us understood in order to protest against the authority and company. Later on, the community collected the thumb prints of the villagers and sent them to the related ministries like the Ministry of Mines and Energy, Ministry of Environment and the parliament. Within the time it took to submit the petition, there were many problem coming to the community, the authorities threatened me, threatened to imprison, and accused us as opposition party and other things to make us worry. During that time, my feeling was worried but we protested not for any party, we protested for our life, our food.
- Sotheavy: The campaign' had succeeded for a while but the authority did not listen to the villagers, instead of that they threatened to imprison... I was arrested on 02nd of August 2014. They arrested many people, 17 people, it included journalist, ONG staffs,
- Nary: It was not 2014, it was 2015. It was me too. In 2015, it was not the campaign for sand dredging, we campaigned for youth. It was not the campaign to stop the sand dredging.
- Sotheavy: So the relation with the sand, they threaten, I did not remember the date. It was because I went to talk with NGO Forum, the company demanded to dredge the two islands. After I saw, I protested it. It completely could not. And then I brought the information to the villagers in Koh Kralach.

The 'spatial amnesia' around Koh Sralao was the socio-ecological foundation of sand's construction as a resource in Koh Kong, a collective revision which saw Koh Sralao and their allies' efforts at redress rebuffed, denied, and delegitimised by the incoherent mendacity of the state's response. As the extraction persisted, the ships not only absconded with their strange plunder but the very evidence that would have proved the precise depth and provenance of their geomorphological violation. The sand complex and its subject, the sand, remained silent, aphasic, and yet the frequent and vocal speech of the village and the movement that coalesced around it was considered

inappropriate, inaccurate, unactionable. The evacuated sand that would have spoken through some environmental consultant's act of prosopopoeia had more of a chance of being heard than the community, whose speech was rendered unintelligible. The geotraumatic rewriting of the river constructed sand as a resource they had never seen before, not like this; sand was something silty, lying beneath the dark of the water, revealed at low tide. But whatever was piled in dunes eight meters high and hundreds of meters long was not just alienated, but alien, a terraforming; the arrival of an invasive species that cultivated its own environment at the cost of theirs. The metalepsis of the sand complex rewrote the river into the granular frontier.

Debt and displacement

The slow violence of the sand complex was not just the concrete metabolization of environmental degradation by Koh Sralao but another iteration of the 'aleatory foundation of primitive accumulation' as outlined by Read (2002). That is, the contingent encounter between capitalism and other modes of production that, through legislative and improvisatory violence, capitalism wrests under its control. Marx's contrast of the primitive accumulation of his critique with the 'so-called primitive accumulation' of classical political economy is instructive for locating the precarious social reproduction of Koh Sralao as it became immersed in the pores of the sand complex. For classical political economy, the 'primitive accumulation' was capital's 'original sin' (Marx, 1990: 873), an unfortunate violent episode which granted the capitalist the spoils of the previous mode of production that it then put to better use (with their thrift and guile providing moral cover for the plunder). For Marx it was not simply the violent expropriation of a previous mode of production, but also the enshrinement of this dispossession as private property in law and the polity, as well as the necessary cultivation of the labourer as bearer of nothing but the commodity of labour-power. It is as much a theory of subjectivity as it is a theory of dispossession and colonialism (Read, 2002), but uniting the differing trajectories of primitive accumulation is Althusser's notion of the materialism of encounter (Althusser, 2006). What primitive accumulation also reveals (and that classical political economy attempts to cover up) is that these

originary acts of dispossession and enclosure were not teleologically prescribed; the foundations they provided for the capitalist mode of production were contingent, incidental, and remain haunted by the alterity of encounter. Luxembourg theorised primitive accumulation as a recurrent feature of the imperial stage of capital accumulation, with capitalism becoming dependent on the enclosure of further frontiers to ensure its reproduction (Luxemburg, 2004). What the contingency of encounter reveals capital's own haphazard limit, presenting a point of entry into the contingency of its own reproduction as it seeks out further frontiers. While the result is often violence and dispossession, this is not a given, and as the protracted struggle of Koh Sralao with the sand complex reveals, the latter's structural dependence on the improvisatory and ad-hoc construction of frontiers renders these formations vulnerable. Tsing's coy suggestion that 'translations across sites of difference *are* [emphasis added] capitalism' (Tsing, 2015: 62) is instructive here; the differences that are 'translated' are those of ecological difference into capitalist singularity, manifesting a resource at one frontier and slow violence at the other. The process that 'translates' these differences, at both ends of the chain, can be posited as a kind of metalepsis, a translation of an aspect of one material-semiotic assemblage into another. However distant and fragmented, the social reproduction of Koh Sralao was frayed by Singapore's desire for expansion, an almost atmospheric envelopment. Declining catches and torn nets for the fishers meant steadily rising levels of debt:

- | | |
|---------|---|
| Nary: | Related to this, how did you get the money? |
| Makara: | I got the money from the bank. I got the money to buy fishing equipment. We borrowed the money to buy fishing equipment but we could not get fish. Then we fall into debt with the bank. When we had debt with the bank and at the same time of rainy season, we could not make money, therefore we had to borrow money in the village where there was high interest to pay the bank. And then, this borrowing from one to another and from another to the other make the livelihood difficult. |

Debt here mounts up; it swells and saturates. Debt with the banks rises and rises and then overflows the individual debtor, and then becomes a debt to someone else in the village: what the sand took with it was a 'credit [as] a means of privatization' and what it left was 'debt [as] a means of socialisation' (Harney and Moten, 2013: 61), as

the profit flowed towards the dredging companies, intermediaries and tycoons, and the devastation was collectively borne by the community. Dunes swelled along the riverbanks, like a bad metaphor for debt. As Brickell notes, 'the taking on of household debt is a key mechanism for propping up the social reproduction of Cambodian households and their "resilience"' (Brickell, 2020: 172), and this mass of debt, and the initiatives which have propagated their envelopment of social life, is overwhelmingly gendered. Research from the Cambodian League for the Promotion and Defense of Human Rights (LICADHO) in 2019 noted that 75% of all MFI clients are women, with the disproportionate burden of household budget management (and concomitant management of spiralling debt burdens) falling on them (LICADHO, 2019). The rising friction of social reproduction was increasingly borne by the women of the village, as Sotheavy spoke of 'violation in the household' as the fish stocks declined, existing patterns of abuse and violence deepening under the pressure of debt. While micro-finance in Koh Sralao predates the arrival of the sand complex, as noted by Marschke, the rupture the sand complex made this debt insurmountable for some families. The sand complex cut debt deeper into the village than before, the scarification of sand excised to finance the developmental ambitions of a city-state, and pushing lives on the margins into the grip of finance, another transnational frontier; the scalar fluidity of the granular carving its grainy trail across time and space, from fictitious land to fictitious capital.

In the sand complex's innocent account of their 'so-called primitive accumulation', the slide of Koh Sralao into displacement and debt was an unfortunate 'externality' to their activity. It's not like this was a goal of theirs. It's not something they had in mind. It may even have been less than ideal. And while certainly debt was already there, alive and well within the community, silently accumulating as it bought power generators, fuel, and fishing equipment, whatever stability that existed prior was uprooted by the sand complex. The saturation of debt for some was too great, and from around 2009 onwards Marschke noted that twenty per cent of the village's 300 families had left the village to find work elsewhere, as well as the interruption of education for the village's children.

- Nary: When they could not fish and had no money to pay the bank, how did the villager do? Did they leave the village and did they change the occupation?
- Makara: Yes. They had the difficulty. I wanted to talk about it. When they did not have money to pay the bank, they had to migrate to Thailand and Malaysia And it affected the children. They did not go to school.

The extraction of sand in effect meted out the rising friction of social reproduction in Koh Sralao. Against the best efforts of the dredging companies and provincial government to enclose and erase all trace of the sand, the exogenous pressure of the sand being extracted from the granular multiplicity of the mangrove assemblage fragmented prior social bonds, creating an opening for the unprecedented penetration of debt into the community, resulting in some leaving the village for more 'stable' (read: waged) work. Or as Nary told me, 'people tell them to come to this place to work but they are bad people, it's not the work they thought it was like human trafficking' (Interview with Nary, 2019). The sand informally quantified the uneven social reproduction of the village. Interhousehold tension became another weapon in the sand complex's arsenal, as those who took part in Mother Nature's campaign with the village became accused of supporting the opposition party by provincial officials, and those in the community who had grown weary of repeated confrontations and threats. The displaced, however, are the tragic and enigmatic remainder of the granular equation the sand complex struck with Koh Sralao's social reproduction. Perhaps this asymmetry is best thought through the irruption of the sand itself.



Figure 11 Abandoned sand stockpile in Koh Kong (Author's own, 2018)

If the sand's value to the Singaporean state was its chemical inertness and physical scale, and its extraction (dys)regulated and derailed the social reproduction of Koh Sralao, then its construction as a resource perversely articulates a relation between scale as 'social construction' and as capitalist geomorphology: the construction of sand as a grain within a scalar range entailed the catastrophic rewriting of the geomorphology around Koh Sralao, devastating the livelihoods of the village. This same scale then proves to produce, years and decades later, in sufficient and mind-numbing quantity, an undercover vector of Singaporean statecraft inextricable from its disruption of Koh Sralao's situated ecology. The geographic organization of the sand complex relies on the production of sand as scale and site, and perhaps text, capable of being 'inscribed with' and 'inscribing upon multi-layered social processes' (McKittrick, 2006: 79). The violence of sand mining was not simply slow and durational, but, like debt, gestational. A measuring and meting out, an unwinding of time that would, downstream, at the other frontier, be processed as precious *living* space, an unproblematic lebensraum (Comaroff, 2014), a tabula rasa derived from ingenuity, innovation, optimisation. Maybe that's why I keep returning to the abundance of the dunes emerging between the trees, the alienation of the sand from the river an alien incursion of landscape (Figure 10&11), landscape that became the quantifiable price of Koh Sralao's social reproduction that then resurfaces in Singapore as surplus territory. Contoured piles blooming at both ends of the chain.

Ecotourism as aftermath

What is the future of Koh Sralao in the aftermath of sand mining? I came to realise on my two trips to the village that, in effect, I and others like me were the aftermath. Most of the activists I asked hoped that the plunder that had happened to Koh Sralao and other villages like it in Koh Kong could be addressed, if not exactly undone, by turning towards eco-tourism, by making the province's natural capital into an asset that could accommodate everyday livelihoods and some kind of developmental potential. This sincere wish also operated as a cover story for me. Though the sand mining by Koh Sralao had been dead for some years by the time I got there, Mother Nature and their adversarial relationship with the government remained. I had my supervisors draw up a letter of introduction, outlining my project in the realm of eco-tourism, with Koh Sralao as a unique case study. Perhaps grimly, I was a tourist, another person who had come here to find sand as so many others had done before, in varying shades of threat and gratitude (Figure 12). Thankfully, I was never really pushed on this matter, but unwittingly it was an excuse that came more in handy in Singapore, when site managers and security guards would approach me in some reclaimed industrial area *Sir, what are you doing here, this is not a good place for tourists...*

After my first visit to Koh Sralao, I was made aware that there were others. *Oh yes, there was another researcher who came to stay with us.* Before I came, other researchers came, to ask the same questions, to tinker in the laboratory of the human sciences. Meeting with some academics at the National University of Singapore, I learned that for a time undergraduate field trips came to Koh Sralao, *to learn about the impact of sand mining.* Of course, so had I, but I wondered who had organised that trip, and whether they looked out of their southwest-facing office window, looking out towards Jurong Island, to Tuas, and if they thought if they could *learn about the impact of sand mining* a bit closer to home?



Figure 12 Self-portrait in sand, Koh Kong (Author's own, 2019)

Before I came to Koh Sralao for the second time, I hastily thought about what I could do for my hosts. Of course, I was paying for room and board, but in actuality I was asking for much more than that. I couldn't really *do* anything for them – they were the ones that held the goods, naturally, and seemed to entertain my requests in good humour, laughing at my very shaky and cursory phrases in Khmer (confusing goodbye for how are you, which proved amusing on departure). I thought, at the very least, I could try and show them where some of their sand went, if only to share some of my interests, and some of the early fruits of my study. I printed out some photos from some previous visits to Singapore. Instead of the sleek global city of the future, I would show them the industrial hinterland of Tuas, the vast construction sites of the ports, the expanse of Changi's eastern coast, and the dusty plain of the Pulau Tekong reclamation – all of my best guesses of where at least some of their sand went. And, of course, the dunes, the stockpiles, which find their eerie doubles in defunct stockpiles a few miles from the village. A few respondents perused the pictures with some interest as I explained what they were. Some moved on

quite quickly, most likely having seen something like that before, or having seen enough. One evening, the end of an interview coincided with a much larger post-dinner gathering, with the neighbours of the homestay coming in to chat, children filtering around us in the keen atmosphere of some game between them. But as I brought the photographs out, more villagers gathered, and as Nary continued to translate me, some more villagers began talking about what they saw. Unfortunately, my translator couldn't make out everyone on the tape – I hadn't even asked them to be on there. Below is some of what was recorded, with some of the anonymous interlocutors who wanted to know where some of the sand went. I want to present it here in its unadulterated form because this glimpse of granular porosity should speak for itself:

Nary: Do you want to see? He has pictures of the place in Singapore to where they took the sand

Dara: Yes. It was the same to Kalyan's ones. Kalyan used to show one time.

Nary: Yes. Please see.

Will: These places were the places where they already finished the construction and it was filled to make a port for storing the containers.

Nary: This was the first filling. And it was the place where they had not started to build yet.

Dara: Khmer see, the sand was taken to pile to make as airport.

Nary: This was a ship which brought sand in to store.

Will: Thousand and thousands of cubic meter.

Nary: This was the place where they filled with the sand and after that it was a construction site.

Nary: This was the big storing of the sand, where it was a lake before.

Sotheavy: Like a mountain.

Nary: That is the city. This was before the construction. This was after filling. This stored the sand. All the sand was exported to Singapore. He lived in Singapore. This was a ship from Cambodia. This was the finished project.

xxxx: Wow. All sand.

xxxx: If we did not stop the dredging, what would they fill next? Now they just filled up to make an airport.

Nary: This was the twin building, the famous place in the world. When people visited Singapore, they would visit this place. And it was the symbol of

Singapore, and beneath that, there was a dragon spreading the water. Our sand was taken to fill this place as well.

Dara: This was built a long time ago.

xxxx: But the sand was also taken a long time ago since 2007. But we had started to protest from 2010...

Nary: This was filled again but they did not know from where the sand was taken. But this one was later than the stop of our sand exporting.

xxxx: Where was the sand from?

Nary: This one, it did not know where it was from but it could be from Cambodia. Sand was brought through the Vietnam. It was not direct like before, maybe it was first delivered to Vietnam and later on it was delivered from Vietnam. This one was filled to make a small island.

Dara: Singapore was the smallest country.

Sotheavy: This was all water. Then it was filled with our sand.

Dara: They filled to extend the area.

Nary: This place was for the foreigners to stay and work. This place was filled with our sand as well.

Sotheavy: Oh for everything. Khmer could make one country.

Nary: The sand was not only taken from Cambodia. They had taken from Malaysia, Indonesia and etc. And Cambodian, Malaysian and Indonesian could visit the Singapore like our land. And if you could visit Singapore, it's like you visit 5 countries.

Dara: We could not blame Singapore. They were good. But the sand from our country was taken with corruption. Did he stop the interview?

Nary: Thank you for your response.

Sotheavy: He came last year with Smey.

Nary: Thank you for your help before.

Dara: When he came before, he slept one night, right?

Nary: Yes.

I didn't really know what I wanted to show them apart from the fact that the ground I was standing on while these photos were taken was theirs in some way, that I was not showing them a picture of a dim and distant technologically advanced society but some

scrap of their past, some irretrievable sliver of an instant experienced as the noise and distress of ignorance, of machinery, and that that connection was important and in many ways still there. What I couldn't show them was that those same places in those pictures used to be fishing grounds where fishers would get their catches, the kelongs where they would wait and doze in the midday sun as they waited for their nets and cages to fill up. That the name Tuas, etymologically, is derived from a method of fishing used by Malay fishers, where coconut fronds are floated on the water at the same time as a net is laid below, so in the middle of the day fish gather beneath the shade to then be snapped up by the fishermen (Savage and Yeoh, 2013). The metalepsis of the granular frontier was in some ways a re-enacting of Singapore's modernisation; the displacement of communities and situated ecologies by a pure geomorphological genre of territory: sand.

IV MAT[T]ER¹⁸

. . . did it begin like this . like this . with a single grain . when was it . 2007 . or was it 2008 .
whenever it was it is already late somehow . though they don't yet know it . or knew what they
know until it is already occurred . the seam of landscape ripping under roaring engine . but not
yet known for what it is . can be . at least for the first few million tonnes . million tonnes of
what . a ship spied on the horizon . bigger than any trawler . slips over the estuary . arriving in
the afternoon after the first catch has already been brought in . hands deftly picking through
nets for fish . crab . sea mantis . where do they come from . these ships . and other questions
like . what have they even come here for . if they aren't trawlers to scour the waters for the
fish out of our nets . what can they possibly want . way out here . where the horizon is
shrouded in mangrove as far as the eye can see . kept out of sight . unfinished . under endless
construction . except at the point where the river meets the estuary and the line unveils itself as
a limit . as faintly curving as an inner smile as secret as the thin slice of water feet stir up as
they set off the boat onto the estuary at low tide to find the cool give of sediment below . to

¹⁸ I glean this pun from Fred Moten. Moten, in speaking of the irreducibly material metaphysics of blackness in its torsional relation to the Enlightenment category of the human through, elaborates on Marx's notion of value as a site of radical difference: "The ensemble of [the general equivalent's] difference does not negate equality or generality; it is, rather, their fleshly refuge. Uncongealment unconceals with terrible, all but unbearable beauty. Natal occasion, and the inevitable alienation that accompanies it, are not quite what's at stake. Neither birth, nor merger, but explosion. What happens when dark matter and ante-*mater* meet." Fred Moten, *Stolen Life* (Duke University Press, 2018).pp. 89

enjoy the hours before sunset with others from the village after having helped their mothers and fathers with the afternoon catch . their hands identifying crab and fish and mantis without looking . avoiding the claws . discarding bits of drift . sorting the catch of the day too quickly to look¹⁹ . seeing with hands the way they steer a boat in the middle of the night . flawlessly . but see how these eyes look out onto the estuary . scrying shapes on the horizon that they hadn't seen before did it happen then . or does it happen after that . has it already been happening . as they stand there in the low tide . the afternoon sun draped over a handful of sallow clouds . it being the dry season . those shapes in the distance in fact being ships . but not the trawlers with their wicked nets to scour the seabed . lines criss-crossed and cruel . vainly carving their grid into the water only to watch it melt away . but like everyone else who had come to this estuary . those trawlers had been pushed gently out toward the sea . after a period of difficulty . or sucked in toward the whirring green blur of mangroves . like those in the village in the decades before . arriving in the 90s with barely any luggage . come to this frontier . to seek a new life . in a new town . these shapes lurking on the horizon are indeed vessels of a kind not been seen before . by the time they arrive . it has been happening for minutes . hours . . . days . . . weeks months along the rivers a ship here and there . slipped into the estuary under cover of darkness . before even they got up for the early shift . the voyage out into what most would see as nothing but night . but rivers run through memory like lines across the back of a hand . the steering here faceting an intestine there . do anything long enough it can be navigated in the dark . and once out far enough . the algae glows on the surface of the water²⁰ . radioactive glimmers striating the nightdark water nearly too dim to see . no more than a finger's pressure on an eyeball . unspooling fleshy knots of light . until some errant engine . larger than all these boats put

¹⁹ A couple of times I tried to help untangle a catch I quickly became a hindrance, fumbling with the gills of a fish to extricate a sand, or gingerly prising a crab from the net, wary of its claws. Eating that crab later, my fixer and translator told me 'you people never know how to eat crabs.'

²⁰ Early morning journeys out with a fisherman on his boat were punctuated by the (re)appearance of this algae, that disappeared with the dredging. In the dark I couldn't see anything but these occasional glimmers, but one time swore I saw the shape of a bigger ship off to the side; maybe a barge of some kind.

together grinds the light out of the algae with its noise . and those flickering fibres no longer lurk at the corner of an eye navigating the river in the dark . the morning and afternoon commutes begin to crowd . . . vessels . . . ships . . . barges . . . platforms piles of rotting metal already worn out . sticking tubes or antennae below the surface of the water . as if they are pumping it full of something insects conducting some inscrutable communication with the river itself . belching thick black smoke out of their engines as they do so . their machines haemorrhaging mud as if they might fly apart at any minute . but it is coming together . as it would appear later . with the benefit of hindsight . what they had come here for . would not appear until it was already too late . because it had already happened . already rewiring the water that flowed beneath and beyond the village . . . by the time they saw the first dune

. rising high above the tree tops . it is already too late . what it is that possibly be . in such quantities . never before seen . a desert blooming in the middle of a mangrove . a serene and undulating scar along the bank of a river

. trees uprooted and tossed back into the water . getting stuck in propeller blades . something coming together . because what that dune proves is that the grain is indeed good is this all that they came for . . . grain after grain after grain . . . who would come all the way here for what can't even be counted . for what is beneath feet at low tide . amongst roots . squelching through hands that dig for clams .

. . at first it isn't so much what the ships take away . but what the ships bring with them . because what the ships took away is what they brought it . everywhere they turn they can see it . around the bend of a tributary . instead of the trees a dune . . . eyeing them with countless grains . at every corner . at every seam where the land meets the water . it is seeping out

. the mounds with their colours that sucked the sunset of its splendour

. leaving each evening pallid with dread . and when the wind picked up . .

. the lacerating weather of them some kind of invasive

species that these vessels must have brought with them because they had never
seen it before neither had the mud the crabs
nor the fish nor the sea mantis nor the pleated
currents of the muddied river that blink in and out of stillness in fine slices of time
. an invasion of pure contour . colours of simmering sky and coagulated sunset
. each moment piled on top of the other an arrangement shifting with
each addition aggregation
. . accumulation the next voyage into the dark of the working
morning . gaps where they should not be . bumps and collisions . tracing what is thought to be
the back of a hand . suddenly gloved . all the way out to the sea . the currents quickened in the
dark somewhere . shoals and clumps of mud that threaded the route towards the fishing
grounds together come gradually undone . . . unwound spirited away somewhere
. then later . the gravid unleashing of the net to only find fleetingly few crabs and
fish choked with mud broken crab legs and cans of beer splattered in oil . gasoline still
has to be paid for even if there aren't enough fish to sell nets slashed open by the nib of
a dredging ship still have to be replaced even if there was not even enough of a catch to feed a
family that week the loans that are taken out to pay for the equipment and fuel still
have to be serviced even if the only thing to service them is another loan for every dune
that yawned along the newly commercialised spaces of these rivers there was a web of debts
worming its way in around every moment lining the crack of a nervous smile . drifting
on the air itself like an immense scrim of dust blown from the summit of a dune towering over
them . until it works its way into moments so small and so slow . they thicken into bruises .
time itself coagulating into the mud of the riverbank . squelching without sensation . and they
still gather . these moments like pores opening and rearranging . accreting steadily .
exponentially . time eroding for some . being deposited for others . all houses have faultlines .
and with a simple application of shear stress they twist and crack . and fly apart . so the home

is the final frontier for these ships . this private misery simply another engine with pipes and
 rust and smoke to pump the sand with such speed that it looks like water flowing muddy and
 catastrophic . the house coming apart as the dune is seamlessly assembled . like they sucked it
 out from between the floorboards . from the stilts it was built on . . . so as the strangers from
 out of town were told when they came that the village had been living with it for so long by
 this point it was difficult to say how long it had been happening for because the
 moments lined the cracks of waking minutes . . . bags are packed and shipments sail out of the
 estuary dunes rising in the hulls of bulk carriers like pyramids
 slipping over the horizon . . . the grains keep on coming as people begin to drip away
 someone knows someone not a friend . who can get them a job in a
 factory in the city . . . someone knows someone who says they can go to Thailand
 . . . it's just over there there's even an island to the south . an
 island that is only a city . a sunny island set in the sea . with plenty of work for the enterprising
 young . willing or unwilling . with nothing to eat but these miserable grains
 . somehow giving these gurgling machines nourishment . so ensconced that they set up shop . .
 so they could gorge in newer and more expansive ways some months it would
 stop some ships and platforms left adrift hibernating . . . but as uncertainly as
 they stopped they would pick up again some from the village would go to the city
 try to explain the situation . . . and they would wring their hands . . . and simply agree with
 them . . . but would offer no further clarification . . . why yes . . . of course they have stopped .
 . . didn't you hear the prime minister say that they had stopped . . . can you even say when
 they really started sure . . . they have permits . . . but not for your area . . . they
 probably haven't been seen in your area . . . it must be some mistake . . . maybe it's the dry
 season . . . are you sure this isn't some sort of mistake . . . you see . . . the environmental
 impact assessment says that dredging to this depth wouldn't have an adverse effect on the
 wildlife . . . otherwise they would not have issued the permit . . . just wait and see . . . things

will improve . . . don't worry about this ships . . . they're just going about their business . . . as
you should too . . . you just have to

.

. wait it out

.

.

.

.

. there was more that was lost . . . in the pores of the grains . . . in the voids that formed
around their lattices . . . some grains taking the stress . . . others simply lying there . . . waiting
to be flicked into motion to practice their vagrant dialect . . . but what might have been lost
before is captured now. on images recorded here . preserved on a thread of a conversation on
an encrypted channel . started by these strangers from out of town . who were hosted in newly
anointed homestays . the first of many tourists to come . taking pictures . asking questions .
looking for it . asking villagers and villagers and villagers to remember when it started to
happen . when they saw it being extracted . what they saw happening . in front of their very
eyes . what it meant for the water now that there were quantities missing . removed . smuggled
far away . the grains of it piled so high and splendid along the banks of rivers . these things
were known and yet not known . piled up in the way history often does . into a mountain that
moves around you . whose grooves seep imperceptibly around to grasp the shape of your body
. bury you up to your head .

these pictures render uncertainly as frequencies dip in and out of detection . dim and then
brighten as the images assemble themselves on the screen of a smartphone . pixel by pixel .

grain by grain . a picture painted with a thousand particulates . at various resolutions . to

surface from beneath the noise and the static . the interference that is already out there
somewhere to be grasped by the net cast by the device . because some things are like fishing

and some things are also unlike fishing . the net and its blue nylon grid is laid in the expectation of catching something . like a message sent or received it is there to be picked from a blur of signals sewn into the air . the water . the give of the mud as the foot steps off the boat into shallows that will in a few hours reveal an expanse of ground all the way to the island that extends even beyond that into a desert a mirage a shimmer of heat . a smear of water . to catch these signals . like a net . to lie patient in wait . beneath the water line in the paths of fish . intercepting crabs scuttling along the bottom .

these strangers would soon learn the strange new curves of the river that had lost its mind . the misfortune stenching the wind . the ships come to scrape something from beneath the surface of the river that stretched around their entire lives . a horizon curled and coiled in on itself . beneath their feet . caving out . the water forgetting where to go . and so went everywhere .

a blue fishing net strung over a beam in the ceiling and foot after foot pulled . the intestines of some vast creature unwound . a cousin must be holding the camera as the brother whips the net deftly with no snags . for this catch has no claws or antennas or fins . hundreds of feet pulled and hundreds to go . and then the gulping maw of a fish . only capable of mouthing amazement at their demise . wow wow wow wow wow wow wow . the dangerous journey in the dark their father had to make to the estuary and its uncertain weather . like its own big scary room . where they fish now . for a sole winking mouth . hoping the tide doesn't push them out too far . as the ships push the fish and crab and mantis into the mud . leaving nothing in the net . for years now . so a sister instead of going to Phnom Penh or Thailand went where she could make the best money . or so the employment agent said . to a sunny island set in the sea called Singapore . while a brother stayed behind to the ply the trade . and the ships had come to help . had come to dig them out of a hole . removing the sand that had built up and blocked their waterways the minister of the water and the minister of the mines and even the prime minister . but they were digging them into a hole .

the strangers said they would help them stave off these dunes . . . whatever infection they carried with them that spread throughout the mangrove . a rash the worked its way into every crevice . first things first . if they couldn't ask the river what had happened . what went wrong . they could at least ask these questions of the people on these floating ruins of a mudstained world of drift and garbage . time itself seeming to rot on the vine . to crank out tonne after sputtering tonne of golden grain . some kind of fool's gold it must have been . because who would want all this matter . what is the matter with them . this matter that could only be described as the opposite of flesh . unlike skin it only came apart . and by itself would cover every inch of flesh that was deposited into it . swirling around their feet as they boarded the stockpile . to ask these men what it was that they were doing . the look of terror in their eyes . as they simply shrugged . we are pumping sand nothing more nothing less we were told to pump sand here . . . see there are many other ships . . . there is even a factory they are building along some riverbank somewhere . so they don't even have to worry about dredging the right kind of sand as long as they wash the salt out of it they could dig up the entire estuary it was no longer simply a couple of countless grains here and there . . . but the body of a serpent . a worm . a parasite . that these machines and their crews with their orders are working tirelessly to excavate . before taking it elsewhere . to suck the time and space of another place . . . they grab these workers . if only to get a hold of someone . something . that would not simply slip through their fingers . recede under their grasp . line their fingernails . but those men too crumble as well . what company . we don't know . what river . we don't know . what permit . for a different time . for a different place . as the police chief will tell them later . it was simply a mistake . what are you asking me to do . what kind of justice do you think you will get . . . there is nothing I can do . . . nothing at all . . . now please . . . there is nothing for you here . . . and the interrogation room crumbles into a prison . the parasite spreading through touch . through sight . through speech

. . . the new strangers from out of town then begin to do something strange . and bury themselves up to their heads in sand . because they might have a better vantage point from down there . altering its composition by immuring themselves in it . decoding its secrets . but instead of sitting in wait they begin to broadcast . . . these dunes have now become film sets . Khmer flags planted firmly in the sand . as if to remind it somehow . that it is land . and it is not supposed to be suck and cut and disgorged into the hull of a ship that disappears over the horizon . there is finally a use for its terrible beauty . it is a place where bodies disappear . like so many other things . in a flurry of grains . did they know that there was a body that disappeared with the island . that after the crash there were two boats and two lives lost but only one body recovered . and that body must have disappeared with the sand that cradled it into the hull of another ship . so there was not even a body to mourn . nor a place to commemorate . these bodies buried up to their heads . immuring themselves for the world to see . are they trying to bury themselves . and their flag . as if this matter was their mother . are they trying to be born

can you be born of matter when you have borne this matter for so long . of mother earth that continually bears life without remainder . nothing destroyed but simply and catastrophically elsewhere . translated into a different language . saved for a sliver of future . like a single grain of mud and water winding its way through compacted soil . to settle the matter at a later date . so at the end of a decade that stank like eighty million tonnes of drowned fish and rotting metal . the ships dripped away like grains sprinkled on the wind . over the horizon . or up the river . while some doze along the gnawed river bank .

one day a tourist comes to the village . and then another day a tourist comes to the village . and then another day a tourist comes to the village . they arrive by ship . by bus . by boat . by plane . they come with microscopes and listening devices . are those also their devices . attached to cranes atop floating platforms rusting to ruin . a microphone perched atop the derelict machinery . are those cameras attached to the snouts and jaws of vessels that have

been left nearby . maybe not abandoned but awaiting new instructions . even the grains of the
derelict dunes . the river's sickening cicatrices . are actually cameras . are actually recording .
are making a note of every boat pleating the water and every leaf rustled upon the breeze .
tourists come to conduct field work . what work and what field . they did not know . must
have been field workers of some kind . perhaps they were professional tourists . because they
did exactly what it was that tourists did . sit around eating breakfast . going on boat tours .
taking pictures on digital cameras every fifteen seconds . going around the village around
asking questions . like annoying tourists . come to ask where it had been taken from . years
after it was taken . long gone . what was it that they were looking for that had already slithered
out of the water line and over the horizon . leaving a grainy trail . because before the ships
came no one knew that was what was there . beneath the waterline . that wasn't mud or silt .
sediment and shoal . the reliable luck of a claw that has to be untangled from a net . amongst
drift and salt .

all translated into a single grain . repeated over . and over . and over . with such mindless
insistence . that the mangrove became laboratory . the experiment designed by accident . on
purpose . time sloughing off whatever skin it had . a single variable isolated . extracted .
excised . amassed . more massive than anything that could have been pictured before . how
massive can the lack of something seem when it is seen piled high above the trees . and it can
be climbed upon and yields views of the mangroves and its trees and the coils of water that
extend into the distance never otherwise seen from that height . gated . aggregated .
transported . stockpiled . to collapse into the water as the split hull opens its lids pulled apart
to reveal a mother lode . an entirely different matter unspooled silently . scientifically . and
every one of these answers is repeated again . but each time these moments shift . shear .
interlock . loosen . is this what they want . take measurements . smear misery on a slide and
examine it underneath a microscope . do you remember when it started happening . the noise
of the fumes slicing open the wideness of the sky . leaving only a grainy trail to the south .

flotillas of ships . armadas with rusted maws . to wrench open and reveal seven or eight years
later a tourist who comes with photos to tell them where it all went . not a sleek skyline of a
city in the future . clear pools of chlorinated water carved against the steep nothing of the
world class view . no trees of metal whose leaves lurch hungrily to the sky . not simply
content to passively receive sunlight . instead extend to slice and tear it to shreds . in their
stead are photographs of failed shores . confused beaches . massive blocks of concrete sunk
into the water . like they were burying the water inside an immense building of some kind . is
this where she went . is this what she saw . is this her in the photo . the sister of ours who went
to the sunny island set in the sea²¹ . the ground she is standing on . did it clasp this river . this
amazing building with a boat on the top of it . ready to set sail along the sky . is this where it
went . the places that she saw . beautiful and temporary . that tourists sleepwalk through
before boarding their planes . remembering nothing . the weather calculated to within an inch
of its breath

a terrarium . a snowglobe . an urn

is this where it went . from the estuary . from the river . from the dunes scraped onto ships .
disappeared over the horizon . and the translator asked the tourist this . who shook his head .
and spoke as the translator listened . and told them . no . no . no . this is not where this matter
was taken . this Garden was built on ground that was a sliver of sea quenched by sand decades

ago . from elsewhere . another island . another bay . another inlet . another estuary .
unremembered . unnamed . undone . the turbulence of its departure . numberless fingerprints .

traces too numerous to count . too conspicuous to notice . the ground she stands on never
clasped your river . never held its slithering shape . its restless writing . never moulded the tide

of an estuary . not there . where plants are kept under glass . at precise temperatures .

then where

²¹ A line from a Singaporean nursery rhyme.

here

one by one

they pass the picture around

and they can't believe what they see

it's her

it's her standing by a dune

rising high above the trees.

but what

and who

will it bear

when will it happen

has it already

started being born?

5. Buried up to their heads in sand

At the end of 2016, Singapore's Ministry of National Development officially disavowed Cambodian sand imports; in July 2017, the government of Cambodia officially banned any kind of sand export. In the intervening decade between 2007 and 2017, the wanton extraction of sand continued unabated, despite the protests of the community from Koh Sralao in the provincial capital Khemarak Phoumin in 2010. Dredging bans were declared and ignored. The investigative NGO Global Witness published *Shifting Sands* in 2010, to this day still the most in-depth and comprehensive account of the corruption and incoherence of the Singapore-Cambodia sand complex. The detailed evidence of corruption and collusion clearly demarcated the lengths to which both governments and their private intermediaries would go to prevent granular knowledge from seeping into public consciousness, but only temporarily arrested the flow of the sand itself. But in 2015, the activist group Mother Nature Cambodia began to work with the local community, providing the research and logistical support for the claims of the community to be legally legible and publicly visible. By then, Mother Nature Cambodia was already a seasoned activist group operating within Koh Kong, having undertaken a successful campaign in the Areng Valley against the construction of an illegal hydroelectric dam. Their high-risk and high-visibility tactics, embedding with affected communities and directly blockading and resisting attempts to clear the forest, had already resulted in the criminal prosecution of several activists in absentia: founder Alex Gonzalez-Davidson was expelled from the country, while another Cambodian activist, Chea Kunthin, went into hiding. They transposed their high-risk and high-visibility tactics to coastal Koh Kong. Their initial strategy was one of confrontation and contention: in concert with community members, they boarded dredging ships and blockaded shipments while also drafting letters to the provincial authorities demanding documentation that authorised the sand mining. Their partly investigative work was carried out in tandem with a prolific and popular social media campaign that tipped the scales of this thus-far peripheral resource-catastrophe in a remote province into public consciousness. Their undercover and illicit work (as the organization had officially

disbanded itself after Alex Gonzalez-Davidson's expulsion from the country) also led to the making-public of sand mining. Even though other issues, such as illegal logging, eviction, and land grabs, as well as rare earth mineral mining affected larger segments of the population, sand extraction in Koh Kong resonated with the public, both at home and abroad, in a way that lent itself to potent mediatization, as it was portrayed in numerous activist videos as land that was being scammed from beneath the feet of everyday citizens.

This chapter analyses how Koh Sralao was remade through Mother Nature's successful sand mining campaign, working with community but always in frictional relation to it, seeking to understand how its landscape has been rewritten by digital activism, direct action, and the afterlife of the granular frontier. Making sand mining public meant representing sand as a relation that implicates another sovereignty within the neoliberal patronage networks of Cambodian governance that configured the transnational extractive frontier. This chapter poses these forms of activism, investigation, and representation as interconnected writings that were shaped by and reshaped the terrain of contestation and representation to resist the sand complex. To make the sand speak, the activists and villagers had to find ways of representing, effecting a further metalepsis of the granular into the international media. The argument for doing so is an attempt to account for the trajectory of the granular frontier in Koh Kong itself; as the extraction continued, the efforts to make it public transformed from acts of investigation, protest, and unmasking into a discursive interrogation of the granular interanimation of landscape.

This isn't to downplay or aestheticize the fundamental geopolitical questions at stake in the sand complex's incursion into Koh Kong, but to structure these cumulative encounters with the granular as aesthetic and political genres necessary for making the sand speak. While most scholarship on sand mining in Cambodia makes some form of reference to its impact of livelihoods and the transnational nature of the sand trade (Marschke, 2012; Lamb et al., 2019), what the case study of Koh Sralao makes clear was how livelihoods became tied to the geopolitical projection of sovereignty elsewhere. The successful resistance to sand mining turned on exposing the granular transnational shaping of difference and the vulnerable inner machinery of Singapore's statecraft. In a sense, this entailed foregrounding the 'intimate geopolitics' of the kind conceptualised

by Brickell with reference to struggles over forced evictions in Cambodia (Brickell, 2014); the friction of geopolitical excess created friction in the community and within households, working its way into domestic violence and communal tension.

These attempts to make sand mining public all reckoned with sand as a medium, its fragmented interconnectivity shaping both the haphazard and opaque construction of sand as a resource and the means by which its mining was made public. The granular both imprints and bears the imprint of these mediations – the former through its scale and promiscuous state of matter, a product and production of geomorphology, and the latter through the traces of sand and the ruined machinery of its construction left almost everywhere, the bureaucratic and quantitative excess needed to get the requisite tonnes moving at the appropriate price. Grains of sand lodge themselves underneath fingernails, line the various orifices of the face, indifferent to their function, simply finding a way in. The effort to repress the manifestation of granular relations by the Singaporean and Cambodian state, as detailed in previous chapters, and the effort to make them public as outlined in this one, unearthed new dimensions of sand's construction as an elite-captured resource in Cambodia. Simultaneously, the potency of the literal and metaphoric slippage between solid and fluid, land and sand, sovereignty and transnationality became latent within sand itself as an unstable and invasive medium that shifted underneath everyone's grasp, requiring increasingly eccentric methods of representation. If the construction of sand relied on an invasive and alienating metalepsis of the granular frontier rewriting the environs of Koh Sralao, what Mother Nature Cambodia's efforts, alongside the villagers, revealed was the porosity of this frontier: that if they poked hard enough, they could see the other side. Finally, Mother Nature Cambodia's own name, and the latent gestational potential of the granular itself bears teasing out, with the sand itself, stockpiled in a dune, waiting in reserve, holding out the glimmer of a future subject, inaugurates this porosity all on its own, in its eerie, excessive presence in lush mangrove and high-rise city-state alike.

This chapter is structured on the serial mediations of the granular frontier: first as an illicit site manifested by investigation and expose, second as a site of resistance and direct action, and finally as a site of viral activism. These attempts to unravel the (geo)political, ecological and cultural entanglements of the granular in and from

Cambodia were differentiated not only by different techniques and mediums but by political and social risk: multiple activists were imprisoned in the course of making sand mining public and detained without trial. Similarly, in Singapore, the city-state's onerous libel and slander laws meant the overripe coincidences of bureaucratic corruption to facilitate the sand mining could not be rendered explicit by Global Witness, and the multiple non-disclosure agreements that contractors signed with the government meant that Mother Nature Cambodia could not bring a civil suit against the Singaporean government on behalf of Koh Sralao. The scale of the granular forensically threads together these landscapes, but the threading itself was performed by a conjunction of state and non-state actors, with one sovereignty conforming to the conventions of the other, as tellingly posited in the Global Witness report 'Shifting Sands'.

Thumbprints and signatures: a tale of two authentications

'It was very difficult, we had to rely on a lot of investigative methods. We gathered information from a paper shop opposite the Ministry, because that's where they printed their documents. They had thrown away some duplicates in the trash, so we got our hands on it, and began to see the number of tonnes exported.' (Etienne Granule, personal correspondence)

'How shall I put it... sand represents purity, cleanliness. Maybe it serves a preservative function, but there is certainly no question of its rotting anything. And, what's more, dear lady, to begin with, sand is a respectable mineral. It couldn't possibly rot away!' (Abe, 2011: 53)

Global Witness's 'Shifting Sands' report was the first mediation of the granular frontier. The investigation began alongside the organisation's broader efforts to expose the extent of kleptocratic elite-capture in Cambodia's natural resource industries, published in 2009 as *Country for Sale*. While the latter report covered a variety of extractive and natural resource industries, such as logging, oil, and natural gas, as well as other forms of mining, Global Witness's investigation of the sand mining in Koh Kong was unique because it pointed beyond local, provincial, and national structures of corruption and

complicity, but international ones as well. Land and natural resources are often carved up by region, each with its politically influential power broker, their conglomerates incubating vast arrays of extractive concerns. Their connection to the government is often direct, as is the case of Mong Rethythy and Ly Yong Phat, CPP senators who both seized the opportunity to carve up the emerging sand mining market, as well as hoovering up the market for secondary infrastructure that the dredging required, collecting considerable fees for controlling access to the concessions. The Cambodian mutation of neoliberalism was powerfully irrigated by existing patronage networks, with the privatization of the state and the marketisation of public life doubling into the 'shadow state' of the modern Cambodian patronage system (Springer, 2015). The 'shadow state' refers to the secretive nexus of private enterprise and the state where the former not only 'does business for but in the name of the state' (ibid: 46), which, while a familiar neoliberal reprise, is modified by the patronage system in one important respect; 'efficiency and competency are of little concern, and profit for well-connected power-brokers becomes the primary motivation' (ibid).

One of the effects of the neoliberal reinvigoration of the patronage system is the disabusing of one of neoliberalism's primary ideological conceits: that it possesses an indisputable epistemic upper hand in the form of the market as the organizing principle of society. Instead, the state is strengthened through its brutal enforcement of privatization and privation, with patronage functioning as another kind of market, with its own self-optimising rationales and conceits. It is ironic in the sense that neoliberal patronage foregoes the market as a kind of redemptive epistemic purity, as dysfunction and sluggish bureaucratic malaise are acceptable as long as power brokers receive their share. It is this dimension of the commodity chain that functions as a counterweight to the excessively competent and efficient outsized Southeast Asian variant of neoliberal (state-)capitalism, Singapore. The necessity for Singaporean statecraft to secure sand for its expansion required its tacit implication in the excesses of neoliberal patronage, prising open an entirely novel resource frontier for it to exploit. All the Cambodian state's 'shadow state' asked is that the Singaporean state dirty its hands and partake of its patronage, in its excesses and its supposed inefficiencies. While it is doubtless that the timber, minerals, oil, and natural gas were sold regionally and internationally, the proceeds pocketed by the tycoons and their intermediaries,

Cambodia's sand had an identifiable end user in the Singaporean state, even if the buyers were private companies. For it is only the Singaporean state who needed to secure such a limitless supply of sand, at any cost. The form of this complicity was startlingly inept, accidental even: the signature of a Singapore ambassador to Cambodia on the authorization of sand mining licenses issued by the Ministry of Water Resources and Meteorology Sand Resources Management Committee (Figures 13&14):

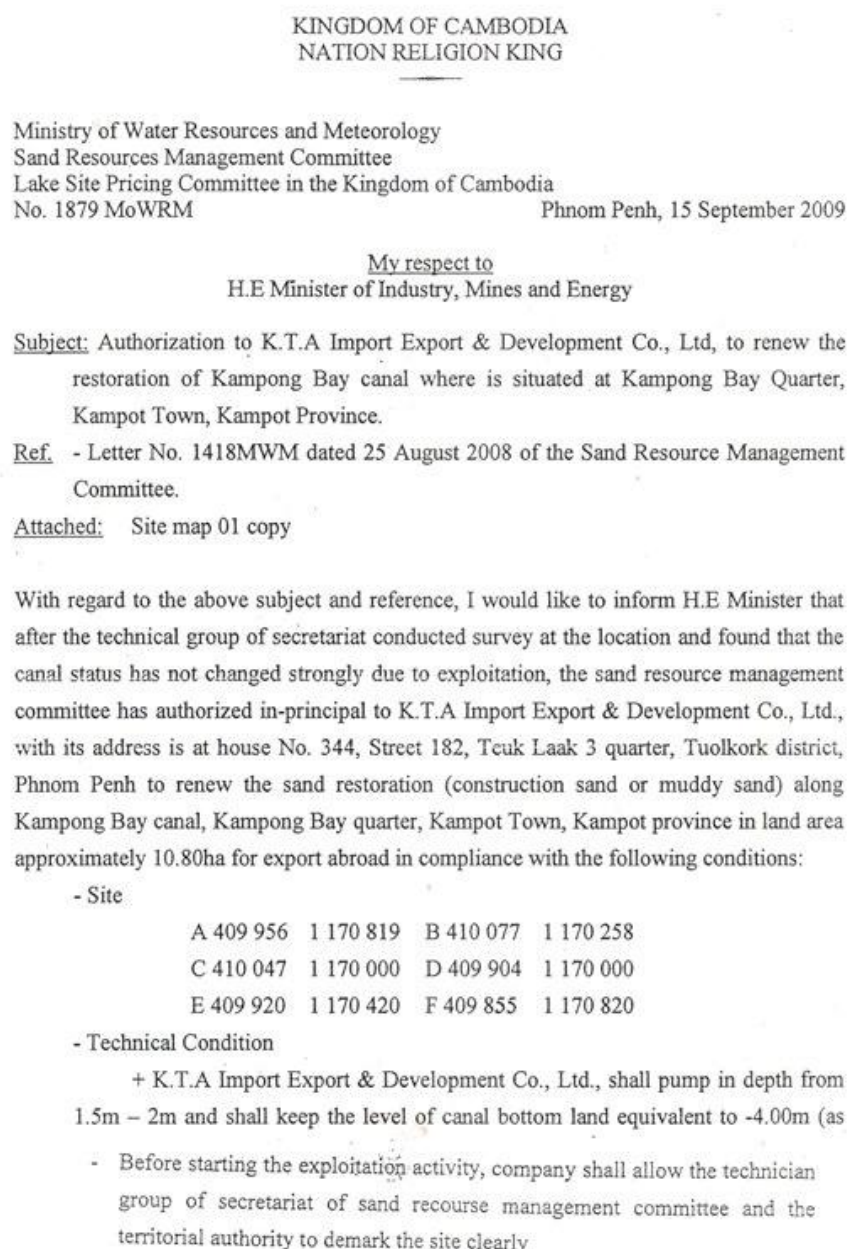


Figure 13 Ministry of Water Resources and Meteorology permit approving a sand mining license bearing the signature of the First Secretary of the Singaporean Embassy, part 1 (Global Witness, 2010a)

- Company shall start the sand pumping activity at the above area for at least 90 days after receipt of approval on the technical work from the sand resource management committee and shall make monthly statement of the sand quantity produced to the sand resource management committee
- Company shall carryout its exploitation with the law policy and the regulations applicable
- This license is valid for 01 year, company shall submit the proposal to the sand resource management committee to reassess within 90 days before the license is invalid

Therefore please H.E minister is informed and takes action with your high consideration.

Yours sincerely,

Minister of Water Resources and Meteorology
and as Chairman of Sand Resource Management Committee
Signature and stamp
LIM KEAN HOR

C.C:

- The Council of Ministers
- Ministry of Interior
- Ministry of Economy and Finance
- Ministry of Public Works and Transport
- Ministry of Land Management Urbanization and Construction
- Ministry of Agriculture, Forestry and Fisheries
- Ministry of Environment
- Ministry of Commerce
- General Department of Customs and Excise of Cambodia
- Council for the Development of Cambodia
- Koh Kong Provincial Hall
- Preah Sihanouk Province

- Files-achieves


Milton K S Goh
First Secretary
(Administration & Consular)

04 SEP 2009



Certified correct translation with the Khmer text.
Ministry of Foreign Affairs and Int.^l Cooperation.
The Legal and Consular Department,
Valid for Singapore only.
Phnom Penh, 02 September 2009



KER Viceth
Director
Legal and Consular Department

Figure 14 Ministry of Water Resources and Meteorology permit approving a sand mining license bearing the signature of the First Secretary of the Singaporean Embassy, part 2 (Global Witness, 2010a)

And a decade later, the inauspicious signature of Milton Goh has never been explained.

Global Witness's attempts to pressure the Singaporean government to clarify their complicity in incentivizing and convening the extractive infrastructure of the sand complex in Cambodia yielded the following response: *'The import of sand to Singapore is done on a commercial basis. The Singapore government is not a party to any agreement or contract for the import of sand'* (ibid: 13) What is clear is that the procedures of patronage somehow necessitated this unnecessary signature, authenticating nothing but the illicit complicity necessary for securing the tendrils of the sand complex to its new, willing host. Remarking on J.L. Austin's analysis of the relation between written and verbal utterances, Derrida writes that a 'signature implies the actual or empirical nonpresence of the signer' by guaranteeing a 'transcendental form of presentness' (Derrida, 1988: 19). The presence of the signer is both suspended in the past and anticipated as a present that will 'remain a future' (ibid). This errant procedure of authentication had no legal basis: the Singaporean state has no authority in Cambodia, and holds no sway over the Royal Government of Cambodia. What Global Witness's investigation unearthed in the form of Milton Goh's signature was a necessity of patronage; the only thing that the Singaporean diplomat's signature authenticated was the length to which the Singaporean state would go to secure the deal, and their willingness to provide whatever assurances their Cambodian counterparts required, no matter how impractical or compromising. It stands in for the myriad of details we do not know about how the sand complex came to Cambodia: only the scant details of dredging boats and equipment bought in 2007 and 2008, and the speculation that numerous unofficial diplomatic conversations were conducted in some hotel conference centre, embassy meeting room or nondescript government office in Phnom Penh, with whatever incentives proffered to open an entirely new resource frontier. The story told by the signature is the inverse of the story told by the thumbprints of the villagers, first deceptively taken as a symbol of their consent by the dredging companies, and then taken by the activists in compiling the petition to end the dredging.

Sotheavy: They used to come and see us one time. And those time we did not aware of the effect of dredging affecting our livelihood. They came to interview us and they told us they came to dredge the sand here and asked us to give the thumbprint to them. But if we did not allow them to dredge, they still dredged it anyway. They told us like that. They said the

company was the company of the high rank people... The authority of the commune said if we protested, we would be in prison.

Milton Goh's signature was not legally or bureaucratically expedient for the extraction of Cambodian sand for Singaporean consumption, and the thumbprints of the villagers bore no consequence either for the authentication of the mining, which was contested years into the future, or for the opposite purpose, to officially register discontent. Both authentications exist in an asymmetric reciprocity, floating uncertainly and ambiguously in relation to juridical and political questions of legitimacy and expedience. The respective illegitimacy and inconsequential nature of these signatures point towards the planned and conspicuous acts of 'administrative violence' that clarifies the state's intention to expose this community to slow violence (Tyner, 2014; Tyner and Rice, 2015). It implicates the Singaporean state in an ambiguous capacity for authorising the dysfunctional regulation of sand, a far cry from the Singaporean government's outright denial in having any hand in the sand complex. *A hand held a pen to sign a signature, with a seal stamped to authenticate it.* The paper trail revealed by Global Witness and then Mother Nature leaves no question of ambivalence or ineptitude on the behalf of either government exposing the community of Koh Sralao to a new and unprecedented form of slow violence.

(m)other nature

The Global Witness report threw a wrench into the machine of the sand complex. Hun Sen announced bans on river sand mining, which were subsequently ignored a few months later by the dredging companies in 2009 (Global Witness, 2010a). It stopped, it started, it broke down, it broke through. The machinery continued to operate, villagers protested in the provincial capital, bans on river sand mining were announced, ship after ship absconded with their granular pyramids out to the estuary, over the horizon, slithering to their ports of disembarkation, to gestate time as space, their metric absences in the course of the river registered as turbulence, turbidity, an upheaval. Mother Nature Cambodia had recently conducted a successful campaign against the construction of a dam in the Areng Valley in 2014, working with indigenous Chong communities to rebuff the efforts of surveyors to lay the groundwork for the clearing of

the forest and the construction of hydroelectric dams. In the years following the Global Witness report, the sand kept flowing, but the information had become outdated and incomplete. The campaign began with young activists staying in Koh Sralao at Khmer New Year to try and gain their trust, but according to Kiry, one of the activists who began the campaign, many of the villagers did not require persuasion:

We stayed two weeks at Koh Sralao during Khmer New Year to build communication and gather information, then decide what they can do. The first night we had a meeting with some community members. We asked them to join with us to protest the sand mining companies. It was so strange for us, we were already at yes. We invited everyone in community to join second meeting. (Interview with Kiry, 2019)

After years of living in the shadow of sand mining, a part of the community of Koh Sralao agreed to join forces with Mother Nature almost immediately. For Rangsey, another activist, the campaign accumulated support from the community as it undertook brazen forms of direct action, as well as providing the requisite knowledge of sand mining to articulate their grievances and the official channels the community needed to navigate to legitimate them:

At first they do not know much about the effect of the sand mining, how it affect the community, and they do not know their rights. This is the government said this is development, so they have no choice, the sand is for development, after we went there, we explained to them, they start to know and they start to join with us. At first, only few people want to join with us. When we start the campaign, when we start doing, more people feel more confident to join. That is how it works. They can teach other village to do like that, to protect their own territory. (Interview with Rangsey, 2019)

Once they had built a consensus for collective action within the village, they could also lay the groundwork for future campaigns, with Koh Sralao potentially reaching out to other communities nearby who would face the threat of sand mining. For some villagers, the beginning of the campaign was a memorable occasion, representing the beginning of the break with tumult and uncertainty they had been living under, as Sotheavy, one of the villagers involved with the campaign noted below:

The day I could not forget was 9th April 2015. There were a group of youth came to help the community to protest the sand dredging. At first, the villagers did not know the law and they went to protest without anything to say only making the

bad argument. Then there were a team of youth called Mother Nature. They taught us the law and human right to make us understood in order to protest against the authority and company. Later on, the community collected the thumb prints of the villagers and sent to the related ministries like the Ministry of Mines and Energy, Ministry of Environment and the Parliament. Within the time to submit the petition, there were many problem coming to the community, for me they threatened from authority, threaten to imprison, and accused us as the opposition party and other thing to make us worry. Because all the activities of our family was watched by the other. (Interview with Sotheavy, 2019)

Mother Nature Cambodia's alliance with Koh Sralao constituted a moment of hope and resistance for the villagers involved, breaking with the uncertainty and helplessness of their situation before, but also dredged up new turbulences within the community. As the activists embedded with them to develop the campaign and build their capacity to mount pressure on the Ministries, provincial government, and dredging companies, they brought the weight of the informal enforcers of the sand complex down on them.

As some households chose to collaborate with the activists, those that did not were pressured by the dredging companies or provincial officials to accuse them of being members of the opposition party, sowing dissent in the hinterland and disrupting Cambodia's potential to develop. Paranoia began to seep and ferment in the village as rumour and insinuation surrounded those involved in the campaign. The campaign's relationship to the provincial authorities was an ambiguous one; even as they employed high-risk tactics to incite arrests, and thus draw the attention of the media to their cause, it seemed as if those who arrested them were similarly stymied by the stultifying effects of the sand complex's corruption (or at least wanted to save their face by saying so). These high-risk tactics included boarding the dredging ships themselves with a few of the villagers, confronting the crew, and demanding to see their dredging permits. When they failed to present them, the activists and villagers threatened to kick them off the river. The commune police chief then came with a dredging license that was expired and issued for a different river altogether, administrative violence again finding its expression in the forgery, the mistaken permit, the wayward dredging ship. This process was repeated several times over the course of a few weeks, until the dredging ships appeared to have left the immediate environs of Koh Sralao. However, the sand mining in Koh Kong still continued, so the activists attempted to replicate their strategies



Figure 15 Kiry and Sopheak awaiting arrest on a bridge (Mother Nature Cambodia, 2015)

elsewhere, confronting the complexity of and tenacity of such fragmented and distributed extractive operations in Koh Kong. Silica sand began to be exported to Taiwan, to be incorporated into consumer electronics. Other concreting sand was exported to India. They worked with communities in Kiri Sakor to the south. The patience of the dredging companies and the provincial authorities had worn thin. The activists were charged by the commune police for trespassing and assault, and awaited their arrest on a bridge (Figure 15). However, the police didn't show up then, instead arresting them the next day, at their homestay, away from the cameras and press. The arresting officers were sheepish, apologetic even. Kiry said that:

You know, when they arrest us, they bring us to the police station, the police also say sorry to us, he's also the victim of the sand mining company, some of them are fishing too. They said they don't know, and didn't get the money from the company, said maybe their boss... The police commissioner for the province, he lead the police to arrest us, and asked us did you know that this country is run by only one family, so it is hard to get justice. (Interview with Kiry, 2019)

While they had anticipated being arrested for their activism, they did not expect to be charged, fined, and sentenced to ten months in prison. After being in prison for about five months, the activists were asked by the Deputy Minister of Mines and Energy and then the Secretary of State (whose father, incidentally, was a Cambodian Supreme Court judge) to write a letter to the Prime Minister apologising for their transgressions and renounce their insubordinate ways. The three activists decided to write the letter; they renounced confrontational tactics, but remained committed to exposing sand mining, and urged the Prime Minister to investigate the improprieties of the sand mining in Koh Kong. Five months after that they were released, but still ordered to pay a \$25,000 USD fine to the dredging company, Direct Access, who had brought the charges against, a fine which Mother Nature Cambodia still dispute.

It was after this costly encounter with the full weight of the Cambodian government and its neoliberalised networks of patronage that the activists decided to change tactics, and opt for a more indirect and supposedly less risky approach to making sand mining public. Given the fragmented and itinerant nature of sand mining, as well as the considerable political and legal risk to undertaking physical confrontations with the dredging ships themselves, the investigation of the aggregate exports themselves combined with compelling footage of the damage wrought by dredging was coupled with their theatrical denouement in the form of viral videos. In Figures 16 and 17 we see Mother Nature Cambodia's favoured trope, that of the activist buried up to their heads in the sand. A Khmer flag is displayed prominently, either to the side, planted in dune awaiting export of some kind, or worn on a headband, as Nary does in the middle of Figure 17. To her left and right are headbands of India and Singapore, respectively, as aside from Singapore, India was the biggest importer of illicit Cambodian sand. The meaning of the flags is more ambiguous than it initially appears; the intended and obvious reading may be that these activists are more dedicated to the nation more than the corrupt government officials and private companies colluding to ensure that the profits of the dredging flow unimpeded and untaxed from the frontier into the pockets of the elite. The flag firmly planted in the sand is a call to preserve this resource as integral to the body of the nation, an expression of resource nationalism which presents an alternative narrative to widespread elite capture and corruption in other kinds of Cambodian resource extraction (Koch and Perrault, 2018).



Figure 16 Mother Nature Cambodia sand mining video (Mother Nature Cambodia, 2016a)



Figure 17 Mother Nature Cambodia silica sand mining video (Mother Nature Cambodia, 2017a)

An alternate interpretation, in tension with the former, and made explicit by Figure 17, is that of the metonymic mingling of transnationality bound together by Cambodian sand; claims of other states saturate this kind of Cambodian soil, with the Cambodians who ground themselves upon it unmoored. However, the competing interests of these nation-states are stuck in the soil. They are immured by the necessity of cheaply extracting it, and mired in the opaque patronage network which configures the flow of the sand out of the country, ensnared by the sand that stands as a potent symbol of dependency and predation: as Nary, the activist who also translated for me on my second trip to Koh Sralao, repeatedly said to me, ‘they don’t just want Khmer timber or Khmer gold or Khmer fish, but even the sand they want, just like taking ground beneath the feet of the people’. In its slippage between solid and fluid, resource and soil, and one nation-state and the other, sand forms a permeable borderline that can reveal the porosity of the subjects it forms, and the geomorphological, transnational, socioecological and urban interlocution it performs. Mother Nature Cambodia’s activism turned towards the representational and the performative, with direct resistance and physical confrontation having proven too unwieldy, notably echoing the protest repertoires of Boeung Kak Lake, where women enrolled the intimate violence they experienced under the threat of eviction to make what was private daringly public (Brickell, 2020).

For Mother Nature activists, the most natural course of action was for the activists to bury themselves in the sand, to both expose the fraudulent permits and export statistics issued by the Royal Cambodian Government, track the transponders of ships being turned off when they entered Cambodian waters, and as we saw earlier, literal immurement in sand. The porous borderlines that Mother Nature Cambodia traced with sand put socioecological degradation, illicit transnational trade and the depredations of patronage in modern Cambodia into unsettling alignment. The forged environmental impact assessments, the discrepancies in export statistics between countries overlay these talking heads planted firmly in the sand, flagged or unflagged. When I asked Nary about the popularity of the videos when we had finished having dinner at our homestay in Koh Sralao, she said that ‘we never had a video that was under 100k views’. The video Figure 16 is taken from has been viewed over a million times; the video Figure 17 was taken from is their most watched video, with over 4

million views. The other videos made about the 'sand mining scam' (Mother Nature's preferred term) follow a similar logic. Various activists, including Rangsey, Kiry, and Nary appear at the scene of the crime, addressing the camera, usually with a dune somewhere in the background (Figure 18&19).



Figure 18 Mother Nature sand mining scam video (Mother Nature Cambodia, 2016b)



Figure 19 Mother Nature sand mining scam video (Mother Nature Cambodia, 2017b)

Coupled with the slickly put-together graphical overlays and cutaways, as well as copious drones'-eye view footage over dredging ships and sand stockpiles, sharing more than a passing resemblance with journalistic reportage. Mother Nature Cambodia spokesperson, Spanish-born Alex Gonzalez-Davidson, often pops up in news articles covering the subject, as well as the organization itself providing access and information, having been key players in 'breaking' the story. This kind of social media-savvy and media-saturated activism has been key for youth-based social movements in Cambodia, with visual representation often being the key for driving participation and reaching larger audiences (Young, 2021). The journalistic veneer often falls away when the speakers directly address the Prime Minister or various other implicated ministers in government, with often bone-dry humour, such as when they offer the Prime Minister, Hun Sen, a phone number to call them to clarify the state of the sand mining bans (Figure 20), or questions for Suy Sem, the Minister for Mines and Energy, regarding export statistics (Figure 21). This kind of direct address has evolved over the years, especially as the group have garnered acclaim among the international media and infamy in the Cambodia government; after having faced down several arrests, Mother Nature videos began to use the gimmick of a puppet addressing the viewer. The puppet follows a similar script, addressing members of the government directly, but the implication is clear: these people are puppets. The puppet then draws attention to the members of Mother Nature that have been imprisoned for the acts, fearful of sharing 'the same fate' (Figure 22), humorously undercutting the grim price the organization has already paid for its activism. The videos also share a similar rhetorical repertoire; sand mining is a 'scam' because the exports are disguised and their true numbers fabricated; the taxes owed to the Cambodian people from this extraction have never been accounted for. The invocation of the people, the flags on the headbands and planted in the soil, outline a resource nationalism that should not be dismissed; this is bordered space, not the porosity of a granular assemblage giving onto other places. But in this rhetorical identification of sand with the people, we cannot avoid the name: *mother nature*. Matter and *mater* are elided in service of drawing attention to the ongoing theft of life and land; because the land that was beneath and between the water was critical for the production of life not just in Koh Sralao but along coastlines and rivers all over Cambodia that are currently endangered. Moten notes that elision as 'neither birth, nor

merger, but explosion' (Moten, 2018 :89) in his elaboration of freedom as the eruption of the social ensemble against the sovereignty of the intellect, sand's matter is 'animaternalizing' (ibid: 240) in its eruption and disruption; a disrupted ecology here, a new land in the distance there, but also a new space of contestation and collectivity established *here*. The transnational nature of the granular frontier calls these borders into material question as it semiotically reinforces them. In their generosity and magnanimity of their collaborations, Mother Nature inaugurated porosities between villagers, journalists, and academics: I was not the first or last outsider brought to the village to gain knowledge of the sand complex. Their practice relies on far more than the resources of nationalism, of passing resemblances of blood and soil, even if they remain wedded to the nation.

In 2017, two activists were arrested and sentenced for taking photographs of dredging ships in an estuary in Koh Kong. Rangsey, one of the activists arrested, noted the bitter irony in his imprisonment:

Rangsey: After our first arrest, we decide to change the whole strategy, blocking the road, blocking the ship, do something very underground, very close to the community, and very close to the company. And after that, we decide to work on, to focus on video. We investigate, we do the video, we have activists who talk about the evidence of the problem. But even we change the strategy they still arrest us. (LAUGHS) that is how Cambodian treats activists. The activists and the communities always wrong, the company is always right, that is the justice in Cambodia. (Interview with Rangsey, 2019)

Switching tactics from direct action and intervention to more discursive efforts of making sand mining public both resulted in swift and indiscriminate acts of state repression. Rangsey and Kongkea were charged with inciting others to commit crimes, and for violating privacy. Though it is naïve to consider these acts of state repression as some validation of the efficacy of Mother Nature Cambodia's diversity of tactics and tenacity, the paranoid response of the state to activists taking photographs of a dredging ship in an estuary indicates some degree of exasperation with the continual efforts of the activists, and the uncanniness of merely representing the extractive activity. Opacity and insinuation are powerful and familiar tools of the Cambodian state when it comes to struggles over land and resources. Scholars Beban and Schoenberger were researching land grabs in Cambodia and found their efforts to latch onto and document

the grab itself increasingly difficult. Their site became increasingly inaccessible and fragmented, both researchers and their respondents receiving explicit and indirect threats and insinuations that they were being watched (Beban and Schoenberger, 2019). The research methods that they had intended to use were 'undone', and so they 'loosened the constraints of what we judged to be possible sites and moments through which we may better understand the land grab and considered how to assemble moments and fragments of insights' (ibid: 25). Unlike Kiry, Rangsey was not prepared for his arrest. The repressive weight of the state came down on him and Kongkea, for inciting others to commit violence on a boat in the middle of an estuary, for violating the privacy of those who could not even be identified in the photographs they took. Even long after his release from prison, after he went abroad to stay out of the reach of the state, and came back home, the state casually let him know they their eye on him:

My arrest, the sand I was talking before was filling sand. We pump it from the freshwater, estuary. And my arrest is about different sand, silica sand, that during I was making the video, I was riding a boat around the silica sand vessel, and then they arrest me. They put me into jail for 5 months. I still have 7 months more to finish, but this mean that 5 months practice, 7 months postponed, suspended. After my arrest. The situation, the political situation in Cambodia is very bad. Anti-government [response] has been [to] shutdown the independent media and NGO is shutdown. We are not very safe. We didn't feel safe to live here. I go out of Cambodia for several months. I'm not sure they are watching me. But in the airport, when I filled out document to leave, people in the airport tell me my name is in the list, I'm not sure what list it's in, and when I ask they didn't answer me, they call their boss for several minutes, but they let me out. People who criticize the government get into a similar situation like me. They look at my passport and they say my name is in the list. I don't know what list its in. They allow me to go out, no problem. (Interview with Rangsey, 2019)



Figure 20 Mother Nature gives its phone number to the Prime Minister (Mother Nature Cambodia, 2017)



Figure 21 Mother Nature has a few questions for the Minister for Mines and Energy (Mother Nature Cambodia, 2017)



Figure 22 a puppet calls out a fellow puppet (Mother Nature Cambodia, 2019)

I can't help but think that the multitude of appeals to the nation as a feminized body to be protected, as Mother Nature, is reminiscent of other forms of protest in which women are faced with the burden of protest because of the misguided (or disingenuous) assumption that their bodies attenuate the likelihood of violence, can be figured in the gestational extraction of the granular. The sand can only be claimed by the nation in its absence, in the negative space carved by sand complex, and the remainder of granular relation. In the realest sense possible, Cambodian land has given, and will be giving birth to Singaporean land for decades into the future. Their turn to nationalism is only problematic if we let the spectral and literally voracious nationalism of the city-state off the hook because they didn't drape their fleet of sand ships in red and white cloth bearing a crescent moon and five stars in formation. Their practice, now embedded in Koh Sralao for the long-term in the form of an eco-tourism homestay, pokes at the porosity between these two distinct sovereignties, shaped by this treacherous and modest substance. Their continued work illumining this porosity was not only critical for my research, but of countless others who also benefited from their hospitable porosity. Nationalism in this case incubates a transnational awareness, and perhaps even solidarity of some kind; of both the insufficiency of the nation in plugging the aporias occasioned by the sand complex, but also the cruel reminder that the injustice of this process, at both ends, reinforces the governing model of each respective nation. While

undoubtedly these videos were picked up by the media and viewed internationally, the fact that this peripheral resource catastrophe became a subject of national controversy and contention, viewed by millions across Cambodia and around the world, is noteworthy. Exposing the porosity of the subjects formed and convened by the granular, in both its encompassing of resource and national soil, as matter and *mater* that Mother Nature Cambodia problematically linked and defended, provoked the violent reprisal of the state nearly as much as the direct and physical confrontations on the dredging ships. The granular, slipped by metalepsis from mangrove into international media, demonstrated that the rhetoric of nationalism, in Mother Nature Cambodia's case, belied a transnational ethic of collaboration, and formed in reaction to the surreptitious nationalism of the Singaporean state as it sent the sand complex to construct a frontier in Koh Kong. The mater of matter and natality of nationalism become bound in a problematic of exposure and immurement; how can you show that land elsewhere is borne of your land? Can the body of the nation be Mother Nature itself? Perhaps what is even more criminal than directly challenging the sand complex is to merely glimpse it's (un)formed matter at its most embryonic, at the point at which its difference is translated over the horizon to displace another, sitting in the hull, a strange and sere figure absconding to be figured, by inadmissible and unobservable metalepsis, into a political-economic narrative comprised of stark and indisputable *facts*.

V PROFESSOR SOON ADDRESSES THE SAND COMMITTEE

a geoliterary theory-fiction²²

‘What does Singapore think it is? A Lion City? A Merlion City or a *malign* City? Or does it think it is a Sea Town, Temasek of so long ago? This is what I have come to ask the Inaugural ASEAN meeting of the Sand Committee’ Professor Soon announced, gently bracing himself against the podium as a wave of mild incomprehension swept through the audience. The opening joke already botched. The assembled bureaucrats, geomorphologists, engineers, environmentalists, construction industry representatives, and mid-level dredging company executives were here to either listen to the distinguished and somewhat senile Professor Emeritus wax geomorphological upon the issues affecting transboundary construction aggregate mining in the region. Or like the many corporate executives begrudgingly sent to attend this inauspicious conference, had turned up simply because they did what was expected, and arrived on time, and attended the only session scheduled for the morning. They had wanted to sit with their tinkling cups of coffee and drift off in a caffeinated haze.

‘I was invited, of course, to talk to all of you about my long career as a coastal geographer and geomorphologist, getting my start in the frenzy of a newly independent Singapore, working with the Dutch to get our first reclamation plans off the ground, or should

²² (a manuscript recovered after the interruption of the Sand Committee’s inaugural address by one of the Distinguished Professor’s graduate students)

I say, into the ground, and then consulting with the various Ministries and Boards on marine engineering projects from time to time, and then finally my thoughts on the so-called transboundary aggregate crisis that affects all of the countries, industries, and disciplines represented here today. But gathered here before you, as you are gathered here before me, I refused to use this word, aggregate, because what we are all speaking of together is sand. We must be transparent about the crisis of which we are gathered to speak. The crisis of the rivers and the crisis of the coasts. Because the sand crisis is a water crisis.'

A knot in his throat. Professor Soon clears it with a cough and from his podium he can see the piers of the Tuas Megaport, fanned out, clutching the water. He skims his eye over the surface of the water for a moment, trying to latch onto the curl of a wave to see if he can contain for even a single moment, confine it to a point, somehow disaggregate the pleats of force, and out of nowhere, without returning to the pre-written speech on his tablet on the podium—

'And what country in Southeast Asia is more afraid, more hostile to water, than Singapore? Haven't we, in our short lifespan as a nation, shorter than my own, shown the utmost contempt for the universal symbol of life? I would kindly ask my audience to look outside'

A lull. One or two audience members turn their heads without looking, miming their acquiescence.

'These used to be open waters traversed by ships, cutters, container ships, pau kajang, junks, from all over the world. Now all those ships have been displaced by supertankers, virtual floating citadels of commodities. Or the Marina Bay, which many of you received a guided tour of yesterday. The mouth of the river used to be where it met the sea. Now it has been dammed up, cut off from the sea and cauterized into fresh water. A river gagged by court order. And what made this possible? Not Former Prime Minister Lee Kuan Yew standing near where we are forty years ago and saying that this Bay shall become a reservoir, but the millions and millions and millions of tonnes of sand that encircled that bay, muting the entire course of the river. I am here to talk to you about transboundary construction aggregate issues

in Southeast Asia, but after working with and causing even more of these problems throughout my life, I have discovered these problems, these so-called issues, are beyond the remit of any coastal or fluvial geomorphologist but are the province of the *geoliterary* itself.’

‘I thought, who was I to discuss these issues that I know nothing about – the construction industry, regional inequality, uneven development, the interweaving of financial and real estate markets, the insurance-industrial complex and anthropogenic sea-level rise? Geomorphology is low on the pecking order. The laughingstock of geology – we work on surface level problems while the Geologist dwells in deep time, like astrologers in reverse. But it is in the shallows of deep time where the *geoliterary* is produced. Geomorphology is not just found on the coast or riverbed, in the silt or soft clay or **sand of the coast that is white like a piece of cloth**. It is the study of how the earth changes. And so I have revised my speech accordingly.’

On the shores of the geoliterary

‘You see, it isn’t that there are transboundary issues regarding the construction aggregate market and problems of its extraction and regulation throughout Southeast Asia. It is that the sand itself is speaking to us through these transboundary issues, and it has selected Singapore as its representative, its primary medium, or shall we say its preferred interlocutor. As we will see, Singapore is not haunted by sand in some metaphorical sense, but literally *possessed* by it. In the *Sejarah Melayu*, it is not the misidentified Singha, the mistaken lion of our nation’s mythical history, that Sri Tri Buana notices first, but the **sand of the coast that is white like a piece of cloth**, and thus decides to found *Singapura* within what was then known as Temasek (literally Sea Town in old Javanese). Even from that mythical point in our prehistory, the sand was luring men to come here to found cities, against their better judgement, against the judgement of history. Even then the sand of the coast was a blank slate for the inscription of the *geoliterary*, such is its treachery, such is the vast conspiracy of sand that we all find ourselves planted firmly on. Sand is more and less than a geomorphological text. It is mediated by the flows of rivers and the pounding of coasts, wrenched from the face

of a mountain range by glaciation: but to become a text it needs hundreds and even thousands of years of these phenomena before we can even recognise it in its perplexing abundance. That is Geomorphology 101. There is not one Southeast Asia, but two: the archipelagic one, of land smattered across the fathomless ocean, abundances of coastal sand that we have supped on with abandon and without accurate records, for how can you keep an eye on a thousand islands, some uncharted, disappearing at high tide, their names tumbling into the abyss; and the Mekong's Southeast Asia, the countries slung around the eddies, tributaries and deltas of an impressive engine of the geoliterary, a discordant unity of cultures and nations that all draw their sand for their concrete cities, unknowingly imperilling their own dwellings, entombing themselves for the coming inundation. Southeast Asia's difficulties regarding transboundary construction aggregate management can be said to start with this outsized city-state, whose own problems regarding this very issue we can more or less pinpoint to a precise year if not a precise month in time: 2007.'

'That is the year that Indonesia stopped exporting sand to Singapore. Why it was this most inauspicious year, the 10th anniversary of the Asian Financial Crisis and the first Malaysian sand export ban to Singapore, and the onset of the Global Financial Crisis, is probably beyond the purview of this lecture today. 2007 was the year the sand market in Southeast Asia grew beyond the local into the truly regional and began when Singapore started importing sand from Cambodia. Business between these two countries has always been brief, almost circumstantial. Singapore simply needed a seller; Cambodia had no idea there existed a willing buyer for whatever muck that drifted through the rivers and estuaries of its most remote province. It had no idea that for this city-state, this procurement was a matter of survival. The blueprint Singapore had designed for itself until the end of 2030 was under threat; unless they could secure enough sand to see these plans through, it would have to make drastic corrections on the interior of the island to compensate: it would have to cannibalise its interior territory: it would have to consume itself. Without it, the plans for the Tuas Port Reclamation, its resplendent fingers reaching out to grasp the ultra-deep berths of supertankers

before us today, would have never been realised. The magisterial extent of Changi Terminal 5 would not have achieved its full breadth had this sand not been secured.

‘And without the Tuas Megaport, where would Singapore be? Shipping lanes would have broken off towards Pasir Gudang, business would have dripped away, little by little we would have lost our competitive edge, the synergy with the petrochemical industries would have been snuffed out. Without the continuing flow from other, more distant and legally nameless sources, the current reclamation works along the Southern and Eastern coasts to buffet sea level rise would be floundering. Singapore would lose its place in the world, we are told, in the First World, with the spectre of the Third World from whence it came snapping at its heels, and perhaps lose its physical place in the world as well, as the seas rise, so that it would become a formerly great sunken kingdom, a historical repetition of Angkor Wat, set by cascading ecological and geophysical events into cataclysmic fall: the fused triptych of the cursed Marina Bay Sands would stand like a ruined temple, vines crawling up and perforating the façade, the glass of the windows long having cracked. That is what we are told. However, the series of minor natural disasters around Southeast Asia that has fuelled the city-state’s sand market, invites the somewhat discomfiting idea that Singapore’s resounding geomorphological success as a city-state comes as a direct, but not necessarily correlating consequence of the multitudes of crises along the Mekong, the Irrawaddy, the Riau Archipelago, the mangroves of Koh Kong and the Sundarbans.’

One or two audience members shake their heads – another looks at his watch. The Professor stares out for a moment onto the port scene outside: a supertanker passes, and behind it is another, and then another behind that one.

‘We have been told that all this an outcome of necessity, to maintain our place on the global stage. What a convenient lie, what a tidy little fiction. I was already a man when this little red dot became a sovereign city-state. Twice Singapore was manifested against its own will and against the better judgement of history – William Farquhar begged Stamford Raffles to pick Penang as the regional entrepot, and consign Singapore to the Dutch. Lee Kuan Yew, Founding Father, Minister Mentor, the First Singaporean Prime Minister, tried to beguile the

Malays into letting Singapore into Malaysia – and yet, it was made independent against its own will, the will of history. 1822 was the year of the first reclamation project undertaken by Raffles; 1962 the year Lee Kuan Yew began the East Coast Reclamation project. This is the stuff of the geoliterary – sand. But what is sand? The sediment of time²³. This is the question I want to put to you today: why is all the sand in Asia working its way towards Singapore? What is it about this little red dot pointed like a sniper's laser sight at the head of the world? Allow me to ungravel, I mean, unravel this insight. Sand is geoliterary. It is the expenditure of the earth, its sublime climactic and clastic accounting, each grain geology's actuarial unit of entropy. Weather and water grind away at the face of the earth and sand becomes the standard unit of measurement to account for this expenditure. It is the meeting ground of the geological, the aethereal, the aquatic, the atmospheric: air, wind, water, all factored into contouring and calving grains into existence. Of course, the quantities we are speaking of are quite unfathomable. And in fact the sand that has worked its way towards this city-state, in unfathomable quantities has quite particular and specific qualities. A certain range of sizes, for instance, between 0.08 and 1.6 millimetres, for fine concreting sand, and somewhat larger and coarser for reclamation sand. So we don't simply have sand working its way towards a city-state to be incorporated into it, but a mechanism of unnatural selection at work, that is to say, an artificial geomorphological intelligence, which is inchoate in the granular dynamics of sand, through convection, or so-called granular self-segregation: ordering itself by size, by provenance. A positively geomorphological eugenics that material scientists cannot fundamentally explain. And the most conspicuous driver of Southeast Asian aggregate through this meatgrinder of intelligent selection has been Singapore's land reclamation project, or what I prefer to term its incubation of surplus territory, which is the development of a prosthetic spatiality, or a systematic spatial redundancy, if you are more of a systems thinker.'

²³ Reinhart Koselleck, Stefan-Ludwig Hoffmann, and Sean Franzel, *Sediments of Time: On Possible Histories* (Stanford, California: Stanford University Press, 2018).

Offstage, the Professor can hear the crackle of walkie-talkies; he has veered considerably off-course, and can guess what will happen to him when he finishes, but nonetheless, he must continue.

‘Our greatest planners and our most farsighted pioneers could never tell us why we needed all this additional space, these $n+1$ redundancies of territory that colonised our coasts and islands with future uses, ideal optimizations of citizen and standards of living, so that we can barely have enough reason to ask for what this is all for, who is it for, and to what end, let alone where all the sand that has financed this spatial redundancy has come from. At the same time, this inner development of spatial redundancy has been built not only on sand, which is already too obvious: it has resulted in a financialization of geomorphology. Sediment budgets in the river systems of Johor, Koh Kong, the Irrawaddy, the Riau archipelago, and many more places than we can legally name, legally nameless places have had their somewhat unmolested dynamics of sediment entrainment, erosion, and deposition, profit and loss if you will, unwittingly financialised by the fathomless market of Singapore’s granular territory, the world’s number one bleeding edge importer of sand, its most voracious consumer. And as I like to say to my great grandchildren when I take them to our local hawker centre on Sunday, you are what you eat. How does one financialize geomorphology, one might ask?’

The geomorphology of ‘as-if’

‘A handful of sand shows you nothing – not even fear, nor the passing of a very insignificant amount of time. But in quantities orders of magnitude greater, something strange happens – it gathers of its own volition, and seems to become a force multiplier. Quantity becomes quality. Each grain that ends up filling a volume of foreshore or churned with water and cement flows and consolidates so well together it is as if each grain is bespoke, handcrafted by artisans. We know this because artificial aggregate is a subpar product: how much crushed granite has Singapore imported from Indonesia over the past decade since the good reliable grain has become more arduous to find? Entropy is a finer craftsman than Isambard Kingdom Brunel, or James Watt, and if I may say so myself, a better statesman than

Lee Kuan Yew! Put together some of the vast sums of money Singapore's land reclamation has cost, in the hundreds of billions. Years ago, the previous prime minister committed to spending \$1 billion dollars a year for a hundred years. Do you know what my friend who runs a hedge fund calls that? A futures market. A claim made on a commodity in the future with a specific price in mind. For this price per year to bear out, the price of sand that will resource this land must be fixed as keenly and as exactly as the coasts which will be designed to push the sea back. Of course, the government has assured everyone in this room that sand will not need to be imported. That a mixture of empoldering, recycled construction materials and incinerated ash can make up for the shortfall of billions of tonnes of sand. Right now we are looking out at the mighty combined might of sixty-four million twenty-tonne equivalent units that is Tuas Megaport. Ultra-wide berths for supertankers, caissons the size of an HDB flat, and nearly one billion tonnes of sand. What does that buy Singapore? Twenty years, 2050, maximum. The political economy of Singapore is a granular particle accelerator, a political-economic Large Hadron Collider, Asian sands whipped at the speed of Gross Domestic Product to produce endless optimisations and innovations. Limited land, unlimited space became the adage of the Singapore Land Authority. How? Space can only become truly plastic once reduced to its constituent pixels, and assembled grain by grain. Once we consider what preceded Singapore, Temasek, we can then really investigate its relationship to the Asian dredging market. Temasek, sea town. Singapore, Lion City, that is a conceit, a convenient fiction, the hallucination of some Srivijayan prince afflicted with astigmatism or perhaps dehydrated after a long day's sailing. But Temasek, the Sea Town, is an underlying fact too awful to contemplate, too terrifying to grasp in its singularity. Singapore is a product of maritime trade, the grisly geoliterary engine of global capitalism. And in the carnage of the post-war reconstruction of the world, this little red dot was able to mould its own geomorphology, and ingest other geomorphologies, according to the emerging trends of containerisation and supply chain fragmentation and outsourced manufacturing. The first act of reclamation didn't push the sea away – far from it, it invited the sea *into* our state. We call it a city-state, but it is really a sea state of the Venetian type, a Sea Town. Temasek. The truth

older than the counterfeited history of Singapore, its history nothing more than the commercial confection of a shabby tourism board who created the Merlion as its avatar. What is the point of this elaborate ruse, this paper- or cloth-thin *fiction*?

‘The difference between fiction and hypothesis is that the latter demands verification, with the capacity to be wiped out by reality, whereas for fiction, its first criterion is its *expedience*, and rather than being subsumed by reality, fictions in fact ‘infect it... with elements which do not belong to it but yet serve to render it comprehensible’²⁴. Hypotheses try to avoid logical contradictions; fictions *call logical contradictions into existence*. As opposed to erroneous hypotheses, fictions persist because they are expedient to formal practical assessments of a given state of affairs. Fiction is instrumental to knowledge. Think of the abundance of material facts that would contradict Singapore’s success as a nation: lack of space, population, natural resources. And see how the calling forth of the contradiction manifested a pragmatic path towards resolving those contradictions. All of those gaping lacks somehow compensated for with millions of tonnes of sand. That is because all hypotheses, all knowledge, do not tell us about reality as such but reality as we can perceive it. While some hypotheses are so logically and concretely cohesive they are beyond question, when we countenance how theories of matter and gravitation in physics actually accord to mechanics, they at base rely on *fictions* of substance that serve as a shell or scaffolding for the interplay of forces that are the true subject of those theories. So matter and gravitation are not fictions as such, but the necessity to package them and brand them arises from our so-called quotidian experience of them. At the heart of the Singaporean political ideology of pragmatism is this fiction, this fundamental *as if*, that gives the city-state such a cutting edge – but one that slices both ways! Why has this logical unfolding of governance in Singapore been *as if* it could see into the future and shape itself perfectly to that future? According to Haila, it is because:

²⁴ Hans Vaihinger, *The Philosophy of 'as If'* (Mansfield Center, CT: Martino Fine Books, 2009), p.81

Unlike in countries where elections change political programmes, Singapore has built itself step by step, as if there has been a logical plan. This makes Singapore function almost as a laboratory for a social scientist.²⁵

The secret of the social scientific laboratory of Singapore is our long and petty history of political repression. But the real success of Singapore Inc. has been to see Singapore as a model, as a simulation that is always already existing *as if* all the variables were on the table. I have a nephew-in-law, a real entrepreneur, who would stay up all night playing Sim City – a game where you build a city from the ground up. And I thought, *wah lao*, that was almost what it was like being in those early HDB meetings for the East Coast reclamation – we were looking over a scale model of the East Coast, moving blocks of flats around, seeing if we could fit a beautifully landscaped park along the coast. And though I am very old by now, I do know that computer graphics rely on thousands of pixels to bring the game-world to life. A single grain of sand, then, is simply a pixel, or rather a voxel, which is a pixel in three dimensions, or perhaps a *tixel*, a textural pixel, which we have used to partially recompose the overall model again and again. I am working with the boutique technology company Simulation Laboratories on a virtual reality experience tailored to project the recomposition of the city-state's prosthetic space. Because reclaiming land isn't simply a question of accumulating spatial redundancy, but opening up the land of the interior to be redeveloped as well. So we can't even account for the value of the sand, the billions of voxels Singapore Inc. has consumed in the reclamation of land, because every square foot of reclaimed land has also opened up a twin on the already existing landmass, freeing up another piece of the puzzle of the nation's total plot ratio, allowing land use to be optimized, idealized, fictionalized. **'The poet is master of history; and he can move events as closely together as he desires'**²⁶. Every square kilometre of land reclaimed opens another kilometre of land elsewhere on the island, as if a planner suddenly flipped a switch and it fell away into a bottomless pit. And where is this pit going? The future! But the future is coming through the sand being shipped

²⁵ Anne Haila, *Urban Land Rent: Singapore as a Property State* (Southern Gate, Chichester, West Sussex, UK: Wiley-Blackwell, 2015), pp.24

²⁶ Gotthold Ephraim Lessing, *Briefe, die Neueste Literatur betreffend*, letter 63 (October 18, 1759), in id., *Werke*, vol. 5: *Literaturkritik, Poetik und Philologie* (Munich: Hanser, 1973), 207, cited in Koselleck, 2018, pp.13

from the carnage of dredging sites all over Asia. The development opportunities reclamation affords present as a series of pits, or holes, opening on the surface of the island, like exfoliating pores. But this is the myopic approach of the Singapore story: there are gashes and wounds across the rivers and coasts of Asia! The foundation of political economy was the simple fiction of the isolated man, Robinson Crusoe, enacting the revolution of Protestant industry on a desert island with his own *karang guni* Friday, a rag and bone man he could fleece to his heart's content. But we must formulate an approach that treats these transboundary issues as if they are truly connected, and not insulated by non-disclosure agreements and commercial competition clauses. An approach to this problem 'as if' these issues were actually connected! Because if Singapore is a system managed by the best planners, perhaps on this planet, then these planners are also plotting the penetrating tendrils of geomorphological externalities and climactic uncertainties into some of the poorest and most vulnerable communities across Asia, its last remaining frontiers that have been, until now, resistant to the kleptocratic agribusiness- and mining-driven landgrabs that have carved up the interiors of these nations. Which is why I have provided a draft on the first Building and Construction Transboundary Authority Act on the regulation of construction materials. This is but a first step towards what I have in mind, and will allow you a moment to review before progressing to how Singapore forgets itself with every piece of land it reclaims.'

Bewildered bureaucrats turned page after page in front of them, the words sliding off their eyes, abrading them. Professor Soon attempted to clear his throat, but all that could be heard was the crunch of compaction.

Reclamation as technology of forgetting

'What is the terrible source of this virtuality? For the anthropologist Leroi-Gourhan, the developmental of human technical ability began in earnest with the exteriorization of the organs; from the simple replication of the mechanical ability of the hands and feet, this soon metastasized into the unlimited extension of motive power through the steam engine. But long before this, there was a different kind of exteriorization. While apes and the like can mimic elements of mechanical exteriorization, mnemonic exteriorization preceded the most

significant acts of mechanical exteriorization – language served as a vehicle for the exteriorization of memory²⁷. So then this technical exteriorization of organs can be encompassed by a general exteriorization of memory – its precondition and its predicate in advanced industrial society. But when it comes to the technology of reclamation, what it memorises is perhaps not as compelling as what it forgets. All reclaimed land in Singapore is identical – it is a piece of foreshore formally enclosed by the Singapore Land Authority through written Proclamation, and then subsequently integrated into the land system, sold via auction to one of the Boards and then assigned this or that use at so and so plot ratio. What preceded is no longer in the past but totally inaccessible, wiped off the face of the earth. Reclamation is an *exteriorization of forgetting*. It is a new form of technical development, the innovative result of Singapore’s principal fiction: the fiction of the tabula rasa. The blank slate. **The bright sand of the coast so white it resembles a piece of cloth.** This is what enables development to take place, but what is actually happening? The original geomorphology becomes replaced, supplanted, infested, no, colonized by perfectly smooth, flat, and geotechnically flawless ground. This new tabula rasa is an amnesiac; it is pliable, manipulable, plastic, but only if it is part of a master plan: only if it is already simulated, forecasted, and summoned into existence. It is the ground upon which the future hatches upon, it is the runway for it to land: it is the beachhead that it uses to invade the present. Koselleck theorised the layering of historical time as sedimentation; as opposed to a linear procession of events, historical time consisted of different kinds of sediments that formed unevenly, that folded, at varying accelerations, into distinct and historically categorizable strata²⁸. Both fact and fiction, according to the discipline of history, carry with them *pre-linguistic sediments* that, by virtue of history’s codification and narration, form it and shape it. *Res factae* and *res fictae* alike become stratified by history; the former according to discipline of history and its thresholds of evidence; the latter according to strictures of literary form, or other demands of *poiesis*: the bringing forth of that which did not exist before. Admitting the fiction we require to ensconce ourselves in such material ‘facts’ is discomfiting: perhaps only as much as

²⁷ Andre Leroi-Gourhan, *Gesture and Speech* (Cambridge, Mass: MIT Press, 1993).

²⁸ Koselleck, 2018

building a nation with sand. Indeed, reclamation is simply the preparation of ground for the future, and the future's consumption of the past: rendering it incomprehensible to what led up to it. '

Lights are being flashed on and off; he has run over his time. He notices a boat pass outside: it is carrying a single dune, and it stretches to fill the floor-to-ceiling windows at the end of the conference hall.

'What is reclamation, and what is being reclaimed? This land never existed before; you would have to go back hundreds of millions of years to when all the continents were fused into Pangea to be standing where you are today with your feet dry, on solid ground. Hundreds of millions of years or hundreds of millions of tonnes of sand, whichever is easier for you to hold in your mind: this ground is the scale which proves those two qualitatively different quantities equivalent, from a certain point of view, in a certain manner of speaking, if one were some sort geomorphological actuary. How are these reclamation works financed? By undeclared withdrawals from the coffers of the Central Provident Fund that every Singaporean citizen and permanent resident pays into every month. So in a very real way, every resident is an orang pasir, a person of sand, invested in the very expansion of ground this nation is premised upon.'

Gasps flicker through the audience; some senior officials at statutory boards are on their mobile phones, calling their offices to release official responses denouncing this obvious heresy. Some begin to wonder why they invited the distinguished and senile Professor at all. And the Professor, the Professor's throat is parched. He reaches for a glass beneath the podium, but the tips of his fingers seem to crumble around it. Panicked, he looks at his tablet, touches it with his hands, but the remnants of fingers scatter across the screen, the static of silica on silica, and his mouth keeps moving as if playing a recording.

'And what is reclamation for the average citizen? For someone my age, we still remember a time before Singapore was an independent city-state when we could go fishing more or less wherever we wanted, or we could cross the Straits and visit family in Malaysia or Indonesia; gradually, what reclamation meant was the boarding up of the coasts behind tall fences, the sight of the sea replaced with the sound of machinery, and within ten years there

would be flats in their stead. No loss to commemorate, no remnant to mourn, but the inconceivable gain of development, a gift.'

'While most other island nations around the world are trying to deal with the threat of erosion, the entropic wearing away of the land by the sea, Singapore has experienced the opposite. Sand, funnelled by the market's optimisation of resources and prices, has wormed its way towards Singapore for fifty years, working its way into the very soil of the nation. In systems studies, we call this negative entropy, or negentropy for short: the temporary and local reversal of disorder within a larger system. However, to facilitate this reversal, the entropy, the disorder that would otherwise be built up, would need to be exported. This is the situation with Singapore's so-called 'import' of sand: while Singapore has been importing sand, they have been exporting entropy to the sediment budgets of countless coasts and river systems. The global market's emerging financialization of geomorphology has expressed itself through the anomaly of the geoliterary: Temasek. Its acceleration of geomorphological time has resulted in the production of a model of governance that many look to as the future; the interests of the state and multinational capital in perfect harmony, acting pragmatically, in the interest of the greater accumulation. However, Temasek needs to conceal itself as a more tangible model: the political-economic fiction of Singapore. The people of Singapore are citizens, while the people of Temasek are Orang Pasir, people who have to set aside their hard-earned money into a Central Provident Fund that is then used to purchase billions of tonnes of sand that then forms a part of Singapore Inc. It is here that I have to suggest a simple policy proposal for the monitoring and regulation of transboundary aggregates. If we are serious about addressing this issue, we have to make the value of sand commensurate with Singapore's financialization of geomorphology. I propose a Granular Bond to be issued per tonne of sand purchased, and a convertible equivalent per square of leasable plot ratio, issued and implemented onto a blockchain. Of course, this will only manifest within however many decades it takes for land to be reclaimed. Singapore must begin paying rent for the land that it purchased. Because what is rent but 'that portion of the produce of the earth which is paid to the landlord for the use of

the original and indestructible powers of the soil'²⁹. And sand, sand is indestructible because it is already obliterated. And for concrete, I propose a bond that similarly factors into the plot ratio of office space, but mitigated owing to the variety of factors that play into the real estate market. It would also stimulate the recycling of concrete, to avoid paying ground rent to the frontier. A Transboundary Development Council then provides the investment vehicle through which these bonds can be translated into tangible development for these hinterland spaces – of course, I will suggest the model of Temasek Holdings, our most successful sovereign wealth fund. These Granular Bonds could be implemented on a blockchain platform which is geotagged, so we can have a real-time model of the geomorphological transactions being conducted, with each one bearing a unique hash to prevent fraud and piracy. These will then provide the necessary computing power to run the virtual reality I am developing with Simulation Laboratories in perpetuity, so that we may project the city-state into the far future. So here is your solution, let us make coasts and river systems all over Asia part of Temasek Inc.!

Before he collapses on the podium, young men come to take the Professor by the shoulders, to help him offstage, but as they grab his sleeves there is no longer anything inside it: there is a flurry of particles, the lights go out, and coughing spreads from the front row of the audience; did he slide into their breath, or sink into the ground itself?

²⁹ David Ricardo, *On the Principles of Political Economy, and Taxation* (Cambridge: Cambridge University Press, 2015)

6.Reclamation

‘Henceforth must it be mentioned of an exchange between Tuan Raffles and Tuan Farquhar who had sat down in mutual accord regarding plans to expand the Singapore settlement. On this matter, Tuan Farquhar was of the mind that Kampung Gelam should be made into a merchants’ quarter, that is, a place where people would trade and a market and so on. However, Tuan Raffles’ thoughts were that this near side should be made into the merchants’ quarter instead. Whereupon Tuan Farquhar responded with: “Much too difficult over there, because the land is too muddy and the water isn’t even good.

Moreover, it’ll cost too much to reclaim the land. And furthermore, where can we get enough earth to embank it?” To which Tuan Raffles answered: “If Kampung Gelam was to become the trading site, then this side would be neglected for a hundred years; nothing will ever improve.” Hence, at that moment, the two of them brimmed with ideas. One said this, the other said that, each trying to find a solution. Thus it took three days of them mulling over this matter when it entered into Tuan Raffles’ thoughts that a hill near Tanjung Singapura could be broken up. From which the earth could be used to be made into an embankment for the near side of the river.

. . . Consequently, the next day, men under the orders of both tuans called for Chinese, Malay and Indian coolies. Around two to three hundred coolies; each at one rupee per day. They were ordered to dig up and carry the earth . . . Within the day, Tuan Raffles would come around twice to issue orders to the men working. And even in this matter, there were several persons to supervise the men working. Furthermore, Tuan Farquhar would ride out on his horse every morning, without fail, to divvy up the land at outlying areas into parcels. Some were auctioned off, some were given away so long as the land could be cleared quickly, for it was all forested . . . And so, it took approximately three to four months of men raking through the hill until it was flattened. Hence, all that was sodden as well as rivulets and ditches and low-lying areas were levelled, aside from stones as huge as elephants that remained. . . ’

(Abdul Kadir, 1955: 164-7)

The account above, from *The Hikayat Abdullah*, an autobiography of Malayan *munshi* Abdul Kadir (rendered variously as secretary, teacher, and translator), offers a vivid account of the colonisation of Singapore by the East India Company represented by

Stamford Raffles and William Farquhar, as well as the wider regional struggles between colonial powers, including the originary act of reclamation, the construction of South Boat Quay in 1822. Land reclamation, and the economic, legal, geographic and colonial relations that underpin it preceded the independence of Singapore by one hundred and forty-three years. While outside of the remit of this thesis, it is important to identify the elements flicked into motion by this construction of prosthetic territory, continually reiterated with every subsequent reclamation project, eventually coalescing into the sand complex: the naïve commercial impetus that presents the false dilemma between land that exists and land-not-quite-yet-existing; migrant workers paid pittance to execute earthworks of wonder; the flattening of topography without consultation or even hesitation, under the auspices of an inarguable commercial imperative; and the ingestion of these earthworks into the planning system. As exemplified in Beverly Fok's remarkable excavation of the legal histories and labour disputes of land reclamation in Singapore (Fok, 2020), the contemporary cultivation of territory in Singapore retains more than passing resemblances to its colonial past. The very legal structures that made land reclamation possible in the colonial era were retained in their entirety, as with most other laws and political structures. As Thum advises, those who study independent Singapore must look before the formal moment of independence to understand the 'fundamental continuities between the late colonial stage and the independent state' that characterise the city-state's ruling class and the unbroken governance of the People's Action Party, with independence functioning as 'the further stage of colonialism' (Thum, 2019: 50). In Abdul Kadir's account, we can see clearly that reclamation began as an act of speculation that *reclaimed* the productivity of what was before languishing as a swamp. Even before it was folded into the PAP's ideology of pragmatism, reclamation reified territory as a productive and regulated *speculum* (mirror) of the interior that can be extended as far as shipping lanes, maritime boundaries, as well as dirt cheap labour and fill material will permit. This speculative material practice has become an organising principle of the long-term spatial planning and economic governance of the city-state: the projection of sovereignty through land reclamation depends on an act of speculation being laboriously realised over decades. The cheap migrant labour Singapore relies on to achieve this projection is a constituent part of the city-state's political economy, from construction to social reproduction. As this thesis will explore, the workers often find themselves lodged

within sight of the kilometre-long stockpiled dunes of reclamation and construction sand (Figures 23 & 24), and governed by similar labyrinths of private procurers, construction companies, dormitory owners, contracting and subcontracting.

Sixteen thousand grains in a kilogram, sixteen million grains in a tonne. Eighty million tonnes, from Cambodia to Singapore. For a time, opening *Google Earth* and flicking through archived satellite images of both Singapore and Cambodia, in the magical decade where they were tethered by the transit of unimaginable quantities of sand, became a meditative practice, even if the map, and the assembled communications arrays of satellites, GPS and server farms that brought it under the slow absent-minded caress of my mouse cursor, couldn't tell me how it happened, even if I could sort-of almost-see in-between what happened.

This kind of relentless verticality of the god's-eye-view shot, for Toscano and Kinkle, diagrams the 'social metaphysics and political aesthetic' (Toscano and Kinkle 2016: 12) of the repressive viscosity of contemporary capitalism, with perverse geo-strategic portraits of the Earth never having been more ubiquitous or available. For Steyerl, these visual verticalities induce a sense of 'imperceptible free fall' (Steyerl, 2012: 26) that sequentially follows the predominance of linear perspective, fulfilling a similar ideological role in placing subjects in social formations. But this also grants similar opportunities for dispensing with 'the idea we need a ground in the first place' (ibid: 27). The idea we need a ground in the first place is a question which echoes throughout the entire thesis. What ground, for whom, and for which figures? The problem of reclamation is that it gives primacy to the ground that is consolidated and the ground that has crumbled away recedes from view. Cognitive mapping, as a method, invites this problem, in as much as the reclamation traces the edge of the totality as it alternately consolidates and crumbles ground.

Tumbling into the abyss, what do we find at the bottom of it? Sand. The bottom of the hourglass. Is that so? It is all locked in now, irreversible, invaluable sovereign territory constructed from ordinarily worthless dirt. Converted from hinterland to city-state. Only in its extraction did this muck and mess of nothing acquire its metrical utility as sand. It began falling through the hourglass as soon it was sucked through the nib of a cutter suction dredger. Even when the sand is locked away, compacted, and

consolidated into territory, or sitting in a dune behind barbed wire, the granular is still in motion, flowing through the new relations it binds: of territory, of governance, and labour. And like a parenthesis embracing all three terms: speculation.

At least 80,000,000 tonnes of sand: in order to encompass this unaccountable bulk, events years before and after factor into this movement. Future and past form a pincer movement through which the sand, that is now without a doubt sand (not sediment, not muck, not territory, not even mess, but our blessed commodity that is gathered here in our thoughts like something standing-in for something else before it was anything else). Both ends of the hourglass converge upon the sand as it slithers through its neck; thanks to its integration into the logistical circuits of the global city, it is now always in motion, suffering a horizontal vertigo. Depending on where you are, sometimes the ground literally twitches with the emergence of new territory, as hammers and prefabricated vertical drains pound the ground, so that it may consolidate more quickly.

Eighty million tonnes is the fact, give or take a few grains, as undeniable and irretrievable as the ground it was mapped and moulded into – what are you going to do, dig it out? The map became the territory, and is still even at this moment ceaselessly becoming territory. When the territory unfurls according to the map, what exactly is being reclaimed? Singapore's Global City destiny retrieved from the future, from 2100, in fits and starts, to become the past the future is planned from.

But smuggled inside this fact's freight are / were / will be stowaways, hidden within its pores and voids, up until the moment it was / is / will be consummated as territory. The state's projection of sovereignty not only leveraged by volume, because sand is a word spoken so softly in the city-state as to become on the lips of bureaucrats and contractors a prayer or curse, but weight, mass.

Mass so massive and amassed that it transforms the territory of city-state (figure 22), so deeply, irrevocably and infrastructurally urbanized that landscape has slid apart at its limits to reveal a sub- and supra-cutaneous succession of cityscapes coalescing into a city-state of matter, landscape that no longer denotes anything but city. Each cityscape bonsai-pruned and future-proofed, econometrically manicured and pureed

into area, plot ratio, and slathered over a horizon of 6.9 million people by 2030 (Population White Paper, 2013). The Population White Paper, when it was revealed in 2013, caused consternation: firstly for the eugenic vein this vision taps in the People's Action Party's history, the preoccupation of Lee Kuan Yew, the founding father of the country; secondly in the more ominous number it was followed by: 10 million by 2090. Desire and space managed like they are two sides of the same coin, and practically cast as one. Following Oswin's analysis of the state's governance through its technologies of heteronormativity (Oswin, 2019), sand is the purchase through which its spatial strategy achieves suitably eugenic regimentation, a geomorphological surplus as necessary a condition of its prophetic planning as its illiberal authoritarian iteration of democracy: power to the people, but *what people?* Certainly not those with the least rights or legal recourse in the city-state's temporary accommodation, not those migrant workers who find themselves often living within sight of the vast dunes that comprise the city-state's strategic stockpiles of territory (Figure 23), both legal aliens who are only recognised as the mute and mutable rudiments of the city-state's political economy. It is this envelopment of alien sand and migrant labour, the foundation of Singapore as a logistical state and global city node which we shall probe in the following chapter.



Figure 23 Sand stockpile at Seletar (Author's own, 2019)



Figure 24 Sand stockpiled at Seletar with overgrowth (Author's own, 2019)

The genealogy of state sovereignty and its manifestation through modern practices of territory, as Elden reconstructed through Foucault, is important, yet ill-fitting for Singapore (Foucault, 2007; Elden, 2010, 2013). As Chua Beng Huat has reiterated, the illiberal nature of the city-state's democracy needs to be accounted for if its power and the viability of its national project are to be analysed adequately (Chua, 1997a; 1997b; 2017). Legitimacy is sought by the state through a careful calibration of communitarian policies, overt and covert forms of political repression, and the outsourcing of poorly paid and dangerous labour. But in the geographic practice of the sand complex, the abstractions of the Singaporean state's sovereignty scrawl themselves out in almost-legible spatial form. Through its plasticity of territory, the Singaporean state attempts to anticipate what trends to optimise land use for. But the management of territory, as a modern practice, is bound up with the eugenic asymptote of population. What kind of population, and for what purposes? Which population, with what kind of voting rights, should have what kind of working conditions? Constructed territory, as well as the primary paradigm of urban development in modern Singapore (Topalovic, 2014), has been the way the Singaporean state has moulded its past and future, rendered them as mutable and pliable as sand itself.

The story of Raffles' founding of Singapore is a favourite of the modern Singaporean State, a date fondly recalled last year in the Bicentennial of the founding of Singapore as a plucky little entrepot, when Singapore had a history that also predated Raffles, as local historians and artists remind us (Sa'at, 2019). One tied more intimately to the sea, the Straits, the Malay archipelago. Singapore used to be Temasek: Sea town. Its main island used to be Pulau Ujong: End Island. In the process of reclamation, islands have been renamed, erased, and grafted together. Coasts displaced and extended, barred from public view. And countless other places and their names scrawled out before they reached the history books: the erasure of reclamation is always uncannily doubled. The continuity with colonial governance is more than simply sentimental, with its legal framework cut and pasted from the British administration, and with the British colonial administrators playing a key part in Operation Cold Store in 1963, where over 200 members of opposing political parties were detained without trial,

some for over two decades, consolidating the People's Action Parties power and setting the stage for the immense transformations that saw the city-state on its miraculous developmental trajectory, and cementing the legacy of Lee Kuan Yew as a legendary statesman (Thum, 2013).

The sand through which Singapore has fulfilled its Global City desires became the condition of its ground: a '*terra infirma*', as Singaporean poet Boey Kim Cheng told me, that it has to routinely affirm, never becoming whole. The following chapters tackle how the sand of Koh Kong, as a para-site of socioecological difference, in turn parasites the city-state's spatial governance. Socioecological difference is translated into a host of symptoms that we term the sand complex, each one vying for temporary suspension of the ailment of endless growth, for actual closure is no longer possible once governance has been seduced by the spectre of *tabula rasa*. No longer a mere historical ruse of colonialism but the secret to its speculative model of Global City, the compulsion to produce a blank slate when confronted with any kind of uncertainty is now baked into its strategy to combat sea level rise until 2100. But the *tabula rasa* is a fiction haunted by the erasure its production has entailed, and returns and returns with each new iteration.

Perimeter Bund 6: Entrainment

Consisting of a series of recorded therapy sessions conducted by a counsellor hired by the Tuas Industrial and Marine Estate (a fictional authority presiding over the Tuas Megaport and associated industries), this geofiction is composed of vignettes which broach the varied granular geographies of reclamation, and the speculative technologies of expansion that promise to wean the city-state off sand for good. The clients of this unlikely mental health service are the engineers, dredging industry types, and security services involved with the maintenance of the industries, reclamations and other activities happening in Tuas. The separate companies involved with these activities have reported problematic lulls in productivity, workplace related accidents, and employees falling prey to a variety of intrapsychic disturbances. The questions and interruptions of the therapist are completely elided, surfacing instead as ellipses, so that their presence can only be inferred by the responses that appear through these short monologues. The impulse behind this is to register the friction of social scientific

methods, interviews and ethnography. Science implies an excision of the subject, following Althusser (Althusser, 2012), which echoes Freud's comments about creative writing, whereby the writing achieves universal literary status only if it conceals the wish-fulfilment of the author (yet nonetheless it's still there)(Freud, 1908). Here the excision of the subject is also the eruption of granular 'text' in the form of ellipsis.

The subject matter of these vignettes are themselves derived from interviews with the professionals of the sand complex: engineers, dredging company staff, civil servants and academics. The often-dry technicalities of the interviews (though significant exceptions are marked in the footnotes) are repurposed to express the unity of the alienation these kinds of practices of territory express (and are premised on the literal alienation of sand). All of these methods of producing territory, with or without sand, are redolent of the profound anxieties and fears Freud associates with the Uncanny through a reading of Hoffman's short story 'The Sand-Man'; the unfamiliar infiltrating that which is familiar, the *Heimlich* found to be, beneath the surface, unrecognisable (Freud, 2003). This geofiction poses the possibility that Tuas is a haunted place, but one that is not haunted by ghosts of another time, but by the sand of another territory, Koh Kong, that has set into motion an entire apparatus of earthly prostheses that undermine the solidity of individual experience and professional competence. Ghost stories are a popular narrative form in Singapore, with the regional legend of the *Pontianak*, a vengeful ghost of a murdered woman, figuring prominently through a series of films; Teo's novel *Ponti* brilliantly captures the centrality of this ghost story in modern Singapore (Teo, 2018), and so this geofiction registers a different kind of 'ghost' at work: that of endless geographic growth without determinate end, and the 'outside' place it continues to haunt.

This fiction sits between a chapter outlining the interlocking of migrant labour with the sand market, as migrant labour camps are often located right next to sand stockpiles, and both constituents of political economy are procured through similarly shady supply chains, and a chapter on the strategies for territory expansion that Singapore has tried to develop that lessen the dependence on imported sand.

Perimeter Bund 7: Tabula rasa singapura

The experience of reclaimed land in Singapore is quite unreal, almost virtual: a piece of coast is gated off, behind high fences, for years and years, until it is revealed totally finished, complete, as if a brand-new land had magically surfaced in one fell swoop. I wanted to register this uncanny virtuality with which space is administered, 'as if' it could be generated by simulation alone. The genesis of this geofiction stems from a conversation I had with the director of *A Land Imagined*, a detective story in which a migrant worker goes missing on reclaimed land in Singapore. Videogames feature prominently throughout the film, as both worker and detective suffer from insomnia, and spend sleepless hours in a twenty-four-hour internet café. Land is both dreamed and simulated into existence through the anticipatory five-year plans issued by the Urban Redevelopment Authority; but what happens when the substrate of geographic expansion is the 'source' of this dream: who is then doing the dreaming? Which is why this story takes the shape of a simulation experienced by a supposed future Prime Minister of Singapore, celebrating the anniversary its founding. The graphics of the virtual reality are composed of countless 'tixels' which, are the constituent particles of the simulation, with their collective 'granularities' experienced as prosthetic senses. The narrative begins with a sleight of hand and ends with a sleight of land: the protagonist is anticipating a simulation of the founding of Singapore in 1819 by Sir Stamford Raffles and the British East India Company and is sorely disappointed.

As Sa'at, Rahim, and Thum have noted, Singapore is peculiar as a postcolonial state in its veneration of its colonial history, with multiple statues commemorating the founder who, by all accounts, only lived in Singapore for a handful of years (Turnbull, 2009; Rahim, 2010; Thum, 2019; Sa'at, Joraimi and Min, 2021). The sleight of land derives from the real Prime Minister's declaration in 2019 that the government will dedicate \$1 billion dollars a year until 2100 to combat sea level rise, mostly through land reclamation, and the story then touches upon these future barrier islands: how does this act of speculation, backed by the public utterance of the Prime Minister, reframe the murky history of land reclamation and sand extraction up until this point? There is an additional irony that Singapore itself used to be surrounded by mangroves before it developed its coast through land reclamation, and the best and cheapest mitigator of sea level rise, as multiple policy experts and ecologists in Singapore attest to, are mangroves. Ultimately, its brand of modernity is predatory upon a shred of its own

history – mangroves, and the maritime sociality and ecological interdependence of Singapore and the Malay archipelago. So instead of being haunted by the ghosts of its past, Singapore haunts its own past, seeking it out to consume socioecologies reminiscent of its own. This story sits between a chapter on the recent artistic interventions that have been granted unparalleled access to cutting edges of expansion in the city-state, and our conclusion.

7. Falling Through the Hourglass: tracing the supply chain of blood and soil inside Singapore's logistical state capitalism

The sand that has made its way to Singapore faces three choices: either dumped into the slurry of a reclamation site; mixed with cement, water, and other aggregates into concrete; or left in a stockpile in Punggol, Seletar, or Tampines, for when another sand crisis rears its head. The latter represent the first crack in the city-state's logistical sleight of land, a rupture through which its vulnerability becomes palpable as alien landscape, and one of the most obvious ways in which Singapore's practice of land reclamation effects a transformation of the city-state's interior as much as its foreshore (Comaroff, 2014). These dunescapes are doubly alien: once in the total incongruity these smooth contoured masses of sand with the verdant foliage, a dream catastrophically erupting into reality; and twice in the fact every single grain of this sand has been exogenously sourced. Protected by barbed wire fences, monitored by guards behind dark glass in air-conditioned security posts, I was never quite sure on whose behalf the security was for: to keep visitors out or to keep the sand in? The arid oddity of these sandscapes is like an inversion of Vandermeer's 'Area X' in *The Southern Reach trilogy* (2014); instead of an alien zone that eludes scientific understanding and exudes uncanny purposiveness in its ersatz mimicry of the natural world, we have a landscape of absolute and sere calculation, segregated and striated by grades of sand and aggregate, pruned of weeds by pickers, and rigged with drainage equipment connected to the city-state's warren of storm drains.



Figure 25 Sand stockpiles at Pulau Punggol Timor (Author's own, 2019)

However, these dunes are not just ensembles of ecologies sieved to the specifications of construction materials administered by the Housing Development Board, but incursive and recursive alien zones umbilically connected to its prosthetic territory. Incursive because these extensive stockpiles of sand would not be required if the procurement of sand was relatively stable. These actuarial spaces in Singapore's city-statecraft are hedges against market volatility, constituting the state's response to the instability of sand as a resource of geostrategic importance, and an anticipatory and spatialised interpretation of the risk posed by its volatility. They are the incursive buffer between Singapore's aspirations as a global city and its geographic reality, posed as a limitation to be exceeded. And recursive because the stockpiled sand is always a point of departure, not a point of arrival: The success of a stockpile lies in its augmentation, not its diminution.

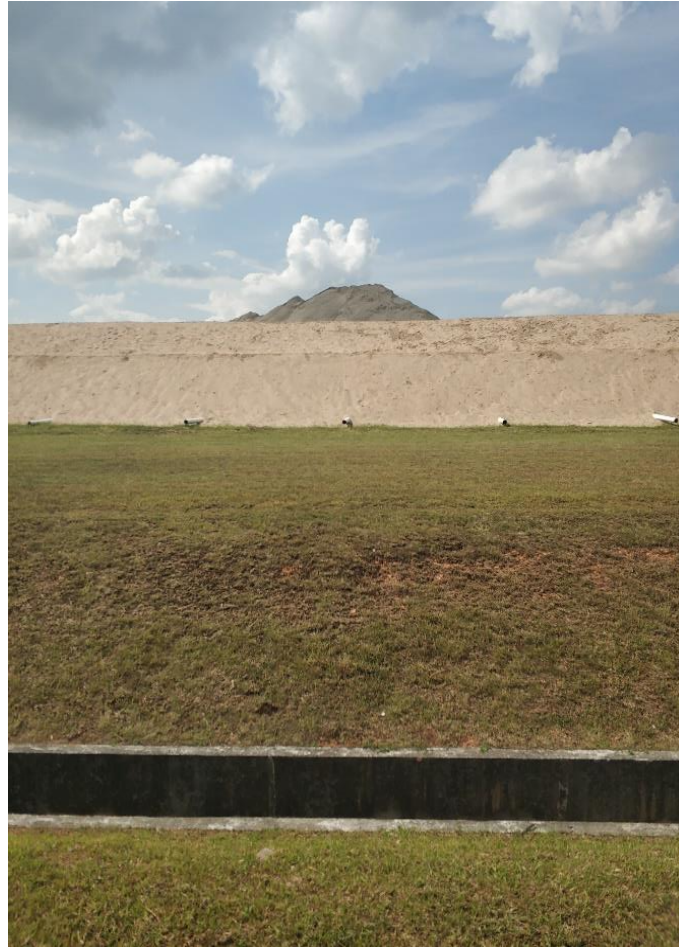


Figure 26 Sand stockpile at Seletar (author's own, 2019)

These sandscapes, and the regime of spatial governance they undergird, will be explored here as a critical seam of Singapore's political economy through its mutual envelopment with migrant labour. While large amounts of sand had been previously stockpiled for construction or reclamation projects, the stockpiles at Tampines (built around 1997), Punggol (built around 2003)(Figure 25), and Seletar (built around 2007) (Figure 26), are all HDB stockpiles, and are not tied to a specific project. A mixture of construction sand and bulkier aggregates, each grade and variation allotted their own section of the dune but continuous with the rest of these aggregates, each strain overlapping briefly with the next (another example of sand's self-segregation through granular convection).



Figure 27 Migrant work dormitories on Pulau Punggol Timor (author's own, 2019)

While documentation around the dating of these stockpiles isn't publicly available, leafing through Google Earth's historic satellite data reveals the construction of each of these stockpiles as coinciding with a sand crisis. 1997 was the first time Malaysia banned sand export, 2003 was when those bans were properly implemented and the average price skyrocketed by 5000%, and 2007 is when Indonesia followed suit and banned sand export as well. Risk, as a determinant factor of Singapore's granular economy, was established by Comaroff as a kind of 'original debt' for the city-state's continual introduction of '*Lebensraum*' to manage both economic and population growth (Comaroff 2014). But what these stockpiles, and their dates of construction, gesture beyond what Comaroff sees as a spatialization of Beck's notion of the 'risk society', is the enduring invisibility of sand to the state, an invisibility managed and maintained through webs of procurement and private contracting. The location of the majority of these stockpiles is especially conspicuous: the Punggol HDB stockpile is almost cater-corner to the PPT Lodge 1B, a migrant worker dormitory complex that houses up to

14,000 workers, their squat four-story warehouse-like structures facing the Marina Country Club (Figure 27); the Tuas Reclamation stockpile faces Sembcorp Marine Tuas Lodge, that houses a similar number of workers; further up the Tuas 'Palm', the Tuas View Dormitory, housing some 16,000 workers, abuts an ongoing reclamation. The noise and dust of sand and soft clay churning shallow shore into solid ground has been a feature of their stay in Singapore for the past three years. The coincidence of these two exogenous rudiments of Singapore's political economy, as well as the similarity in the management of their respective 'supply chains', as this chapter will demonstrate, is far from accidental. The questions of political subjectivity and sovereignty the notion of the logistical state brings up, through its production of territory without origin and the worker without rights, will be explored in terms of what this ceaseless production of *lebensraum* yields beyond what it was projected for, and perhaps obliquely addresses the desire and dreamwork that makes this tabula rasa appear, free of its grisly constituents, absent of ghosts, again and again.

Singapore's global city aspirations are entirely unfeasible, as is the rest of its political economy, without a reliable diet of cheap migrant labour, for both domestic reproduction, construction, and other low-paid labour. This chapter will trace the interlocking of sand and labour inside Singapore's logistical state capitalism, and how both are subjects formed by the logic of the supply chain itself. The uncertain and opaque procurement of both factors conjoin them as undersides that ground Singapore as a global city. Agents and intermediaries plague their supply chains, responsible for recurrent controversies and human rights abuses. The territory without origin and the worker without rights are the material figures through which the Singaporean state leverages regional inequality to further consolidate itself as a logistical node in the global economy. However, what the interlocking of these two exogenous factors of Singapore's political economy demonstrate is that the state's sovereign determinations of the subjects it requires to reproduce itself produce a friction intolerable to the state, requiring their indirect management through the market. Both are the product of the same supply chain logic which shields the state from responsibility, and both become conjoined in the production and reproduction of the state's logistical surface. The threat that their management poses goes beyond the calculative governmentality posed by the probabilistic notion of 'risk': they are potential catastrophes in the sense that they are

forms of political subjectivity established at the geographic and legal margins of state that threaten to condition the interior, akin to the 'boomerang' effect of (post)colonial governance noted by Césaire (2000); 'the colonial project not just as a "constitutive outside" or subtending foil of liberal-metropolitan power, but also as a *returning* political technology that eventually "contaminates" the interior' (Abourahme, 2018: 107).

These exceptional yet peripheral figures of Singaporean sovereignty are the variable means through which the logistical state latches onto the global economy; in turn these figures become the prosthetic debt, to adapt Comaroff's term, that become the logistical state's condition of access to the global economy. In outlining these two figures, the territory without origin and the worker without rights, as subjects of the Singapore logistical state, I do not mean to draw an equivalence between the two, as the condition of migrant workers is a much greater moral and political catastrophe than the sand trade, but to unearth the dynamic link between the logistical state's production of political subjects and how the logistical state reconfigures its sovereignty to accommodate the demands and contingencies of the global economy. The dunescape and the dormitory are as much a conundrum of political economy's critique as a theory of territory: following Marx's trinity formula, significant portions of the land (ground rent), labour (wages), and capital (interest) integral for Singapore's continuing relevance as a global city are alien (Marx, 1992: 590). A Singaporean conception of sovereignty isn't feasible without clarifying how its subjects are determined from the outside-in. The migrant worker and alien dune both problematise the citizen and State Land, and tempt the formulation that modern logistics requires the constant manufacturing of these expendable subjects of sovereignty, themselves a product, or more precisely a *commodity* produced and conditioned by their supply chains. Moreover, they present the catastrophe of the logistical state's sovereignty as a horizon through which

citizenship and territory pass, according to the logic of the supply chain, stripping away everything but the hour of work or space per tonne to be sold (Figure 28).

The Logistical State



Figure 28 Reclamation sand stockpile for the Tuas Megaport reclamation (Author's own, 2019)

Singapore as logistical state subjects both life and non-life, labour and sand, to the porous logic of the supply chain. By logistical state, I build on Cowen's (2014) notion of the "logistics city" – a new urban form central to the development of logistics in the 21st century – to refer to forms of governance which manage and mitigate the demands of logistical operations of paramount importance to self-styled global city "nodes" such as Singapore. These forms of governance, as will be demonstrated, have depended on a patchwork of formal and informal policy mechanisms, where state-created zones of private contracting and subcontracting engineer systems which allow for greater exploitation of labour, while the most flagrant excesses of this system can be dismissed as design failures. These ad hoc systems have been engineered to not just limit the

liability of the state but to ensure that key logistical systems and infrastructures are maintained without incident or friction. While not the only dimension of the logistical state, as many other theorists of logistics note, the disciplining and regulating of labour in logistical operations has been tied to the inherent vulnerability of these systems (Cowen 2014). What is appealing about this argument is not to sidestep the thornier questions around biopolitics and sovereignty, which are relevant here, but orient these lines of enquiry into complementarity with the 'logic' of logistics.

Recent geographies of logistics have identified these spaces as a critical site not only for buffering the friction of global trade (Neilson, 2012; Danyluk, 2017; Altenried et al., 2018; Chua et al., 2018), but as a practice that has 'remade geographies of capitalist production and distribution on a global scale' (Cowen 2014: 10). Singapore's rise as a logistical state in the latter half of the 20th century unfolds as a result of this development; leveraging its colonial legacy as an entrepot as a prominent oil and rubber hub into the postcolonial era, vigorously pursuing foreign direct investment at the same time as it developed state-owned enterprises across sectors (He, 2020). Drastic internal and external political and economic realignment followed Singapore's expulsion from the proposed merger with Malaysia, its main trading partner, causing the PAP government policy to target export manufacturing and expanding on existing port infrastructure (Barr, 2018). Part of this plan of bold economic development was the introduction of a Central Provident Fund (CPF), a compulsory retirement fund all Singaporeans pay into as an infrastructural investment vehicle (ibid). The introduction of the CPF, government-linked companies and banks, as well as the vigorous pursuit of foreign direct investment and multinational companies form the public face of Singapore's logistical-developmental trajectory (Chua, 2011; 2017). However, as Barr notes, the role that low-paid migrant labour has played in this transition has been almost comically underplayed: between 2004 and 2015 the number of foreign workers more than doubled, from 621,400 to 1,368,200, (Barr, 2018). They also serve as an additional buffer, shielding the average Singaporean from the worst excesses of periodic unemployment (as employment passes can be simply revoked or reduced on an annual basis), and from the worst kinds of work and working conditions. The migrant worker, without any substantive political rights to reside or organise in Singapore, is

intimate with almost every facet of the production and reproduction of the logistical city-state:

Foreign workers have built Singapore's factories, schools, skyscrapers, roads and railway lines. They drive the buses, work in the factories, cook and serve the food, clean the toilets and public buildings, and—perhaps the most basic of all—provided seemingly unlimited domestic service so that middle-class Singaporeans can work extremely long hours, knowing their flats and houses are being cleaned, their meals are being cooked and their children raised by cheap hired help. It is no exaggeration to say that Singapore's reliance upon cheap, vulnerable foreign labour has been at least as important to the country's economic development as more celebrated aspects of the political economy, such as its highly educated citizen workforce. (ibid: 162)

Low-wage migrant workers are not required, and unable, to have a CPF, are unable to vote, and are not allowed to collectively organise for better working conditions. They are excluded from the Employment Act, covered instead under the Employment of Foreign Manpower, and owing to the lack of any fixed minimum wage in Singapore, are paid far lower than their Singaporean counterparts. Currently, Singapore has a foreign worker population of just under 1.4 million, with over a third classed either as foreign domestic workers or construction workers on Work Permits, the lowest-paid category of employment visa. The fluctuating population of 300,000 odd migrant construction workers come from across the region to make more money than they would at home. They fill the gap for dangerous and poorly paid labour that few Singaporeans have to contemplate in facilitating the perpetual construction of the skyline and countless condominiums. They can be repatriated in under two weeks' notice and have no available route to citizenship or even long-term residence. What brings imported sand and labour into uneasy proximity is that both crucial inputs are plagued by the figure of the agent, the middleman. Migrant workers can't apply directly for a work permit from the Ministry of Manpower but instead have to pay an agent to obtain one on their behalf for thousands of dollars, who acts as a liaison between the Ministry of Manpower (more commonly referred to with the Freudian acronym MoM) and the construction companies; the average Bangladeshi worker paid SGD\$6,400 in agent fees in 2015 (TWC2, 2018), not including an additional fee for the construction company to employ them. Workers seeking adequate compensation for workplace

injuries and abuses are stymied by labyrinthine layers of bureaucracy which insulate contractors from subcontractors and often take years to rectify. The data on workplace injuries in the construction industry offers a grim if oblique view into the working conditions of the workers at most risk from injury; while the average ratio for recorded injuries to fatalities across 28 EU member states in 2015 was 474:1 (varying from 373:1 in Sweden and 1428:1 in the Netherlands), in Singapore it was 82:1 (TWC2, 2018b). This strongly suggests that injuries are persistently unrecorded, with several cases reported by Transient Workers Count Too (TWC2) and the Humanitarian Organisation for Migration Economics demonstrating the extent to which doctors will collaborate with construction companies to send injured labourers back to work (TWC2, 2016). For the Ministry of Manpower, these events are aberrations that are the result of the informal nature of the migrant labour market, emerging as a natural consequence of the competitiveness of the market, and the desire for agents to obtain the best deals for the construction companies. Whether the worker is fully aware of the terms and conditions of his employment is a secondary issue.

However, these aberrations and worst excesses redirect attention away from the inequalities structured into the migrant labour market itself, and the political subjectivity cultivated by it, necessitated yet somehow unwelcome within the city-state proper. Bal aptly notes how these cases are seized upon by the Ministry of Manpower as opportunities to cultivate a veneer of concern and impartiality, whereas the motivation for the specific kinds of exploitation and abuse faced by migrant workers stems from the legal apparatus controlling migrant labour, such as the Foreign Worker Levy (Bal, 2017). The widespread practice of migrant workers having their passports confiscated by employers is not simply accepted, but commonplace. The potential risk of being denied egress from the logistical state to the worker is considered tolerable compared to that faced by the employers who could not possibly cope with the potential flight of their workers. The problems faced by low-wage migrant workers across sectors are similar, yet conditioned by the specificity of the labour. While migrant workers in the construction and maritime industries are predominantly male, migrant domestic workers are predominantly female, and face different kinds of working and living conditions that redraws the lines of exploitation and precarity, prompting the question of whether or not these constitute the emergent conditions of a kind of 'logistical citizenship' as well.

Migrant domestic workers, employed for the purposes of all kinds of domestic reproduction, often live with their employers (with condominiums and blocks often constructed with in-built and unwindowed 'maid rooms'), who retain possession of their passports (to reduce the risk of worker flight), are especially at-risk of overwork, physical and abuse, sexual assault, and inadequate food provision (Chok, 2019). While unable to go into further depth into the complex legal and social system through which male and female migrants are left at-risk to lubricate the capital circuits of the logistical state, an elegant if depressing final example will suffice: it was only in 2013, after a decade of campaigning from civil society organisations, did the Ministry of Manpower legally mandate one full day off per week for migrant domestic workers, improving on the previous precedent of one day off per month (Ministry of Manpower 2020). What this says about logistics, and the logistical state, bears teasing out.

Dormitory – Population – Territory

Accounts of global logistics have paid careful attention to the precarious place of labour in lubricating supply chains and the human cost in accelerating the circulation of capital in the name of supply chain security, prompting some theorists, such as Sassen and Cowen, to shift our focus towards the political subjectivities shaped by these labour relations (Ong, 2006; Cowen and Smith, 2009; Neilson, 2012; Cowen, 2014; Alimahomed-Wilson, 2019; Chin, 2019). Cowen, writing of the Dubai as a “Disneyland” for capital’ on account of its ‘radical social order’ (Cowen 2014: 72), broaches the prospect of a model of supply chain management premised on a drastically redrawn balance between labour and capital achieved through the weaponization of citizenship, or lack thereof. While Dubai is in many ways a far more extreme exception than Singapore (with 90% of workers being noncitizens), the parallels are tempting and possibly instructive when we turn our attention to the UAE’s similarly egregious appetite for sand. The contemporary labour demands of logistics require the severing of the liberal democratic compact between capital and labour. Unlike the UAE, Singapore has always had an ambiguous relationship with democracy; founded on an act of anti-democratic ‘original sin’, the ongoing political dominance of the PAP is a curious mix of

paternalism and paranoia. What the question of migrant labour, in relation to the rest of the population, is how this combination of paternalism and paranoia marks the spatial delimitation of the logistical state, which brings us back to Comaroff's deft but unpacked invocation of 'Lebensraum' when discussing Singapore's risky wager of territory. The relay here between the geographic and biopolitical manipulation of sovereignty, I argue, is crucial for understanding the assumption upon which the calculative governance of the logistical state rests. However, the explicit link between logistical space and the labour of logistics needs to be clarified to better orient our understanding of sand as a critical spatial seam that stitches together a series of events and processes that construct a terrain that conditions the circumstances of migrant labour. Discussing the evolution of the spatial and economic practices of governance amongst European city-states, Foucault addresses the necessity of a spatial substrate through which uncertainty could be choreographed, with discipline and security assuming a spatial and temporal dimension respectively:

The specific space of security refers then to a series of possible events; it refers to the temporal and the uncertain, which have to be inserted within a given space. The space in which a series of uncertain elements unfold is, I think, roughly what one can call the milieu... What is the milieu? It is ... the medium of an action and the element in which it circulates. It is therefore the problem of circulation and causality that is at stake in this notion of milieu. (Foucault, 2007: 35)

While the corollaries with a general notion of logistical space are self-evident here, especially in the notion of a multivalent and transformable framework, the convergence of discipline and security with the 'problem' of circulation and causality through the idea of the milieu are helpful for elucidating the meaning of the shifts in labour's relation to citizenship that are paradigmatic for logistics. For Singapore, this shift in labour and citizenship was never announced explicitly, appearing to grow out of a sheer gradient of demand, comparable opportunities for employment, and marginally improved pay and working conditions for the labourer. First Indonesia and Malaysia supplied the cheap labour, but as they have begun to developmentally close the gap, Indian, Bangladeshi, Myanmar, Filipino and Chinese workers have rushed to fill it. Singapore's 'bifurcated' regime of migrant labour, according to Yeoh, is premised on a differential politics of inclusion and exclusion: for skilled, high-paid migrants, productivity and loyalty is rewarded with permanent residency and paths to citizenship; for the unskilled, no such

route exists, no matter how long they stay they will ultimately be seen as 'transgressors' to be excluded (Yeoh, 2006: 36).

The two biggest ongoing reclamation projects, Tuas Megaport and Pulau Tekong, are intended to consolidate Singapore's logistical dominance and training grounds for its armed forces respectively. The former, prefiguring the next generation of 'supertankers' with deeper berths, as well as increasing Singapore's twenty-foot equivalent units (the capacity of a container) from a combined 50 million across all three existing ports to a concentrated 65 million, constitutes Singapore's claim to logistical dominance. The slated completion dates of both projects, 2040 and 2035, are just past the deadline of the much-maligned 2013 Population White Paper, which projected the population rising to 7 million people by 2030, and 10 million by 2100, and the concomitant infrastructural and territorial transformations this would entail (with land reclamation subtly featuring as less a strategy than a natural fact of the city-state's present and future development). The Population White Paper marked the next generation of government policy around population, which had been a core feature of the PAP's governance since independence, with policies varying from the introduction of contraceptives and tax cuts for small families to outright eugenic voluntary sterilisation programmes, where lower-income women were offered cash incentives to be sterilised, in contrast to later policies targeting women with graduate educations who were incentivised to have more children (Chan, 1985; Amrith, 2010). While these policies have produced backlash, they were then coupled by class and race-based anxieties which have long bubbled beneath the surface of civil society, and manipulated through the state management of multiculturalism (Chua, 2003). Part of the reason why the Population White Paper (henceforth the PWP) caused such consternation upon its release was the public's resistance to statistical manipulation by the state, as well as the kind of people this population increase entailed, given every indication that Singapore is a rapidly aging population in comparison to its Southeast Asian counterparts. 2013 was the same year of the Little India Riots. A migrant construction worker, relaxing in Little India, a district comprising the most central migrant worker dormitories and residences, as well as a leisure hub for many other South Asian migrant workers, was run over and killed by a coach driver. The death prompted immediate backlash from other workers nearby enjoying the evening, resulting in riots that Singapore had not seen since the

race riots of 1969 (Lee et al., 2015). The riots were an incandescent rupture in the veneer of state-manufactured multi-ethnic harmony, with the politically invisible class of migrant workers becoming insurgently present. The government was quick to dismiss the riot as an isolated local event, unrelated to the working and living conditions of the workers, and focused instead on the predominantly South Asian workers' problematical consumption of alcohol and occupation of Little India on Sundays, and the perception of the neighbourhood as an 'area of "disamenity"' (Subramaniam, 2017: 58). Alcohol was temporarily banned in Little India, and in the months and years to come the state would pursue a 'decentralisation' strategy, which saw the construction of additional migrant worker dormitories (Tan and Toh, 2014). The Tuas View Dormitory, mentioned earlier, was the prototype of these new dormitory complexes, intended to include every amenity a worker could desire in their downtime, replete with pool halls, cinemas, beer garden, food hall, sports facilities, and even a goldsmith. The dormitory even contains a pitch, with residents often relaxing by playing football or cricket, or idly watch the reclamation taking place while having a picnic or enjoying a drink (Figure 29).



Figure 29 The football field of the Tuas View Dormitory, with workers playing as reclamation occurs over the fence (Author's own, 2019)

The construction and development of this new model of 'all-inclusive' migrant worker dormitory was developed as an explicit response to an unprecedented crisis of security for 21st century Singapore. Their haphazard attempts to wean migrant workers off the downtown core, and leave them content and entertained at the periphery, perversely mirrors the gated communities of private condominium complexes that are inhabited by wealthy Singaporeans and 'expats'. However, while the gating of their life and leisure to this degree was unprecedented and is only explicable in terms of a response to a crisis, it was simply the logical continuity and consolidation of existing government policy and popular sentiment. While the permanent yet provisional presence of these migrant workers in the city has always been regarded as a nuisance, at best, and as a public health emergency at worst, what the riot and the immunological response to it demonstrated was a certain unwillingness, or at least absent-mindedness of the government to 'do something' with this problem until they had to. This after-the-fact securitization and segregation following a crisis, hand in glove, brings us back to the sand stockpiles that bloomed like sores across the fringe of the interior of the city-state. The question that both categories present us with in the arena of the logistical state is a very simple one: why don't they simply take these dysfunctional markets and use their fabled bureaucratic efficiency and innovation to solve these problems? Why is the problem of the middleman, the out-of-town agent, the out-to-lunch regulator so endemic to both of these markets?

What is simultaneously obvious and tricky about this question is that a simple answer will suffice: that it redounds to the state's benefit to structure these markets in such a way, and while it can performatively rein in the worst excesses, the exploitation of human life and despoliation of ecology that this demand necessitates at the appropriate price point ensures that these systemic injustices persist. However, this begs another question: what does this production of the worker without rights and territory without origin *do*, and what do they tell us about the logistical state they underwrite?

Cowen's abovementioned argument that this has also entailed a subsequent redrawing of the relations of the state to security, labour and citizenship, merits revisiting. The fragility of just-in-time supply chains necessitates new forms of

governance and control commensurate with these territories of circulation. The 'global surface of logistical integration' (Martin, 2013: 1023), of which Singapore is simultaneously exception and model, is the site and project of supply chain management, a seamless interlocking of land and sea facilitating the flow of commodities of which the container is the standard unit of measurement (ibid). As Martin rightly notes that this production of a surface has entailed a concomitant 'surface ideology' that relies on perpetuating the illusion of friction-free movement across a 'single glaxis' of land and sea (ibid: 1024).

The circulatory concerns of the logistical state point towards the desire to obscure not simply the labour that goes into the seamless functioning of its surface but to quarantine those very specific forms of political subjectivity it has constructed in the form of the worker without rights and the territory without origin. The tabula rasa is a baseline of the logistical state's operation. Why the figures of the logistical state seem to hold such infectious potential, at least in the estimation of the ministries that deem their segregation and securitisation a matter of import, is that they are political subjects formed by the supply chain itself. With no right but to work under the conditions no citizen could ever be expected to work under, the worker without rights faces not the state it labours on behalf of but a web of agents, employers and construction companies that they have to negotiate, with recourse to only the most flagrant infractions against them. Likewise for the territory without origin: the guarantee of the supply chain of the Building and Construction Authority is that their licensed suppliers have done their due diligence in procuring construction and reclamation sand, and that any impropriety that has taken place has occurred somewhere else in the supply chain, an unwholesome aberration that repeats itself again and again for some reason, so that the sand emerges in the stockpile as a sere and quantified expanse of terrain. Their containment in the frontiers of the city-state, often reclaimed themselves, speak to the out-of-sight out-of-mind attitude of the logistical state to these problematic political subjects that are entirely of its own making.

Blood and Soil

In the political subjectivities engendered by the logistical state, we encounter a tension between the establishment of the means of its production through the loop of the supply chains of sand and labour, and the resulting political identities of these subjects. The rudiments of the logistical state's reproduction itself, they are spatially segregated and secured at the frontiers of the logistical state, but as political subjectivities they present an intolerable threat to the social order established in the interior. They are treated as the alien incursion of the global logistical surface onto the supposed sovereign territory of the city-state, quarantined and policed for potential transgression, when in fact they speak of a form of life and non-life entirely native to the logistical state itself: the worker without rights and the territory without origin. The threat they pose to the logistical state is in their figural revelation: that beneath the veneer of the Global City is a polarised social order where one is either (potential) citizen or mere labourpower, the ground under your feet is either sovereign territory or a mass to be moulded and sold by the tonne, scraped from elsewhere with devastating consequences, and as we shall see in the next chapter, can be planned and planed out of existence if a newer, more productive arrangement for this space lodges itself in the twinkle of a planner's eye. They are the figures which lurk beneath the meticulously engineered 'global surface' of logistics, in its 'hidden abode of production, on whose threshold there stares us in the face: "No admittance except on business"' (Marx 1993: 279). And as figures, they are operative as metonymies that are appropriated by metalepsis in relation to the global city; land and labour, in liberal democracies, ordinarily confer certain rights and assurances, however fleeting or mendacious, that have here been stripped back to the bone. Now the worker without rights sets the territory without origin into flickering motion, providing the motive force for the gears of the global city to grind into action, all to maintain a seamless, projectible surface for logistics. And once in motion it cannot, and will not, stop growing.

VI ENTRAINMENT ³⁰



31

‘This is confidential, between you and me, correct? OK. Good. What can I say, today was a good day. Back at work, after the accident. It was, how do you say it, reassuring. It was reassuring that everything was working like intended. The fill material is now more mysterious than it was before. Maybe my brain blurs it out – I look at it and can’t make out a thing, it’s all pixelated, it could be a nipple or a penis. It says what it is in the schedule, so I know what to do with it, if it’s for temporary

³⁰ The process by which sediment is incorporated into a fluid flow as part of the operation of erosion. Thomas, D. and Goudie, A. (Eds.), *The Dictionary of Physical Geography* (3rd edition), Blackwell Publishers, Great Britain, 2000

³¹ These were the photos that I shared with the villagers of Koh Sralao that I interviewed; mostly reclamations, reclaimed industrial spaces, the sand barges coming in, and the occasional reclamation itself. However, as this geofiction continues, there are some quite different photos, but of what I consider to be of the same, or similar, substance.

storage or for immediate use in a reclamation. One day it's sand, the next day its marine clay, the next day its soil, the next day it's this grey incinerated ash that is almost like cement mix, bubbling up into this grey goo. Whatever it was before was a complete unknown. Before the accident it was a big source of stress. The settlement was the biggest worry. The threshold of liquefaction. The kind of thing you can't tell before it's too late, when the ground itself opens like a horrible, sloppy mouth. That kind of thing used to freak me out a lot. After returning from leave, when I walked onto site the other day, I took this photograph, thinking it would be good to bring to the session like you asked beforehand. You can see the CBD in the distance, over there, and the water is so blue it's reflecting the sky perfectly. It doesn't look at all like water behind the caisson, it's more like ice, and just by being there it wiped away the fear I felt after the incident . . . the city in the distance, well, that's the city I live in . . . OK can we move on now? It's just a picture . . . oh, the incident? Are you sure? I don't think the incident is very relevant. It was shocking, it was more like a shock than an incident. Sometimes when they dredge up the marine clay, they've also dredged up old ordinance from World War Two or the Konfrontasi. Unexploded bombs, weapons caches that were sunk with ships, that kind of thing³². You have to be prepared for whatever comes out of the hull of a barge as it splits. But as far as I know this is the first time that they've found a human body in the shipment. We still don't know quite how it happened. It couldn't have fitted through the suction tube of a dredger . . . at least not in one piece. But there were so many boats working on that end of the reclamation that I was losing track, worried about getting behind schedule. It was only when the worker in the excavator was shifting the pile the dredgers had offloaded did we see it. Legs and arms hanging limp out of the bucket of the excavator as if it was relaxing in a bathtub. I know it sounds shocking but work-related accidents can and do happen. These are risks in my profession . . . well not *my* profession, but working on a building site. We just don't know how *this* happened, or who it was. They can't have been dead long, but we just don't know how or where they got there. Work stopped for a few weeks. That's when I started having that dream. Some of the juniors are reluctant now; usually it's bad enough after a worker gets crushed by the load of a dump truck or dies of dehydration, but this body came from nowhere. Who knows, it could have died of natural causes, though I overheard some Authority guys

³² 'We dredged up a bomb, this one time, and it was a very scary situation. It had happened a couple of times before, you know, with the War and the occupation, so the Ports Authority was used to this kind of thing, but we were crapping our pants, suspended works for a week until the SAF [Singapore Armed Forces] disposal unit came along to deal with it.' (Interview with reclamation engineer Robert Gravel, 2018).

talking about how they didn't just find grains in his airway and his lungs, but they found them in blood vessels and chambers of the heart itself. In the creases of the lobe of the brain. Could you imagine that itch? . . . no, of course, there are no nerve endings in the brain itself, more like nerve beginnings, right?'





‘It all began after I watched the video. It just made me feel so angry seeing that kind of fake news being perpetuated. I’m sure you saw it ... You didn’t see it? OK, I’ll explain it for you. It’s this girl in this village, complaining about this sand mining that went on. And it’s this village, this fishing village in Cambodia that has already gotten a lot of publicity because it is in proximity to some sand mining that happened. Our company was only involved in the export, not the extraction. They seem to miss that out in their pretty little film. We only transported what had already been dredged. We bought this fill material in good faith, trusting that they had followed best practices, and we paid a good price for it ... The film starts in the village. This girl is talking about how *we*, as if there is a *we*, have stolen her sand, right underneath the nose of her people. That’s what they always say. Anyway, there are some shots of her, looking sad, on a dingy little fishing boat, forlorn and fragile looking. Talking all this crap about how sand is their identity, how it’s their land, their ground, or whatever. Then some other women talking about how hard their lives have become since the ships came, taking their sand.

Hello. We had licenses, and we paid good money for it. It was never theirs to begin with. Why don't they complain to their corrupt government? They even tried to trespass onto our ships, threaten our crew, blackmail us. And then they come out with this video. Damaging an entire industry with their fake news. Isn't there meant to be a law against what they did? You go to these places and once people realise there's money to be made, they'll do anything to squeeze a bit out of you. Our crew on the ship had to receive counselling because it was so traumatic. And here we are, still talking about it. In the film she goes down to the Gardens by the Bay, talking about how none of this is real, how if she spoke English she would tell us that this land is actually her land. How dare you, you know? My part in this is very small, too small to count³³, but I try hard, I want to do my best, and now I have this nightmare to deal with. *The whole video was fake news: the land the Gardens by the Bay is built on was reclaimed decades ago, it had nothing to do with her or her village.* Business has already been bad enough having to worry about this. I had friends and family *outside of the industry* talk to me about this. I met some stranger at a bar and he asked me what I did for a living, and I thought twice about telling him, because *what if he saw that video*, and saw this sad, frail girl, looking miserable practically everywhere she went, and think *that I did that to her*. We act in good faith, and trust that the arrangements set up for us have been made in good faith. Legally dredged material looks exactly the same as illegally dredged material. I've just been so exhausted. Maybe that's why I dreamed I was on holiday... I guess this is what you want me to talk about, right? OK, so I'm at this resort. Very modern, high-rise resort. And I'm on the beach, sunbathing on a lounge, my hands around my drink, and I can feel the beads of condensation coming off it. It's so cold, the beads are almost frozen. And the heat, the heat is streaming off the beach. The light too, it's too bright to see the ground. The heat is going to my head, so I get up and go for a walk down the beach. The whole time I'm feeling like that point in a holiday just when you've finally relaxed, let go of work, and suddenly you want to go home. If you truly enjoy your job, leisure is obscene. You may trick yourself into believing you need a rest, and before you know it, you're standing inside a room as big as the sky. Any animal knows this is a bad position to be in, from an evolutionary endpoint. Predators on the horizon get closer every time your back is to them. Birds circle overhead. This is what a holiday is like if you enjoy your work.

³³ 'My part in this is small, very, very small, it's probably too small to count, but hopefully I can share what I can... that video caused us so much trouble. I had friends *outside* of the industry talk to me about it, asking me if those were our ships in Cambodia. It was all fake news... these fishermen were boarding our dredging ships and trying to blackmail the crew. You just have all these people trying to get their own piece of the action unfortunately.' (Interview with Thandar Hsu, 2019)

Captive prey to your own free time ... I mean, who knows what might come swooping down on you ... so I start walking down the beach. Towers are lining my right side into a midday haze, and I can feel the heat through the dream, the searing crunch of my footstep. It begins to hurt, it feels so real, like every step my sole is measuring the temperature of every single grain, so I move closer to the shoreline, to cool my feet. And on the other side of the water, across the shore, I see my neighbourhood, I see the building I actually live in. It's so close I could swim across but the water is boiling hot, hotter than the beach I'm walking on. So I start running. The beach is sizzling with my footsteps, and I look behind and see the imprints, black footprints charred into the smooth surface of the beach. I run along until it begins to curve ahead of my, slightly at first, into a small hilly incline. My feet dig in deeper as it starts to get steeper, and in my peripheral vision I see ash fluttering up with every step I take, like feathers. Every step it rises into a hill and I can hear someone saying 'never go home, never go home again' in some sing-song voice, in some language I don't recognise, but I can hear the voice clearly, over and over again somewhere near the top of this hill. And every step I take onto this mountain more of it falls away. I try and climb with my hands and it falls away with each grasp. I take a deep breath and I can feel it going into my lungs. I manage to claw my way up, and I can see a figure near the edge, wearing a sunhat made of straw, bending over. It's so bright I can't see who she is or what she's doing, bending over, picking something³⁴. I'm struggling, gasping for breath, but she turns away from me, as if she can't see me. Somehow I make it up there, my hands and knees rubbed raw. It's so bright. I see her bending to pick some weeds or random crap, but the beach up here extends into this huge cloud of dust in the distance. No line, no horizon, just the dust lifting off bit by bit from the ground until it seeps into the sky ... what do you mean maybe it's the opposite ... that it's the sky descending down to ... can you stop interrupting me! ... Thank you. Anyway, my feet are burning. My lungs are searing and through the dream I can feel the nylon of my bathing suit chafing. I turn to this woman picking random weeds off the beach that curled up like a tidal wave petrified in place, and I just want to ask her how to get out, how to go home, how to get out but she won't look me in the eye, but now I see it. It's that girl from that video. And she's singing 'never go home, never go home again', and I look across the water and I see right into my own living room, like there was a lens placed over that distance, and I can see myself taking a call, talk about our

³⁴ This might be the sunhat of a picker who prunes the HDB sand stockpiles of any errant weeds or invasive species that might have grained whatever soil the stockpile formerly resided in.

companies new real estate deal in Phnom Penh, or our e-commerce offer in Yangon, or securing a shipment of silica sand for a tech company. Actually I was just working on such a deal before going to sleep, for some company's VR tech that loaded through a blockchain, and the name was something like Simulation Laboratories or something, and the silica was actually from some old Cambodian stockpile funnily enough. Back in the dream I'm making lunch and eating while I continue working, and a moment later it starts melting away. It was all just a flicker of mercury silvering into the distant, smoke-streaked sky. Never go home again, never go home again, she sings, and I go turn to her to grab her to say how dare you, how dare you, but as I turn to her, she presents her bag of dirt and weeds to me, and I take a look and it is so dark my eyes begins twitching with relief. As my vision adjusts, I can see it's this tangle of roots around this tiny point of light, like a tunnel, and I can smell mud and salt of the sea cooled under leaves of a canopy. Never go home she sings, and those roots are branching all around this pinprick of light, but it gradually begins to dilate, and I can feel the roots branch into me, never go home, never go home, and I feel them web their way into the bloodshot capillaries of my eyes. That's when I wake up, and for a second it's like those infinitely small and branching roots are still there.'



‘Who would think the mental health of the TIME would be such a priority . . . oh it’s the Tuas Industrial Maritime Estate, now you finally know who you are working for . . . Ah, they hired the services of a company which contracted it out to you, I see . . . Simm Wellbeing Solutions, never heard of it. Anyway, I’ve decided to take part in this process. It was just because I have a friend, a waste incineration engineer, who started coming here after having panic attacks on the job. Something about the ash twitching as it cools, in these immense vats, these ash pits. Eight thousand tonnes a day, four hundred and four tonnes an hour, he tells me. It makes faces at him, gurning like a macaque, burnt beyond recognition. It mocks him with the information it holds, the everything that went into the incinerator. No matter what it was before, it is now only recognisable as ash. It *winks* at him: if you dig deep enough into the heart of anything all you will find is ash. He says he doesn’t really think this, it’s more like an intrusive thought . . . All thought is intrusive, isn’t it? Smuggled through the hole dug by the little rat of language. Once they go in, there’s no going out. Thoughts make you their home. And at first, it’s pleasant because you think this is a part of yourself you didn’t know existed,

when actually it's come from somewhere else, and how it got there you can't explain, cannot copyright strike thoughts—yet . . . They seem like such nice things until one by one they begin to eat you up, until it's too much, *jialat*, you can't see the city for the buildings, the entire brain collapses under the weight and all you're left with are these spaces you thought were your own. It's like a termite infestation, suddenly you see the holes eating up what you thought was a solid, sure thing. It falls apart and only then can you see all the holes riddling it, little worms of space working their way in along the paths of least resistance. This is what happens when my friend sees the ash. He can't get it out of his head. It's thinking *of him*. That's how he sees it. A thousand times before he's stood in front of these pits of incinerated ash . . . yes, because first they burn the rubbish down into ash, where the heat generated gets converted into energy, but the ash still contains contaminants, traces, the burnt husks of things still retaining some kind of shape, despite the conflagration. Incineration consumes his entire day, burning vat after vat of garbage until it is pure carbon filling the ash pit, its previous shapes and protuberances now undetectable. Stuck in a control room burning garbage with such ferocity that it somehow becomes redeemed of its many worthless and discarded parts, suddenly useful again as this seamless blob. Now all his superiors want him to do is obtain the purest ash possible: a featureless grey mound weighing exactly four hundred and five tonnes every single hour. Even I can see why he's having these attacks. What is that called, when you stare at something and faces begin to form . . . pareidolia . . . yes, exactly, thank you. It's not so much faces he's seeing, it's more than faces . . . They're burning it so they can build some islands in the south. Since infill has been getting harder to come by, so I hear from a friend in the industry, incinerated garbage will have to do. There's not nearly enough garbage produced by the city alone to meet its demand, so they've actually been paying for, get this, high quality garbage to be imported from Malaysia because it's cheaper to do that, burn it twice, then pile it onto a barge to be dumped wherever, than it is to purchase whatever infill they used before. So, he's seeing thousands of tonnes of this stuff every hour of every day he's at work. He sits there, taking samples, monitoring the matrix, filtering out contaminants. That's the part he dreads the most, because they're not contaminants to him, but traces, fingerprints, like dental remains, the only parts that can identify what this pure carbon, this miserable heap of ash, used to be, and his job is to extinguish even these last miserable traces. And as he does this the entire thing is palpitating before his eyes, making furrows, creases, opening pores, lids and mouths, then collapsing, gurgling, farting smoke and heat, flexing like a caged animal, rearranging itself. He's

burning it until all traces of its former existence are wiped out, until it becomes the exact size and the exact weight that the Authority needed to use it as an infill. NEWSand, they call it. That's when it began to talk to him. Talk *of* him, like he wasn't there. The pressure on him to crank out tonne after reliable tonne of NEWSand began to get to him; he began to crumble under the pressure. If garbage can become NEWSand, he said to me, then it follows old sand was just garbage at some point, waste left over from a different process. He told me that he started coming here because he couldn't stop seeing this garbage ash, a great, grey blob oozing and pulsing as if it was alive. That he saw it change shape before his eyes ... it really did become sand. Then he fainted in the control room, and after two weeks paid leave he was sent here by his supervisors ... you can't say, I understand, client confidentiality... maybe it was one of your other colleagues ... It was a smell actually, that caused him to faint. Worse than garbage, because that's what he smells every single day. Fish choked on oil-slick mud, the silt of fermented iron, an abandoned ship, the trophic fumes of trees uprooted, soil flaking into a river, the frayed ends of roots drifting in the frothing current. Not even a smell, but a wind-language the smell carried within it, air uncurling under the heat and the pressure, this friend of mine smelled. Not so much words or characters but hieroglyphs unspooled by the burning that he instinctively recognised. Once, when he randomly checked through the first burn of a huge shipment, spot-checking the dump trucks to see if there's going to be any problem with the slag ... he could tell just by the smell, the gap it made in the air, it was not food or household waste, but just soil, gravel, sediment, bits of drift and seaweed, bits of metal and plastic, roots and trunks of trees all mashed together³⁵. Chunks of soil, carved out, pulverized, incinerated, masquerading as trash ... those islands, those islands in the south where that ash is going, they're just burial grounds. When he smelled those gaps in the air he saw an island unfold in his mind's eye. Garbage earth gulping with human gasps. The mud aspirates, and pores squelch open, and he looks beneath him and it's no ground he's standing on but a dreg heap of mashed roots and regurgitating machinery. The throb of a diesel engine bubbling through layers of gravel and silt. The heads of fish and bodies of snakes pulsating as if they were

³⁵ 'I think we've had an image problem regarding mangroves ... they aren't exactly glamorous. The project I was involved in was about the valuation of their ecosystem services, carbon capture, payment for ecosystems services. Natural capital, it's called. A weird project, to be honest. Clearly, mangroves are superb ecosystems for mitigating the kinds of climate change Singapore is facing, but they destroyed 95% of their mangroves through coastal development. So this project was a joint project mapping the remaining mangroves, how healthy they are, creating models for the different kinds of value they have. Then the statutory boards run different scenarios, inputting data into the models we created so they can incorporate more ecosystems services in their impact assessments.' (Interview with Bertrand Ramel, 2019)

tubes and couplings attached to an engine, webbed together with fishing nets. Fluid of some kind filling and emptying from an oil-flecked plastic bottle ... The entire ground beneath me a gibbering, *respirating* mess moaning and sputtering as I try to regain my footing, but I can't move. I'm sinking. My legs, my feet and legs have split off into roots of trees and the wriggling bodies of snakes. I'm breathing hard and I see a bellows made of old plastic bags matching the pace of my breath, and I can feel the interior crinkle of plastic as I try to breath. And as I go down I can't close my mouth because it's a pipe. I reach out with my hand to grab something, but I can see that my hand has fused into a claw. My heart is racing, and I feel the pulses no longer as throbs but as threads that are streaming into my body as it stretches into the spray of NEWSand from the spouts of dredging ships. Did I say that? No, it was this friend I have, who said that to me... no, he wasn't speaking *to* me, he was speaking *of* me ...'





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Landsick. That's the best way that I can describe it. Even if I'm standing still, I can feel this rocking, like the ground is see-sawing. And it only happens whenever I go to work. So, this is a work-related ailment, which is why I am here. I walk on-site and my gut begins to twitch, trying to even out the keel. Throwing up makes it feel better, for a time, but I have to plan where and when I'm going to Merlion ... you know, after the big statue, with this jet of water streaming from its mouth ... I go to along the edge of the Hand and see these immense ships come in ... Oh, it's called the Hand because Tuas has four piers that we call Fingers, so that's why it's a hand ... I see them floating in the water but all of a sudden in the corner of my eye it's the ground that I'm standing on that is swaying from side to side like it's drunk, like those ships are cemented into position and *I* am the one who is on water, and it's getting choppy. It began with the trespassers. Plural. As you may

³⁶ The strange 'ang moh' referred to in this story are myself, and the various friends and collaborators who came with me to find the sand, which, at the end of my fieldwork, were Robert, another sand researcher, and Nary, the Mother Nature activist who acted as my translator in Koh Kong. They are standing on this hill of dirt to get a better look at the reclamation site while I was a look-out for any security guards.

be aware, Head of Security is a very important job. Not the most glamorous or the most stimulating but protecting the integrity of the Tuas Industrial Maritime Estate is of undeniable national strategic importance. The Estate is a strange place. We're so ulu we may as well be in Malaysia. The sense of scale is completely off. Too big and too small at the same time. Walking down the boulevard you see flatted factory after flatted factory, the immense vats of refineries like gigantic play blocks dropped from the sky. Desalination plants that look like five-star hotels, incineration centres with these tall, vaulted ceilings and curved steel like a futuristic cathedral. Then you see the ruined ramps and haphazard mounds of aggregate belonging to some cement manufacturers, with these wild packs of dogs that roam these piles, like we're in Johor or Batam. The workers like them apparently, but they are useless at keeping intruders out. There are worksites and buildings that were already abandoned by the time I started working here, years ago. Empty hangars, their rusting corrugated walls raked by sunrise and sunset, completely vacant. Outside, unidentifiable hunks of machinery are left to be eaten away by the salt of the sea wind. Apparently, they are being left derelict until the exact moment they can be redeveloped to yield maximum productivity. It doesn't make any sense to me. You walk by these big empty fields of grass, lying fallow. If you take so much as a step onto this grass, it is my job to remove you, because you are trespassing on precious State Land! I know it sounds ridiculous. It is ridiculous. But it's my job. Some of these trespassers are these weird ang mohs, if you don't mind me saying . . . oh, it means red head in Hokkien, but in Singapore it just means white person . . . no offence intended . . . where they turn up at the aggregate terminal, walking around the private stockpiles, taking pictures, and filling these small plastic bottles of water with the sand. It's theft, plain and simple, but the first time, I was very gracious and polite. Hello sir, sir, sir excuse me, but the bastard kept on walking ahead because he couldn't hear me, he was listening to music. I follow him up the road, watching him take photos, and when he turns to take a photo I catch him, say hello, sir, can I please ask what you are doing here sir, and he's looking at me, smiling like an idiot, like he knows something I don't know. Telling me he's a tourist, he's a tourist here just taking a few photos. I know he's talking cock and I don't care; I just want him out of here. I tell him it is dangerous for him to be here and I walk him out the other end, hoping a dump truck doesn't run him over, and I can see his bag is full of these water bottles full of sand,

which, technically speaking, are the property of the construction companies who purchased it, but each bottle would not even be worth a single cent, so I just stand at the end of the road and watch him walk away, look back, see me, turn around, walk away, look back again and see me again and then finally walk away. I begin making my way around the other side, as the road loops around, and I see this ang moh again, walking the *other* way, walking into the forest, which is also State Land. I'm about to call it in when I hear on the radio there's a work-related incident; some worker who fainted on a site, so I have to coordinate the ambulance and manage any potential unrest at the dormitories – usually there are no security issues, but the dormitory managers are important stakeholders for the Estate, so we have to address their concerns. Later in my office I review the CCTV footage for that section of the Hand, and I can't see the ang moh leave at any point. A few weeks later I get a call that another ang moh and a few other people, maybe a Vietnamese or Cambodian woman are walking around the reclamation site. No one could tell me how they got there, but they just saw them in the distance. Taking pictures. I've been getting more calls like this lately. The men are on edge, talking about how these strangers turn up in the strangest places, popping up behind piles of dirt. A security guard for one of the stockpiles told me how he heard voices at night, dark shapes moving across the dunes. The sound of laughter retreating into the jungle beside the stockpile when he went to investigate. Footsteps dappling the tunnels of the longkangs that run under the stockpile as he returned to his guard post. I put him on unpaid leave and sent him here, I thought he was getting too soft in the head. But I keep on hearing these stories from some of the workers, the foremen, about people popping up out of nowhere. They saw a couple of people laughing and running behind a dune, and when they went to follow them, there was only another dune behind that dune. Where could they have gone? Tunnels inside the dunes, I remember someone saying, there must be tunnels inside the dunes that the intruders are living inside. In the damp dark, grains falling from the ceiling as excavators pass overhead, removing a few tonnes for the next phase of the reclamation. Why would they be here? Doing what? What could they possibly intrude on? Is everyone gila? If it was some agency hiding a few workers here and there without the right paperwork, I could work something out. But these were encroachers, and they were encroaching upon the Hand with no good reason and for no reasonable purpose. As Head

of Security, I found my duties extended to guarantee the security inside everyone's skull. Peace of mind is the result of successfully administered security and I was failing at my job, so I began to take it more seriously. A few weeks later I got a call during the afternoon on Sunday of multiple trespassers on a reclamation stockpile, and I wasn't too far away so I got on a bike. I got to the third Finger, which isn't even completed yet, and have to get off the bike because the wheels just grind endlessly against the stockpile, and I saw them in the distance, two taller figures and one shorter in between. I ran towards them, waving my arms, and even though I was running, and they were walking, I couldn't seem to catch up. I got all the way down the edge of the Finger, to the point where the sand slopes into the sea, and I saw them in the distance back where I came from, shimmering in the heat of the day. Had I been sprinting after a mirage this whole time? Dehydration is the biggest cause of fatalities in the Estate. At a certain point they melted into the metallic smear of the heat and I gave up and began walking back. Walking through the reclamation stockpile, sand stretched in front of me and behind me in long, man-made dunes. I heard this long, sonorous hum as the sun began to set³⁷. I had to head back to sign off for the next watch, but I couldn't seem to find my way. This hum began to stretch into a drone, as if voices in the distance were singing, stretching one note into the expanse around me. The ground beneath me begins pulsing, as if waves far below were ruffling the surface, and I lose my footing. But I don't feel sick; my stomach is soothed by the singing, as if the walls of my intestines were stroked by the vibrations of this one note lingering in the air, the tunnels forming an interconnected series of vocal cords fluted by the wind. I'm stumbling around as if drunk, I cannot find my footing. Making my way back through the stockpile, my thirst is immense, the sung note stretched beyond all recognition had stripped the moisture from my throat. The slopes of the stockpile rise high around me, and I'm sure the guard hut is just around the corner, but there is just another dune, and another dune around that dune. I look behind me and try and climb up to see if I can make out where I came from, but I only see dune. Behind the dune another dune. Perhaps this was all some massive sand barge being redirected elsewhere, and there was never any land beneath it to begin with. The note rises, and I must be getting closer, the

³⁷ Sand dunes, when avalanching, can emit sound. This is known as 'singing dunes' B. Andreotti, 'The Song of Dunes as a Wave-Particle Mode Locking', *Physical Review Letters*, 93.23 (2004), 238001 <<https://doi.org/10.1103/PhysRevLett.93.238001>>.

opening of a mouth or the bottomless pit of a throat that I can smell somewhere on the wind. Then out of nowhere, an excavator comes roaring around the bend, nearly flattening me! I try and flag down the driver, but he can't hear me amidst the noise, he's going about his business. Then I see more excavators come bearing their loads of sand, shaping a pile here, flattening one there. And I realised that this was no stockpile, but a voice being built by all these machines. In the palm of the Hand opened a mouth that would sing this expanse into being. I'm on my knees. I look towards the horizon and let the sunset stain my thirst. Then I see this young woman come up to me, looking deferential and concerned. An apologetic smile on her lips, her eyes eclipsed by a sun hat. I must have been having a nice dream! She presents me with a water bottle, and I begin counting the beads of condensation streaming down its clear blue plastic. I am grateful but my mouth is so dry all I can do is croak. Cold and pure in my hands, I unscrew the top, and put the bottle to my lips, and siao jialat, not a single drop of water touches my tongue, but my mouth fills with sand. I swallow it before I know what happened. My throat is a tunnel for the passage of sand, and as I swallow it I notice that whatever landsickness was there before had gone away: it hadn't gone away exactly, but it had been filled.

After that. I looked up, the girl was gone, the sun had set, and I was kneeling underneath the guard hut. I deleted the call from the report log and went about my business.



8. Learning to cope with endless growth

Sixty years of land reclamation is an unprecedented geographic phenomenon. Most Singaporeans have always lived in a country where the maps change every five years or so. A subtle clump of land suddenly appears along the coast, or the outline of a future reclamation haunts the sea and traces the inconceivable immensity of the land to come, far off in the future. The unsettling shifting of coordinates and borders is the outcome of a political economy that has guaranteed Singapore's place as a global city (Sparke et al., 2004; Bunnell et al., 2006; Latif, 2009; Tay, 2019). Decades before the global city was consolidated into an analytic figure for academic consumption (Sassen, 2001; Massey, 2007; Roy and Ong, 2012), the foreign minister of Singapore in 1972, S. Rajaratnam, gave a speech where he stressed the necessity for Singapore, an island nation with no natural resources or space to spare, to become a 'global city' with the 'world as its hinterland' (Rajaratnam, 2006: 232). As Tay notes in their exemplary conceptualisation of Singapore's logistical space, crucial to the construction of Singapore as a global city is positing that 'the sea is all highway' (ibid: 233; Tay, 2019). Nimble switches up value chains and logistical centrality, two features which have characterised Singapore's developmental trajectory, are underwritten by the spatial plasticity of land reclamation. Anticipating epochal shifts in the global economy and opportunistically constructing and reconfiguring territory to its demands is a luxury which such *living space* affords. Living space, not simply as the lebensraum of Ratzellian geopolitics and biogeography, with its vitalist underpinnings often downplayed in favour of its relation to, and prefiguring of, fascist projects of territory (Klinke and Bassin, 2018; Usher, 2019), but abstract space that is in some twitching, nervous sense *alive* through concrete practice, growing and extending for a myriad of reasons and necessities, but *always* growing and *always* extending. Abstract space, for Lefebvre, is a corollary development of abstract social labour, deriving from the deviation of production from the 'process of reproduction which perpetuated social life... in becoming independent of that process, labour fell prey to abstraction'

(Lefebvre, 1991: 49). And like abstract labour, and which we will return to later, 'to look upon abstract space as homogenous is to embrace a representation that takes the effect for the cause' (ibid: 287). The nature of this fall, as if abstraction is *out-there* waiting to take innocent categories, abbreviates the genesis of capitalism in primitive accumulation, and the latter's relation to specific spatial practices that renews primitive accumulation, to which this chapter turns.

Reclamation is ultimately limited by three factors: Singapore's maritime borders with Malaysia and Indonesia; the shipping lanes and anchorage space for the countless tankers that idle in the Singapore Strait; and sand. This third factor forms a parasitic relay between the expanded planning footprint devised by the Urban Redevelopment Authority (URA) and its rising cost, as the erratic conditions of its procurement always entail the founding of a new granular frontier for Singapore to ultimately break new ground back home. For at least a decade, the promise of new ground untainted by sand has prompted the URA to develop different approaches to intensify space, either through developing land reclamation techniques that are less sand-intensive or adopting new models of spatial intensification altogether, such as excavating underground space. The next generation of the Singaporean state's spatial governance promises to hollow out the earth itself: turning towards the subterranean, the telluric, as so many contemporary practices of territory appear obsessed with (Weizman, 2012; Bridge, 2013; Woodard, 2013; Ballester, 2019; Garrett, 2019; Hawkins, 2019;). Yet amidst all of these plans to develop otherwise, Prime Minister Lee Hsien Loong's 2019 National Day Rally speech reaffirmed the state's commitment to land reclamation; under the auspices of rising sea levels, the state will spend \$1 billion SGD per year until 2100 to finance strategic reclamations to allay the swelling tides of anthropogenic sea level rise (Lee, 2019). While Singapore's land reclamation project has always been posed as a matter of increasingly vague pragmatism and national self-improvement, any distinct reason sieved through the tautological refrain of 'we are a small and vulnerable city-state, and we need more space', anthropogenic sea-level rise presents a perverse opportunity for the state to disguise land reclamation under the ultimate ideological camouflage of mortal survival.

The feasibility of these other techniques of spatial intensification remains an open question. Unless reclamation with sand becomes more expensive than excavation, poldering, floating structures, or mega-caissons, there is no incentive to pursue these lines of expansion until sand finally runs out. Sand then comes to stand-in for something else entirely: the question of the necessity of ceaselessly expanding the ground of the city-state, the in-built spatial redundancy it has depended upon since (and before) independence. If land reclamation is such an ideological *fait accompli*, then newer technologies of expansion tempt us to invert the causality of this situation: instead of the city-state requiring surplus territory, it is surplus territory which requires the city-state. These practices of territory go beyond temporalizing space, but in fact parasitize it in Serres' sense of the term: they simultaneously 'feed' off non-existent, but planned spaces (or 'nonspaces') in their anteriority and interrupt the existing spatial ensembles contiguous to the nonspace. These nonspaces are not magically manifested, but opportunistically selected, rigorously researched, and laboriously constructed as an integrated element of its planning system. To say that it is surplus territory which requires the Singaporean state is to say that with surplus territory we arrive at a fully geographic conception of commodity fetishism, understood as the germinal abstraction of capitalism (Marx, 1990; Zizek, 2009; Best, 2010; Toscano, 2014). There is, of course, no surplus territory *out there* waiting to be constructed out of the 728 square kilometres pregnant with pockets of nonspace. And there is no hyperstitional possession of politicians, civil servants, and contractors compelling them to prise space out of nonspace. However, the compulsion with which the Singaporean state acts to first virtualise nonspace out of existing geography, geology and geomorphology, and second actualise it as space is *as if* this surplus territory is out there waiting to be accumulated, tempts us to think how this surplus territory transforms the governance of the city-state. My argument is not to prove that this surplus territory is alive or autonomous in any meaningful sense; in its eerie and excessive appearance, and the social practices which contrive to maintain it, surplus territory bears an uncanny similarity to the commodity fetish, as a social relation disguised as a fantastical relation between things. I argue that this is distinct from other kinds of land grabs and privatization, forms of property speculation, gentrification, and urban development which characterises land as a commodity (Christophers, 2011, 2019; Li, 2014; Sassen,

2014; Blomley, 2016, 2019; Moreno and Shin, 2018). While there is a similarity in terms of causes and effects, the distinction in this case lies in the relationship between the city-state and its land system which allows it to anticipate, and thus tailor itself to, epochal shifts in political economy, and how sand, as land fully realised as a mobile and divisible commodity, has reconfigured how it views its own territory through a speculative plasticity.

Theories of abstraction and speculation will be used to explore how economic growth has possessed the city-state's geography, with capital's self-valorising metalepsis contaminating space through an ensemble of technical practices and multifaceted structures of reification. This happens not only through the construction of territory but also the factoring of speculative territory into its long-term economic planning before one grain of sand has been displaced. What is this city-state doing by growing? Why has economic growth been metonymized as geographic growth? These questions and problematics will be probed through several interlocutors, such as land reclamation engineers, geotechnical academics, and urban planners, whose technical expertise and intimacy with the infrastructures of spatial accumulation pokes a few too many holes in the 'Singapore Story' of endless growth, the lacunae that in prior decades was reliably filled by sand. All of these strategies, I argue, are long shadows cast by the immense quantity of exogenous sand that has been grafted onto Singapore's coast, its extraction and commodification rendering space abstract, plastic and quantifiable which then serves as the model for the city-state's spatial governance. This plasticity, however, is only possible when space is fully abstracted, with the city-state's geography becoming an amnesiac earth-writing, an endlessly extended *tabula rasa* (Figure 30). Sand's infiltration of Singapore's spatial governance represents another metalepsis, whereby all the strategies to expand without using sand are geoliterary inscriptions of the granular itself.



Figure 30 The translucent skins of buildings yet to be developed on land yet to be reclaimed (Author's own, 2019)

Sand is dead, long live the NEWSand

If sand is the protagonist of this thesis, it is time to meet its double: NEWSand.

The spectre of sand scarcity looms large. While alternate sources are located relatively quickly in as-yet undisclosed countries, the stable and continuous flow of sand the Singaporean state had enjoyed until the tumultuous decade between 1997 and 2007 would never return again. Sand, as a covert seam of Singaporean statecraft, began to assume numerous guises as it became scarce. NEWSand is the most recent and most dubious disguise, a construction material derived from ash from incinerated garbage, its name reproducing the rhetorical ploy of NEWater, the Public Utility Board's advanced wastewater reclamation programme. NEWater was borne of the anxiety and frustration the state had with importing most of its freshwater from Malaysia. Decades of investment and tinkering with techniques of water reclamation yielded the viable and potable final product of NEWater, an unnervingly millenarian rebranding of water itself,

as an informal declaration of independence from Malaysia; sometime soon Singapore will no longer have to rely on the caprice of their neighbour across the Strait for such a crucial resource (accelerated by the damming-off of rivers from the sea into freshwater reservoirs). Self-reliance and vulnerability become part of the same feedback loop which maintains the state's legitimacy, and with scrupulously allocated research funding, becomes prophetic.

Water, once secured as part of a closed autarkic loop, becomes a site of homegrown entrepreneurship that is ripe for export (Bok, 2020). In NEWSand, we find a similar rhetorical fervour, but little else in common with NEWater. While its name suggests that the state has once again developed an innovative solution to the city-state's overreliance on imported sand, in practice NEWSand gestures towards this in name only. According to the National Climate Change Secretariat of Singapore, NEWSand is 'just like NEWater... [it] born out of our determination to overcome constraints and create a precious resource from what would otherwise have been disposed of in landfills' (National Climate Change Secretariat, 2020: 102). So far, the recycled incinerated slag has only been used to tarmac a footpath and 3D print a concrete bench (Goh, 2019). The likelihood that NEWSand will eventually be able to replace sand is slim; according to Yeow Heng-Ming, a land reclamation and soil improvement engineer:

The treatment of the ash changes its matrix because it is burnt twice, making it more unreliable to reclaim with than sand... [and] even after you resolve that issue, the amount of quantities required for infill make NEWSand just a fantasy... what is a big quantity for a landfill is a very small quantity of infill. (Interview with Yeow Heng-Ming, 2019)

This assessment seems to write-off NEWSand as simply an expedient by-product of ideological recalibration, rewriting a constituent source of unease and instability into the Singaporean state-entrepreneurial lexicon of pragmatism and innovation, but far from a practical replacement for sand. However, the notion of the 'closed loop' or 'steady-state' alluded to by the greenwashing hype of NEWSand has already been instrumentalised for land reclamation for over a decade in the form of 'good earth'. In their outline of geophilosophy, Deleuze and Guattari speak of how 'philosophy takes the relative

deterritorialization of capital to the absolute; it makes it pass over the plane of immanence as movement of the infinite and suppresses it as internal limit, turns it back against itself so as to summon forth a new earth, a new people' (Deleuze and Guattari, 1996: 99). Absent philosophy, which is ill-suited to the demands of statecraft, what would you need to summon forth a new people and a new earth? NEWater and NEWSand might not be a bad start. In a 2012 blogpost titled 'NEWater and New earth?' (Figure 31), the then Minister for National Development wrote about the 'less well-known story of how [to] recycle excavated materials from our construction sites into a useful construction resource [sic]' (Khaw, 2012). 'Good earth' and soft clay excavated from construction sites and infrastructure projects are redirected to the concavities of reclamations, a centrifugal redistribution of topography hollowing out the centre to extend the periphery of the island. Good earth implies its opposite, as does new earth. If new earth is excavated from old earth, good earth is separated from bad earth. The old earth is the bad earth, and the new earth is the good earth. If the good earth is the earth that is dug out of the bad, emptying it for space, then new earth is not simply a process of expansion but a process of renewal, rehabilitation, and redemption. As I will explore later in this chapter, the invocation of a new people and a new earth is not solely ironic. Beyond the banalities of its functionaries, the unwittingly radical, even revolutionising core of Singaporean statecraft lies in the metonymic slippage of growth, its economic connotation inevitably colliding with and collapsing into the spatial governance of the state. As Khaw continues, the rationale of New Earth is a prudent one, where waste is obscene:

In most countries, excavated material is dumped on land – this takes up *precious space* and is also unsightly. In Singapore, we have a better way to manage such material. We use unwanted excavated clay and earth to reclaim and create new land. This is a sort of new earth. (ibid [emphasis added])

The redirection of excavated materials and dredged clay as infill is another tell-tale mark of Singaporean ingenuity and exception, yet like NEWater, it bears the spectre of dependence, crisis, and vulnerability, reiterating the durable script of Singaporean state

pragmatism with every invocation (Yao, 2007), with every tonne of good earth dug, transported, dumped, piled, and consolidated. As the cost of sand has risen, both monetarily and geopolitically, increasing amounts of excavated soil, soft clay and dredged marine clay, good earth, have been integrated into reclamation projects. Like with NEWater, dependence on sand, whatever it ultimately meant for the state and its people in terms of realising surplus territory, has been temporarily internalised, at least rhetorically. In reality, Singapore still relies on Malaysia for the majority of its freshwater; similarly, despite the eccentric state promotion of NEWSand and New Earth, sand imports are still critical for the functionality and performance of reclamations.

Figure 31 Excerpt from then-minister Khaw's 2013 blogpost (Khaw, 2013)



The turn towards 'insourcing' for good earth has also had the unintended effect of engendering new vulnerabilities in the spatial governance of the city-state. Excavations of soft clay and good earth are needed in immense quantities to make up for the shortfalls of insecure sand supply, and so depend not simply on piecemeal construction projects but on larger-scale interventions and redevelopment, and redirecting surplus

soil towards staging grounds to be redistributed in barges and ships (Figure 32). The horizon then, for reclamation is not only a transnational sand market, but an internal housing market. 'Good earth' does not fall out of the sky nor can even be dug at will out of the ground but has to be synchronised with another state-administered but independent arm of the state: housing and infrastructure. As Kwon Seok-Kyung, a reclamation engineer I interviewed with, put it:

External sourcing of sand and infill has been the biggest challenge for the project. There were also problems affecting the procurement of soil and soft clay, the housing market slowed down, so there was no more soft clay. Yes [laughs], the slump in the housing market was unexpected and caused the reclamation to slow down. (Interview with Kwon Seok-Kyung, 2019)

The state-administered housing market is by far the most significant one in Singapore, yet the inertia of its increasing marketisation has engendered instabilities that have inflected the interdependence of its spatial governance. One way of looking at this is through the eyes of a civil servant from the Marine Port Authority that I spoke to. Michael Koh was courteous on the phone despite refusing to meet in person and made sure I knew what I was being told had been declassified. When I brought up these issues of this kind of geographic interdependence, he merely noted the potential this practice bore for 'synergizing between different government activities' which leads to their mutual impingement and entanglement. This argumentation depends on a foregone conclusion: of the reclamation itself taking place, and of the synchronisation between disparate elements into a totalising strategy that seeks to extend, and not resolve, the problem of surplus territory. According to Michael Koh, the diversification of fill material for reclamation was pioneered a decade earlier, and subsequently built into the future phases of the Tuas Megaport Reclamation:

As you know, traditionally reclamation even in other countries or Singapore in the past we did it through more granular materials, more, what do you call it, that is more stable or harder material such as, uh, sand, for reclamation. So in this [Tuas Megaport] phase one, or in Pasir Panjang phases 3 and 4, we have done it on smaller scales, to reuse dredged materials, or materials generated from public infrastructure projects, and dredging of our basins. We took that

experience to Tuas, and in our tender we encouraged the use of more dredged materials to build up to higher levels. The challenge with dredged materials is that it is not granular, it is very slimy, it doesn't build up to a slope... We encourage contractors to use more dredged materials and accepted a tender for up to 70% dredged materials... and through all these methods, we saved up to 1 million Singapore dollars in terms of sand not used. (Interview with Michael Koh, 2019)

These practices, from excavated soil to dredged marine clay, were test-bedded incrementally, then built into the procurement process, where companies compete against each other for lucrative tenders, drafting bids that promise their technical expertise will, amongst other things, guarantee maximum efficiency from a minimum of sand. But again, it is evident from Michael's matter-of-fact response that these dredged and excavated materials are *not* granular; the space carved by the granular brackets a minimum amount of work that only *it* can do; the more this slurry is used, the more critical sand becomes as a granular guarantor of reclamation. As Kwon Seok-Kyung, a land reclamation engineer I interviewed, suggested, the work of the granular in a reclamation derived from what sand did *not* do: it was almost apophatic:

Sand does not contain any settlement whatsoever, and it does not absorb any water. Water passes right through it because of its high permeability, so it dries quickly. With sand, you really don't have to worry about anything. (Interview with Kwon Seok-Kyung, 2019)

Another way of looking at it is to consider the contingencies and interdependencies of these other means of developing coastal space as being offset and obscured by, if not entirely buried in, sand. Once the sand stopped flowing, the grisly intimations of the state's centrifugal hollowing and expansion of topography, and their fluctuation under other modes of spatial governance and financial management came to the fore. The difference sand makes when it comes to reclamation is stark. For Yeow Heng-Ming:

Sand basically makes water disappear. Sand only has to go through a short stabilization to fill. It's quite remarkable, sand makes designs very reliable, and

makes design calculations very accurate. Reliability saves costs, there's less variability. (Interview with Yeow Heng-Ming, 2019)

Sand's inborne calculative fidelity (the result of a singular excision from geomorphological multiplicity) makes it a remarkable and practical material. Its granular performance stabilizes the design, rendering it coherent and reliable. The amenability of sand to calculation is inverse to the 'messiness' of the good earth and soft clay which has replaced much of the prior ease and clarity of translation between design and execution, as made clear by Yeow Heng-Ming:

Sand is not that compressible, whereas soft materials deform. In soft clays or soils, deformation takes place over a long time. Sand compresses in days. Clay or soil fill is unpredictable for topsoil to stabilize – it's a longer timeframe. You need to use more prefabricated vertical drains to consolidate it, which makes it more labour- and skill-intensive. (Interview with Yeow Heng-Ming, 2019)

The declining availability of sand has been a reality for reclamation work in Singapore for some time, making projects more time- and expertise-intensive, with less margin for error, as the settlement in the soft clay threatens to slur the new earth about to be reclaimed. While these endogenous sources of infill, good earth and soft clay, are being used in greater quantities, this makes sand all the more critical for reclamations that are being conducted. And their synchronisation is, again, a spectre of the granular, where excavation of the interior is required for the expansion of the exterior. Sand effected a metalepsis of solid ground into *good earth*. It is the interior of the island, and the plans that are being hatched for its inner depths, to which we now turn.



Figure 32 Barges being loaded with 'Good Earth' (Author's Own, 2019)

Telluric desires

Singapore's underground turn has been in the works for decades. It began with pioneering the safe underground storage of munitions in far greater confines than was previously acceptable, which created the technical and intellectual foundation for the underground to be developed in the future. And while the state would have you believe this is evidence of foresight, as we will see, it is another representative of the ideological slippage between economic and geographic growth. In an interview conducted by the

artist Charles Lim and curator Shabbir Hussain Mustafa with the former Chief Defence Scientist of Singapore, an influential figure from the 'Pioneer Generation' of Singapore's independence, the genesis of subsurface development lay in a genial optimisation of military storage space for ammunition. This initial optimisation, freeing up space on the mainland for an airfield, then led to a more speculative proposition:

Then we asked ourselves if we could create caverns, not only for the storage of ammunition, but other uses. We brought in all the other agencies. For instance, the Public Utilities Board, Singapore (PUB), they considered our proposals and said they did not require it for water storage. Only one agency was interested – Jurong Town Corporation (JTC). The problem they were facing was that the oil tanks on Jurong Island are a very inefficient use of land. The tank is only about three storeys high. So the chairman of JTC inquired if we could have caverns underground, but this soon proved to be less feasible since the existing land had already been allocated for different uses. It was then, that I suggested, why not build under the sea...? Thereafter, we conducted our studies and established that it was feasible. We were constantly asked, "Anybody done this before?" The response was, "No, nobody has ever needed it."... So we would be the first in the world to build under the sea. I often wondered, "Do you dare?" I mean the physics said it is possible, so you must believe in the physics. The imagination is in what others have not done, and we should not be constrained just because others have not done it. (Lui, 2015: 93)

The Jurong Island Rock Caverns, the first of their kind not simply for excavating under the sea, but for storing petroleum, inadvertently grained the underground with the recursive materiality of the granular. The rock caverns connected excavations beneath the reclaimed land of Jurong Island underneath the sea itself, leaving it twice betrayed, twice subverted (an agglomeration of seven other islands no longer named). If excavations are now roughly 'synergized' with the timelines of reclamation projects, future reclamations executed under the auspices of mitigating sea level rise will certainly entail the hollowing out of the underground. Likewise, as Horace Ang, a tunneller I spoke with put it:

‘if you couldn’t dispose of the excavated material in a reclamation, it would just become a waste of space’. (Interview with Horace Ang, 2019)

Vertical and horizontal expansion must become reciprocal to be fully realised. The irony of land needing to be reclaimed to allay anthropogenic sea level rise after reclaiming land and excavating tunnels to store and process petroleum is telling: they are incubating their own demise in the reclaimed caverns of Jurong Island as they plan to reclaim to abate the swelling tides. National survival has only become the latest and best camouflage for a logic of governance no one has been able to explain, let alone justify. Currently, the integration of the underground into the broader repertoire of the city-state’s spatial governance has been tentative, its well-publicised potential unrealised except for a few test-bed developments outlined in the 2019 URA Master Plan. Having brief discussions with several tunnellers, it was not hard to see why: digging is so much more time-, labour-, and expertise-intensive than reclamation, where sand can do so much of the work. While there is allegedly 100,000,000 cubic metres of underground space to be realised (Zhou and Zhao, 2016), the risks are considerably greater as well. For Horace Ang:

Underground space creation is a costly business, and very risky as well. There was some water seepage in the Jurong Caverns after they were excavated, so they needed to revise the grouting techniques and material improvements. There are always the vibrations to worry about, you can’t quite foresee exactly how materials will respond going forward because there are so many mutually influencing factors. An issue with the whole thing is that they’re checking what’s smart and not what’s safe. There is a whole issue of maintenance that needs to be addressed before we move further underground. But there’s this idea of cut down costs, speed up. (Interview with Horace Ang, 2019)

While these anxieties conceive of underground space in a mostly technical mode, these practical considerations reckon with the dynamism of the earth, and the mutually impinging matrix of factors involved in producing underground space, in stark contrast with the pioneering attitude of Lui Pao Chuen in Lim and Mustafa’s supposedly revealing, but ultimately state-sponsored reification of underground space. The vulnerabilities engendered in the subsurface is that of ungrounding, of the whole

becoming hole. Seepage, leakage, creep and drift, relatively ordinary geotechnical factors and worries swell to catastrophic prominence. The threat of the underground is not only technical, but already pregnant with geophilosophical implications, as outlined by Woodard, 'since ungrounding or exhumation incapacitates the consolidating power of ground, the earth cannot be narrated by its outer surface any longer but only by its plot holes, vermicular traces of exhumation' (Woodard, 2013: 54). Ground, once deprived of ontological stability and wholeness, leaves us with only further holes to dig and spaces to be exhumed. Moving underground is an irretrievable gesture towards immurement, to burial, which is reinforced by the actual threat of burial borne out by the contingencies and complexities of excavating and maintaining underground space. As the space is exhumed, we are entombed. However, in the banal modernism of the Singaporean state, underground space assumes positively rhapsodical dimensions where its long-standing resource woes could be resolved, and immured (Figure 33). Out of sight, out of mind, as Lui Pao Chuen expands upon in his interview.

Two months ago I came up with the idea and said look, storage of water is not such a great idea because water is too cheap in Singapore, about S\$1.25 per m³. If you store oil it's S\$50-60 per m³. If you store sand it is about S\$50 per m³. If you can use the space to store sand, then I can free up the land that is used to stockpile our sand. Then we have a solution. Use the underground spaces under the port for storage of sand and stone. But actually if you can do that, surely we can do that for the precast yards too. The precast yards in Singapore, which are currently up on land are too expensive. Where do they go to? But hey I can use the space underneath the port for stockpiling and also as a yard. (Lui, 2015: 94)

In the city-state's telluric fever-dreams, the underground is a space where all of Singapore's resource-borne anxieties could be resolved according to rational allocation of space according to price and rendered equivalent according to this logic. Space, energy, water. Sand stockpiled to reclaim land could be stored in underground caverns, freeing up the square kilometres devoted to stockpiling towards higher-value activities. In addition to storage, the underground itself could become a source of energy, with holes being bored to test the feasibility of geothermal energy, as well as a feasibility

study funded by the National Research Foundation to assess the possibility of siting a nuclear reactor underground in surface-starved Singapore. To this last possibility, Horace Ang added:

‘it does not sound appealing if you ask me... even the underground is congested...’ (Interview with Horace Ang, 2019)

Even with the potential of nearly one hundred kilometres of underground space to be developed, it is already congested with telluric desires which unground and unsettle. If biopower is “subtended by geology” (Yusoff, 2013: 780), then what kind of subjects will be produced by this underground rush? Once the ground is hollowed, subjects will be grounded through the territory without origin, and its recursive vermiculation of fear and sand as governing strategy in the contingent void of the earth. At the end of the interview with Lui Pao Chuen, it appears that the final frontier of spatial accumulation is deep time itself:

Q: Last question, what do you think is the next stage in terms of caverns?

A: ...My vision is to lower the levels so that our drains lead into the tunnel system and since we can capture water, let’s use it. So the next major project, would be this. Reservoir.

Q: What you are saying is that there will be a kind of a layer of water under Singapore Island?

A: All we need to do is at certain points, bring a shaft down into a tunnel that leads to the underground reservoir.

Q: So eventually there will be water independence?

A: It is only an S\$5b project. Why? Because S\$5b is how much the integrated resorts costed. If one can spend S\$5b for gambling, surely you can put S\$5b to for the caverns... That is what it costs. How long will it last? Maybe 30 years and that’s it. How long will caverns last? Umm... a thousand years? (Lui, 2015: 95)



Figure 33 From URA 2019 Masterplan exhibition, pioneering underground kitsch (Author's own, 2019)

From abstract space to surplus territory

The sand stopped flowing, but the machine didn't stop, it kept going, and everything that the sand had concealed with its mesmeric and sterile motion began to sop and slur, the idea of ground itself quivering, whether with fear or hunger we could not tell.

Now, after outlining the means through which space will be reliably harvested long into the future, the granular crises of confidence blooming into a (w)hole suite of strategies and innovations to honeycomb the territory of the city-state, it is time to ask *why*. Singapore's smallness is a conclusion so forgone that questions of its expansion become purely pragmatic and instrumental. While it is impossible to deny Singapore's geographic size in comparison to most other nation-states, a much more telling comparison is one of growth: which other nation-state in the world has been steadily and reliably growing for the last six decades? The geographic constraint of smallness is in fact an ideological conceit, synonymous with the state discourse of 'vulnerability' which shapes the bounds of acceptability in the state's discourse of pragmatism (Yao, 2007).

The endless return to reclamation as a solution for the city-state's problems resembles a compulsive 'acting out' performed by the subject, who, 'in the grip of his unconscious wishes and phantasies, relives these in the present with a sensation of immediacy which is heightened by his refusal to recognise their source and their repetitive character' (Laplanche and Pontalis, 1974: 4). Land reclamation, as a practice of statecraft, precedes the Singaporean state. It originated as a limited geographic rearrangement of topography for the benefit of the British Empire, to opportunistically site ports and forts, land 'made into tabula rasa for European inscription' with its reciprocal 'ledger[s] of flesh' (Yusoff, 2018: 43) in the form of Indian and Chinese migrant labourers, who had either been brought to Singapore by the British as convict-labourers, or come to escape the disaster of British colonialism. As Fok notes in their exemplary legal history of reclamation, the contemporary precarity of migrant labour in the reclamation industry in Singapore was perversely prefigured by the convict labour

'employed' to develop land in the interior of the island and prevent its natural return to jungle. The tabula rasa created is for the exclusive domain of commerce and productivity. This then metamorphosed into the reclamation projects of self-governing Singapore, preoccupied with consolidating its population into fully-fledged and adequately housed citizens, with suitable soil from the hills in the interior cut down and used to level the foreshore. This territorial nation-building accompanied vicious political repression, including anti-communist purges and detentions without trial under Operation Cold Store, some lasting decades, through which the PAP consolidated its formidable control of (including the confinement of political prisoner Chia Thye Poh to a one-room guard hut on Sentosa Island in 1989, after 23 years of imprisonment without trial, while it was being reclaimed (Mutalib, 2003)). These extensions into the sea were self-contained, constrained to the existing geography and geomorphology of the city-state. With the incorporation of imported sand, the terms of this limited, yet dramatic, transformation of the foreshore became, if not limitless, then accumulable.

It is worth returning to the alien source of Singapore's anxious spatial governance: sand. This is not only because sand is our protagonist, and we cannot bear its absence for too long, but because its granular materiality makes it such an intriguing yet simplistic model of space as a fetishized commodity. The uncertain margins of the price of sand necessitates geophysical margins that can absorb the volatility of the regional sand market in the form of the stockpile. The dunes stretching across these stockpiles diagram hundreds if not thousands of separate and fragmented routes from numerous and unverifiable sources. These internal territories of sheer extraction present us with the opportunity of glimpsing abstract space in the flesh.

The opening of the granular frontier, and the promise of endless territory to be accumulated through it, is premised on an abstraction. In the form of Singapore's demand for sand for reclaiming land, territory becomes contaminated by commodity fetishism. While previous projects of territory-production and transformation were designed and executed for commercial or infrastructural purposes, the nominal pricing and sourcing of the territory itself was autochthonous, from within the parameters of the state. Soil, foreshore sand, and soft clay were informally commodified, but not fully alienated and subject to the exchange abstraction. With the informal commodification of

sand, territory is no longer a static and definitive geopolitical limit, but a commodity that can be extracted, transported, and accumulated to the benefit of the state. In fact, it is land that only becomes land through technical feats of engineering and legal proclamations and loopholes: through a variety of geoliterary inscriptions. It becomes a 'real abstraction', territory completely divorced from its sensuous appearance and premised upon this disjunction (Sohn-Rethel, 1978), able to be posited and realised where it was not before, and thus accumulated. While the commodification of sand does not guarantee the accumulation of surplus territory, it inaugurates territory as a commodity, and then becomes a primarily economic and technical question to be answered by the state, and their overall administration of land. But for a paradigmatically successful global city, with an exceptionally well-planned land use system, the accumulation of surplus territory becomes a necessity, as a recurrent puzzle piece that can be tailored to address future contingency: even on the URA Master Plan, recently reclaimed areas are often a suspicious shade of sand, their use yet to be determined, 'reserved' for an uncertain future. It is surplus.

This basic structure of abstraction, whereby the concrete, sensuous qualities of labour or commodity are ground into the pure quantitative generality of exchange, wresting things and bodies into violent commensuration, is baked into consciousness through social practice. As Marx strove to show how capitalism works behind the backs of those who believe they are doing their own bidding, even the shrewdest capitalist, reification was developed by Lukacs to account for how a particular political-economic form of abstraction becomes perpetuated at every level and in every sector of society:

the reified mind necessarily sees [the commodity form] as the form in which its own authentic immediacy becomes manifest and – as reified consciousness – does not even attempt to transcend it. On the contrary, it is concerned to make it permanent by 'scientifically deepening' the laws at work. (Lukacs, 1991: 103)

The relentless production and intensification of space in Singapore is an example of a multifaceted technical and political-economic structure of reification. Surplus territory became realised through sand, for a time, and then harshly revoked, but the reification of space as an abstraction lingered in the structure of the city-state's spatial governance as a tantalising possibility. Recalling Kornbluh's formulation of metalepsis as the literary

trope analogous to the self-valorising equivocations of the value-form is helpful here, providing as it does an 'ersatz grounding for the logical non-groundedness of exchange' (Kornbluh, 2014: 7). Metalepsis is figured as the substitution, appropriation or infiltration, of one figure of speech or metonymy by another, and in narrative terms as a transgression of one (higher, or extra-diegetic) narrative order by another. The spectre haunting the commodity fetish is a spontaneous 'philosophy as-if' in Vaihinger's sense:

Speculation consists not only in this abstraction, but in the logicotemporal leap that realizes the abstraction: although parties in an exchange relation act *as if* the value of their objects already inheres before the sale, there is no possible guarantee of value ahead of the time of the exchange; only after a sale can value obtain. (Kornbluh, 2015: 7)

Kornbluh emphasizes De Man's understanding of metalepsis as a swapping of causes for effects. For De Man, metonymy, the metaphorical signification of a part for a whole (or in his example, of *tongue* for *language*), is taken as a form metalepsis itself (De Man, 1982: 108). If the former is the part coming to represent the whole, then the latter is an alienation of a part by a whole from elsewhere; a metonymy ungrounded from its original representational moorings. The former is a relation of reciprocity; the latter, transgression. Hence De Man's emphasis on metalepsis as a swapping of cause for effect (De Man, 1996: 117); in a temporal sense, commodity fetishism also binds time and space from elsewhere: in the anticipated and forecasted, but still unknown future.

Sutherland, in his engagement with the conceptualisation of abstract labour as fleshy congelation and the genealogy of commodity fetishism presents them both as elements of satire operative in *Capital* and critical for understanding it as a literary performance towards revolutionary ends (Sutherland, 2011). They can't be understood as works of pure, perspicacious theory, as the literary construction of both concepts depends on undercutting bourgeois propriety through satire. Abstract labour is the rendering equivalent of concrete, heterogeneous activities, but this process is not abstract; it derives from the sinuous and metabolic expenditure of the worker themselves. Thus, this rendering is like the rendering of fat: an irreversible change of state which produces a confection to be consumed by the capitalist. Satire, as a genre, stands as key for understanding the construction of abstract labour as a commodity which the capitalist feasts upon, eating the congealed blood, masticating upon gristle and cartilage,

transforming the freedom to buy and purchase labour and its products into the vampiric predation of the capitalist.

The trope of commodity fetishism is posited as a similarly satirical contraption, consciously appropriating a trope of racist 19th century ethnography to specifically target that other bourgeois phantom: rationality. The bourgeois revolutions and the 18th and 19th century reviled superstition and religious thinking, and so by adapting Charles De Brosses concept of fetishism, deployed as it was to dismissively characterise folk belief systems and superstitions in Africa, Marx turns this ethnographic imperialism inwards to satirise bourgeois economy, and the babbling commodities it ushers into existence, displacing the flesh and blood social relation through an unconscious ventriloquism, a chorus of mystical prosopopoeia. And so, how is space being manifested by the Singaporean state? As a phantom of its own pragmatism and rational planning: space has acquired a metastatic autonomy only *because* it has been fetishized into an abstraction, with the wanton extractive practices and rampant labour exploitation that produce this space displaced into a phantom of growth. If the 'product' that is obscured by commodity fetishism is abstract time in the form of the working hour, through which wage labour is standardised and articulated, then the humble grain of sand is what is obscured by the city-state's practice of abstract space, a geomorphological fabula now engrained in its urban model, graining space with a plasticity that allows it to more flexibly reconfigure its territory for reproducing itself as a global city and logistical node. More importantly, even without sand, the grain becomes an analogue for space that is not only fully manipulable, but accumulable, an analogue that finds its origin in the rivers, coasts, and estuaries of Koh Kong, of the Riau archipelago, of the Mekong, Johor and the Irrawaddy rivers. Abstract space presents itself as homogenous, when in fact it derives from the differences of these places translated by geoliterary inscription *into* equivalence: sand is the product of this relentless metalepsis the city-state requires to function. In its scarcity, and even absence, sand becomes all the more conspicuous to guarantee the accumulation of surplus territory. And what is reclaimed land but a satire of territory itself? A flat, empty container, a blank slate for the projection of the state?

As seen in the interview with Lui Pao Chuen, once investments in research and development pay off, and new techniques are pioneered, Singapore then becomes an international purveyor of solutions, planning, and expertise. The willingness of the

government to fund this research, such as through the National Research Foundation, which has funded successful research into underground space and new infill materials, is crucial for perpetuating new forms through which space can be abstracted, and space reified through surplus territory. Sand was the originary metaleptic transgression, allowing surplus territory to be accumulated from other territories without the salutary clarity of invasion, cleansing territory of its geopolitical valences at the cost of graining it with a hidden geoeconomic trajectory. The accumulation of surplus territory is the realisation of space as plastic, able to be destroyed, redeveloped, and remade. The externalities churned up by the extraction and international traffic of sand become increasingly configured within the city-state's own territory, the extension of the reclamation concatenating back as the hollowing of topography, both movements characterizable through the growth of 'plot ratio', the measurement the URA determines the intensity of a given plots development. The accumulation of surplus territory is ultimately reliant on an authoritarian temporality, as Kwon Seok-Kyung reminded me:

The tender for the Tuas reclamation was planned 30 years ago – before the MPA existed. They look not 10 but 30 years in advance. Singapore can look in advance because they don't have to worry about elections. Mr. Lee was a dictator like the Korean one. (Interview with Kwon Seok-Kyung, 2019)

The only *alien* power abstract space holds is one of space as satire, realised as speculative territory to be accumulated in surplus. (Figure 34). To what end is this surplus territory being accumulated? To cope with the uncertainty of the global economy to which the global city has grafted itself to, and that has internalised through its granular geographies; learning to cope with endless growth means to see the world as so many grains of sand to sculpt and crumble: to dig yourself out of a hole.

The parasite doesn't stop. It doesn't stop eating or drinking or yelling or burping or making thousands of noises or filling space with its swarming and din. The parasite is an expansion; it runs and grows. It invades and occupies. It overflows, all of a sudden, from these pages. Inundation, swelling waters. Michel Serres, 2007: 253



Figure 34 A reclamation of the coast of Changi (Author's own, 2019)

9. All lines flow in: SEA STATE and the sand complex

As Singapore's coastal development has persisted and intensified over six decades of independence, the question of what, and who, this development is for, has begun to rear its head in the city-state. While the explicit questioning of the state's logic is reserved for maligned anti-government detractors, subtle interrogations of the city-state's territory have made their way into public view in the guise of art works, installation, and films. As these cultural products have begun to encounter some modicum of international prestige, the line between criticism and co-option becomes ever more porous, especially as the state becomes covetous of cultural clout. Most notable has been Charles Lim's *SEA STATE* project, an interconnected series of works which reckon with Singapore's infrastructural underside, the titular sea-state that underwrites the city-state proper. In the downstream sector, where the sand becomes integrated to its new 'host', making sand public has entailed an entirely different set of strategies. The differences in the manifestation of the granular frontier in Singaporean cultural production are instructive, if treacherous. On the one hand, the outright aestheticization of the sand complex is redolent of the tension between the stifling confines of political criticism in Singapore and the burgeoning creative and cultural cache it needs to acquire to cement its 'global city' status. It is only by moving these difficult questions onto the terrain of culture that they can acquire any broader salience or start a public, if euphemistic, 'conversation' outside of the familiar scripts of thwarted opposition to government repression. Their success as cultural artefacts, both locally and internationally, while not solely bound to making the sand complex partially public, is caught in the friction between the inherent fantasy the sand complex produces and the reality of its venal administration that cannot be fully disclosed without provoking some form of state reprisal. A retreat into aesthetics is one way of remaining beneath the surface of censure. On the other hand, the ambiguity of the 'insider status' of these works and the glimpses of the sand complex they afford are limited by the terms of their

engagement and institutionalisation. In its mediation of the granular frontier, *SEA STATE* confronts the issue of metalepsis, and how a fundamental transgression of sovereignty is recuperated and smoothed into political-economic order.

This chapter interrogates the (city-)state as work of art, posing how the question of authorship troubles Singapore's projection of sovereignty, revealing the city-state as a city state, shifting between solid and fluid through Charles Lim's *SEA STATE* project and Kalyanee Mam's film *Lost World*. This is accompanied by excerpts from a conversation I had with Charles Lim, which touched on his work but more broadly on how he conceives of his artistic practice in relation to making sand public while being both formally and informally supported by the state. The focus of *SEA STATE* is not the familiar tale of Singapore's miraculous developmental trajectory, metonymized in founding Prime Minister Lee Kuan Yew, who passed away in 2015, the year *SEA STATE* formed a part of the first Singaporean Pavilion at the Venice Biennale. Lim's work is notable in its unprecedented level of access to the cutting edges of Singapore's expansion, from the excavations of the Jurong Rock Caverns, to Pulau Tekong, to the Tuas Mega Port reclamation (Figure 35). While human figures recur ambiguously throughout *SEA STATE*, some silent and some speaking, the subject is the infrastructural underside of the city-state itself: its sea-state. It avoids the pitfalls of hagiography any human story of the city-state's developmental trajectory would entail, the 'Singapore Story' that was written by the 'Pioneer Generation', focusing instead on the technical marginalia of its geographic transformation. *SEA STATE* was initiated in 2007, with the film 'it's not that I forgot rather I chose not to mention', followed by 'all the lines flow out'. Remaining rooted primarily in film, subsequent *SEA STATE* works engage with photography, cartography, sculpture, installation, and interviews with the 'sea-statesmen' themselves throughout its ten iterations, two of whom, Captain Wilson Chua, and Foo Say Juan, will be discussed in this chapter. The name of the project is itself a pun on oceanographic statistical aggregate of the surface condition of a body of water, where 0 is 'calm (glassy)', and 9 is 'phenomenal'. Lim's background as an Olympic sailor figures heavily throughout *SEA STATE*, the project beginning with his frequent collisions with clumps of reclaimed land throughout Singapore's waters not yet marked on the map. Notable in its international reception, forming part of the first Singapore National Pavilion at the Venice Biennale in 2015, as well as numerous solo shows, *SEA*

STATE is the product of a decades-long research project. Lim's acclaim and promotion by the state is intriguing, as his works tread the boundary between critique and complicity.

While I cannot discuss *SEA STATE* in its entirety, I will be focusing on the works in *SEA STATE* where the traces of the granular frontier are the most palpable and problematical, and how it shapes the sea-state's encounter with the sea in its most private parts. This will be done through excavation of several figures that interlock throughout the escalating iterations *SEA STATE*: the grid, as a rudimentary cartographic gesture; the inversion of land and sea, so the former becomes fluid and the latter solid; and the proclamation, a legal text which converts the foreshore into State Land. While all these are principal figures of separate works in *SEA STATE*, they are also processes that permeate this body of work and function to conceptually knit them together; in essence, they are all instances of geoliterary metalepsis the sea-state relies upon for its exponential reproduction. Firstly, I will discuss 'the GRID', a cartographic innovation unique to Singapore, which features in the longform filmed interviews of *SEA STATE 7: the inarticulate sandman*, and *the GRID: intimations of a chart*, which became unwittingly implicated in the granular frontier. I will then examine *SEA STATE 5: inversion*, an 'inverted' 3D print of the seabed around Singapore as a kind of governing principle for Lim's project, as the premise of *SEA-STATE* itself is the 'inversion' of land and sea: the city-state being the province of land, and the sea-state the province of the sea, with reclamation acting as an invagination of the sea by land which is simultaneously land's 'maritimisation' (Adams, 2018). I will then discuss *SEA STATE 9: proclamation*, a film which takes as its point of departure the act of reclamation itself, where we see one of this thesis' para-sites, the Tuas Megaport, in the process of ingesting some measure of possibly Cambodian sand. This explicit exposure of the granular frontier is followed by *SEA STATE 9: proclamation garden*, an installation in the form of 'foreign' species of plants taken from reclaimed land, which surfaces the hidden ecological remainder of this form of geographic expansion.

The success of Lim's works in international cultural circuits may ultimately be to the benefit of the Singaporean state: it is a place of resonant and perverse problematics that can be translated into timely and important cultural products. More urgently,

perhaps the crucial gesture that Lim's work can't afford to portray from the inside is the representation of this movement of material (and the reciprocal movements it occasions and conditions) in its entirety. Lim's work takes the aesthetic of the insider and inverts it, conscientiously adopting and deforming the state's own sight to reveal the sheer, aesthetic *work* of Singapore's territory. There are limitations to seeing like a state, even if its own sight eventually manifests its own desire, which is why I will end by putting *SEA STATE* into relation with *Lost World*, a short film by Cambodian-American filmmaker Kalyanee Mam. Mam's previous feature-length film, *A River Changes Course*, traces the life of three Cambodians as they negotiate economic transformation and socioecological devastation. *Lost World* begins in a similar vein, at the scene of the crime in Koh Sralao, following a woman from the village as she narrates the misfortune that befell her home as sand was extracted from beneath their feet, who then visits the Gardens by the Bay. The reaction to this film, more than the other two works, drew the ire of the state and its unofficial representatives (and perhaps more than a few Internal Security Department recruits tasked with astroturfing campaigns). And while the accuracy of the gesture depicted in the film, that of a woman travelling from Koh Sralao to the Gardens by the Bay in Singapore, Marina Bay being reclaimed decades ago, it unsettles the rhetorical and geographical ground upon which the city-state projects its most delirious fictions of sovereignty: by throwing sand in the gears of the global city, and showing that its success is extracted rather than merited.

And more tellingly, I am writing about an entire body of work and years of research in relation to seventeen-minute film, which, while impressive in its scope and brevity, somehow completes the gesture that *SEA STATE* could not accomplish; for the final inversion is a temporal one: it is a return of the lost world that was sacrificed for the ushering in of a new one.

Sandscape 1: grid



Figure 35 Still from SEA STATE 9: proclamation (Lim, 2017)

SEA STATE begins with the innocent-enough premise that, for a city-state with such rich maritime history and traditions, and the ongoing geostrategic importance of its ports, the sea is curiously absent, both geographically and in the national imaginary (Teh 2012). This point is most explicit in the interviews with Captain Wilson Chua, former hydrographer of the Maritime and Ports Authority, and Foo Say Juan, former sand surveyor, included in SEA STATE's exhibition catalogue for the Venice Biennale. Both are consummate insiders of the sea-state, sea-statesmen, yet they alternately bristle at some of relatively innocent lines of enquiry when asked about 'the GRID'. It is the artist and curator's term for the method of cartography under discussion that both Foo Say Juan and Captain Chua share, that maintains and monitors the limits of the sea-state. The inward-looking nature of the project, far from being a mere fault or symptomatic, reproduces the state's own sight, in Scott's calculative and regimented sense of governmental perception (Scott, 1998), with 'the GRID' functioning very much as this kind of sight that recoils at its own reflection. The cracks in the pragmatic apertures of the sea-state can only be traced back towards but cannot make it through to the other side because those faults are opacities designed to facilitate the projection of a totality. It is an asymptotic movement towards the source of the projection, that

articulates the historical and technical continuities between the sea-state's systems, that reveals how it perceives its own limits and aporias through alternating logics of inversion and excavation. The sea-state becomes an aesthetic conceit whereby its form is composed of its sedimented content, the gaze of the artist duplicating the alternately paranoid and dissociative gaze of the state, or as Lim put it in our conversation:

The conceptual art is kind of like a cover. The work of the artist and the work of the government is not so different. I don't want to make work that just criticises the government, because if a work of art is just a work of criticism, it's limited by what it can really say, it gets didactic... Sometimes I'm actually saying quite critical things, but it's not so explicit, it's from the inside. (Interview with Lim, 2019)

The blurring of the work of art and the work of government in *SEA STATE* is achieved through an aestheticization of governance which, at its best, reveals the speculative core of the foundational principles of technocratic pragmatism. The cartographic innovation of 'the GRID' itself figures as the object of the artist and researcher's curiosity and admiration, and the reticence of the informant. Foo Say Juan was a surveyor for sand deposits in the 90s (Figure 36), voyaging around the surrounding archipelago for sand of sufficient quality to be consumed in reclamation. 'The GRID' was a simple enough innovation in mapping, since it consisted of plotting square nautical miles onto the DGPS and gathering samples at each point on the grid to be able to plot an exact granular taxonomy of the waters surrounding Singapore. Foo Say Juan's grid is then revealed to have been devised by Captain Chua. Each square mile is subdivided into A, B, C, and D, creating a chart for Singapore's waters that was far more precise than conventional longitude and latitude navigation by GPS. While sand mining is absent from the genesis of the GRID, its deterritorializing force is implied as Captain Chua speaks of how the Southern islands of Singapore used to be 'pantuns', that is, rhyming couplets in Malay; 'used-to' because these islands were reclaimed together, their old names erased, and renamed by the authority he worked for as part of his duties with the Maritime and Ports Authority. Elsewhere in *SEA STATE*, the founder of the Maritime Museum in Sentosa, Eric Ronald Alfred, documented the remaining vestiges of life in the southern islands before the residents were decanted into HDB blocks or moved elsewhere and the islands reclaimed and renamed.



Figure 36 Still from the inarticulate sandman (Lim, 2015)

The novelty of 'the GRID' is repurposed as a bespoke surveying tool, its points determining whether the sand beneath is nutritionally viable for the reproduction of the sea-state, and expansion of the city-state. When the artist and curator ponder the possibility that the GRID could be extended across all the waters of the world, Captain Chua responds, 'What for you want to be kaypoh to other people?' (Chua, 2015: 127). Why pry into other people's business? Foo Say Juan's appropriation of 'the GRID' did far more than pry into other people's business but upended untold tonnes of littoral sand throughout Malaysia and Indonesia. 'The GRID' only extended as far as Singapore's appetite for sand reached until 2007, when the granular frontier had to extend after their regional neighbours banned the export of reclamation sand. Captain Chua's admonishment stems from exceeding the bounds of the sea-state, and thus even the necessary question of the transnational sand trade is considered 'kaypoh'. Taken in its historical relation to the sea-state, 'the GRID', as a method of hydrographic survey, facilitated the mapping of the southern islands, their consequent dissolution through reclamation, and the resettlement of island villages into HDB flats, as well as mapping sources of reclamation sand in nearby transnational waters, effecting dramatic deterritorializations and reterritorializations critical for the nation-building of the city-state. These processes were only separated by the parcelling up of public and private

competences: Captain Chua being a civil servant and Foo having worked privately as a sand surveyor. To extend 'the GRID' beyond the defunct mining grounds of the Straits and the Riau archipelago would unnecessarily implicate the sea-state in the fraught business of transnational sand mining. Foo Say Juan is asked if he kept any memorabilia from his days on the sea:

'No, I do not keep any
No mementos, nothing?
No. (Foo, 2015: 111)'

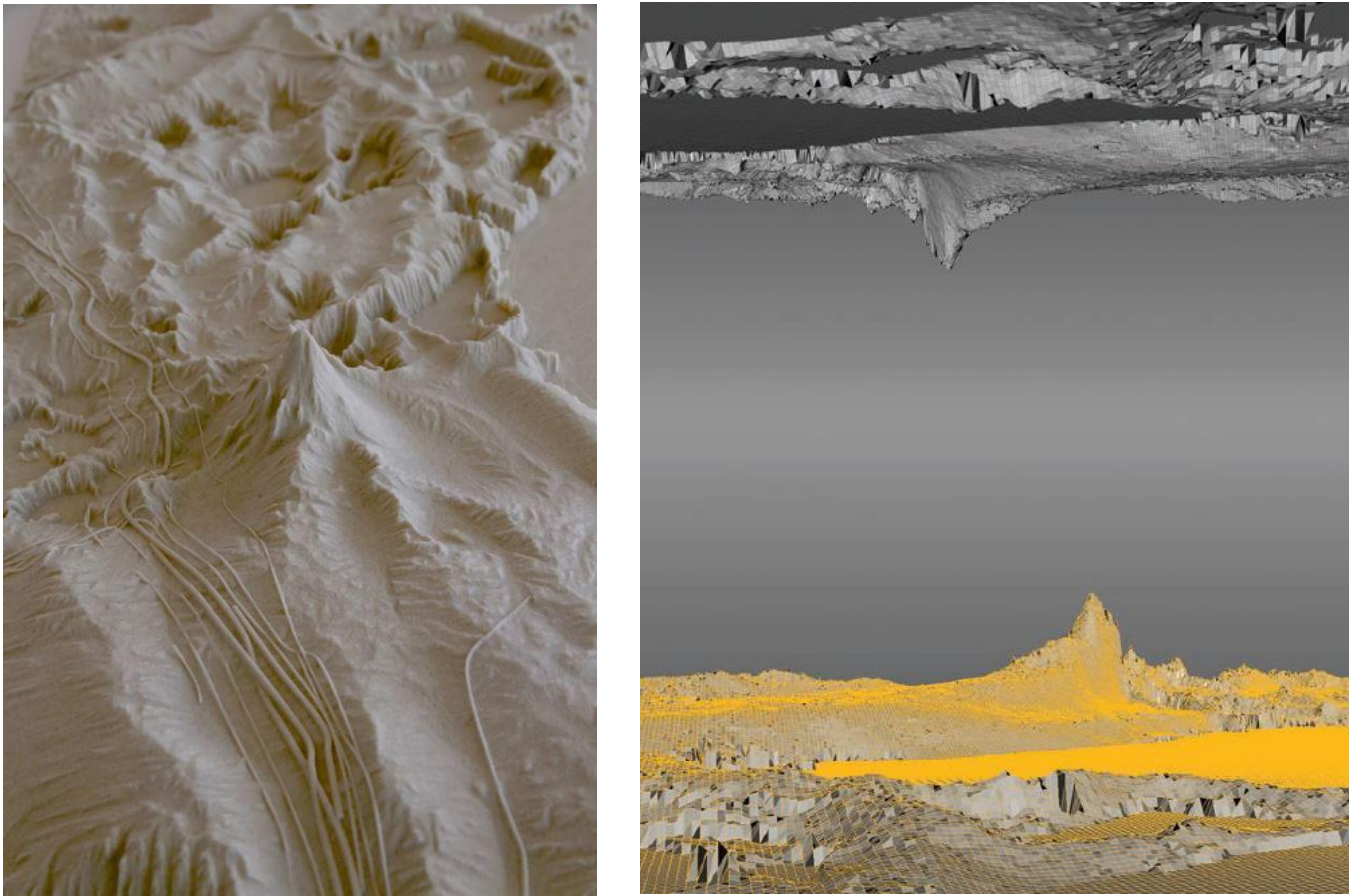
The supposed 'inarticulacy' and reticence of both the Foo Say Juan and Captain Chua are object lessons in the governing principle of the sea-state: the curiosity and enthusiasm of the researchers drifts from safe technical appreciation out of bounds, while for the formal and informal agents of the sea-state, the significance of their own part in these exceptional processes is inadmissible. The details are not unspeakable, just not interesting, minutiae of a job they had not done in decades. But those same details are the precise aporias which connect the sea-state to the water that flows irrespective of boundary, the opacities that conceal the city-state's furtive reliance on other sovereignties to guarantee its own. These aporias, for Foo Say Juan, are the cost of the sand, the charts the sand was mapped on, and any personal memorabilia that is not worth thinking about; for Captain Chua, it is the possibility of the GRID being used to map the waters beyond the Strait. Both touch upon how the GRID was originally instrumentalised by the sea-state as a tool of nation-building and geographic expansion, and then lost its relevance. There is no need for THE GRID to be used to map these waters, because sand mining has effectively been outsourced. While they operated according to a different moral and legal calculus, their work was foundationally concerned with the construction and regimentation of the city-state's territory. Inarticulacy is not the same as reticence. There is a likely possibility that a lot of what Foo Say Juan mentioned delicately avoided admitting any personal liability, such as the multiple times his surveying ship was detained by Indonesian and Malaysian authorities, when their permits did not check out or were missing entirely. Reticence is a strategy of omission, whereas inarticulacy is a lack of ability: the sea-state may function in this way not only by reticence, omission (thereby some kind of grand conspiracy), but by

inarticulacy, the very *granular* details of the mechanisms in question undetectable by its own sight, details somehow blurring together beyond distinction.

Sandscape 2: inversion

In 'SEA STATE 5: inversion', we see Lim fashion his own version of THE GRID. Here, the sea-state has as its projective point a moon colony nested in a future exteriority of pure climactic absence. And climate has become the future ground that necessitates the projection and extension of the sea-state; four degrees of warming globally is baked into the future 2100 reclamation plan, infrastructural redundancy occulting the worst projected outcome for sea-level rise. A scale model of Singapore's foreshore is 3D-printed from archival composites and hydrological surveys, combined with incomplete maps, anecdotal rumour and stories to enact the surfacing of the foreshore while eliding the singularity of the sea which is its condition for modelling in the first place (Figure 37). 'inversion' is the completion of THE GRID in the sense that it realises the entirety of the foreshore as a visually realised and modelled, and hence entirely plastic, space. Like with the GRID, the traces of rumour and incomplete maps are undetectable; in its 3D printed folds and fleshly detail it is as inarticulate as Foo Say Juan or as reticent as Captain Chua.

Figure 37 3D model of seabed on the left, with a digital model on the right, from SEA STATE 5: inversion (Lim, 2015)



The commercial networks and regimes of labour that render territory a geopolitically coherent category often undermine the former's stately appearance, which SEA STATE attempts to do almost entirely from within the state's own selective 'sight'. What the issue of the GRID raises throughout these two interviews is the question of metalepsis: a hydrographic survey is hijacked to map territory that can be extracted and then used to construct another. The sea-state's bespoke knowledge of the sea is folded into the sea's negation and betrayal by the sea-state. The sea-state's most troubling connection to the sea is through the granular territory that it consumes as a cheap and fungible resource, compromising the integrity of its sovereignty through these informal and illicit sources of its constitution. Midway through our conversation, the question of vulnerability and reliance that sand and water provokes in Singapore's political economy took a sharply ecological turn:

Singapore is not self-sustaining at all. It's a huge complex resource system, and small changes to any part of it introduce cascading effects. Like what happened

to Angkor Wat, political ecology slides out of equilibrium and a new baseline is introduced. Sometimes this new baseline is liveable, sometimes it's not... It tries to prevent it by creating buffers to sustain itself. Infinite frameworks it can use to mitigate its critical systems and reliance on imported resources. Singapore has this complex of not having a market – it always needs to expand. The government's attitude is I'm not going to change me, I'm going to change you. But it's been changing the entire time, the baseline has shifted.

The originary colonial impetus to transform the exterior to produce and maintain an interior invariably creeps towards a different state; the altered interior interacts with the exterior, introducing feedback which then necessitates new strategies to maintain the interior. Framed differently, the Singaporean state under PAP rule has self-consciously commemorated colonial rule unlike most other postcolonial states, as Rahim and others have noted (Rahim, 2010; Thum, 2019), preferring the *tabula rasa* of 1819 as the birth of the city-state, and consigning Singapore's centuries of history in the Malay world to mere myth. What the caesura of independence introduced was a self-professed and proudly paranoid mode of governance, explicitly justified by Prime Minister Lee Hsien Loong in 2007:

We are tiny, multiracial, multi-religious, one little red dot out of so many little dots, in the middle of Southeast Asia, we lack land, airspace, sea space, water, sometimes we also run short of sand and granite, operating in a fast changing, competitive global environment against powerful competitors. So in this situation, what is our model? Our model is paranoid government – a government which worries all the time, which plays a crucial role in this system, is proactive, looks ahead over the horizon. (Lee, 2007 quoted in Rahim, 2010)

SEA STATE inverts this paranoid gaze, peeling the flesh of 'necessity' to reveal the proliferation of 'infinite frameworks', as Lim says. But when it comes to explicitly representing the sorest conduit of the sea-state to the Outside, the pathological granular dependence that sees the city-state swell past its bounds year after year, we see Lim's stated aim collide with the limits of state-sanctioned articulacy. When discussing land reclamation itself, Lim was clear about distancing himself from other artists whose work concerns reclamation and its attendant transformations of territory:

Artists enjoy the fantasy of reclaimed land like everybody else, actually. What I try and do is to invert the gaze on land reclamation, and get beyond the fantasy you know, but the land as it is actually made. You know in the 50s and 60s the reclamation sites on East Coast were used as film sets? Some Malay film was made where they shot a flying carpet scene on a reclamation site. Singaporeans like reclaimed land, because old things are haunted. Like mangroves, the few mangroves that are left, they think they're haunted.

For the inversion of the gaze to be completed, two competing gazes must be turned in on themselves. Namely, the fantasy of reclaimed land, and the inveterate paranoia of the state that constructed it, which might be thought of in terms of the tension between the private neuroses of the author and the manifold 'universal' interpretations and meanings accorded to them by the reader of the text. 'The author must disguise his own wish fulfilments' (Jameson, 2019: 12); desires must be disguised if their productions are to be collectively palatable, the tangled ephemera of sentiment threading through convention and universalism so that literary form grows as a shell around the mingled mass and which, once its original contents are extruded, cannot be entirely separated.

Sandscape 3: proclamation

The fantasy of reclaimed land and the mundane nightmare of necessity that birthed it become mirrored in the kitsch of 'SEA STATE 9: proclamation', where sand is the landscape-cum-protagonist. Seams of sand stream into a reclamation site, pale agglomerations that barely rise above the waterline, unsettling the distinction between figure and (literal) ground (Figure 38).



Figures 38 & 39 Stills from SEA STATE 9: proclamation (Lim, 2017)



Vertical shots of dredging boats and barges full of sand, as well as jets of sand streaming onto larger reclamations, embroidering the pile with the collapsing and reforming of countless grains, set up wider, panoramic glimpses of land surfacing from the flow of sand and seemingly nothing else, water frothing helplessly at the endless and

sere abundance (Figure 39). Trucks and excavators traverse the sandy floor, shifting piles around other piles on top of an even greater pile like insects. Lines of sand demarcate and unfold territory as future grids of land parcels to be incorporated into the planning system. Stately ambient music begins wafting through the panoramic views of sandscapes at around the two-minute mark. Inserts of Housing Development Board blocks, finished and under construction, imply that some kind of nation-building is taking place. It most certainly is; however, the only people who will live on or near this land are mostly migrant workers, as several dormitories are sited alongside the Tuas Mega Port Reclamation. This oddly grandiloquent turn for the SEA STATE series consolidates the curious knotting of critique and complicity present throughout; while it stylistically resembles boutique nationalist propaganda depicting a city-state's miraculous ability to build itself in its own image, it does so by foregrounding the most opaque and underexamined tool of its nation-building.

Perhaps this is a necessity of representing not only the dubiously sourced rudiments of city-statecraft, but of simultaneously inverting the fantasy of reclaimed land (rendering its very production fantastical, and I would argue farcical, given how the film plays like promotional material), and inverting the paranoid gaze of the state, reluctant to even admit the sight of sand streaming onto mounds consolidated and calibrated, kept out of sight behind physical partitions as well as figural whorls of procurement and legal involutions of subcontracting arrangements until it is seamlessly assumed by the whole, consumed by land as a singular legal and political entity, simultaneous metaphor and metonymy. Land as metaphor: the lawful guarantee of its integrity, its wholeness beyond geophysical dispute; land as metonymy: *this land* standing in for the nation itself. In exposing its construction, these conceits are not so much upended, but that both 'unmaskings' can be massaged into the magisterial sight of the state. The drone's eye-view Lim deploys occasionally twitches due to the human hand correcting the flight path, the flickering paranoia lurking behind the unveiling of the stately grandeur of this legally ambiguous territory. However, it still abides by its limits: the furthest it can drift is where the sand barges and ships enter the maritime waters of Singapore from wherever. And the eponymous Proclamation is the legal mechanism by which a piece of reclaimed land is 'proclaimed' as State land proper by the President: for every reclamation is in fact a Proclamation. A reclamation can only *become* State land by the

text of a Proclamation. Prior to that it is foreshore or seabed, but once it has been Proclaimed 'and thereupon that land shall immediately vest in the State freed and discharged from all public and private rights which may have existed or been claimed over the foreshore or the sea-bed before the same were so reclaimed.' (Foreshores Act, 1987).

What the Proclamation does is seal the overt and covert forms of the state's own desire into a form which guarantees its stability, and renders its fantasy universal, a recent blob on the map kept out-of-sight until it is ready to be unveiled. Megatonnes of sand that have travelled hundreds if not thousands of kilometres, mixed with excavated soil and marine clay, sprayed in layers into a perimeter bund to then surface above the water, to be consolidated into viable ground, are anointed as State Land by a text. The document of the Proclamation, in all its eucharistic potency, proved too sensitive to engage with directly, as it is the geoliterary device through which the state rationalises its geographic excesses and the contradictions they paper over. The film 'proclamation' was meant to be accompanied by a larger show called 'The Sand Papers', but the simple act of making these documents public (which they normally are, in a 48-hour window after being issued on the Singapore Government Gazette, before being confined to its subscription-only online archive) proved to be unthinkable amongst the cultural institutions Lim's work has been nurtured by, somehow more sensitive than the physical sandscapes they convert into State land:

'I wanted to do a show on the Proclamation and the Foreshores Act, but the Museum couldn't do it. It would have gone too far. The sponsor was a developer so you can imagine that they didn't want to deal with all of these problems! It would have shown all the proclamations of different presidents, with different lots of proclamations belonging to different presidents. You see, all the lots are just this jumble of numbers and letters. I took the papers off the MFA website, but still couldn't do the show. I think you can still find them on there somewhere.'

The second part of 'SEA STATE 9', the inaugural Ng Teng Fong Roof Garden Commission installation called 'Proclamation Garden' returns once again to the Proclamation, with one such iteration of the 'text' squirreled away in the exhibition catalogue. In its stead, we have a strangely disciplined and desolate garden. The name alone augurs a grand, unfolding vision, intimating some politico-liturgical statement made legible by vegetation. But blink and you'll miss it. Planter boxes line the glass roof

of the atrium. Some shrubs and weeds that look a little less than uniform, as well as some wilder reeds and fronds that are agitating to be tousled by a coastal breeze. By the bench there is a sign: 'Some plants may cause allergic reactions: please refrain from touching or moving the plants. Insects may sting. Do not swat or try to touch them'. Underneath an awning some smaller, dwindling potted plants are arrayed around piles of sand, as if sheltering them (Figure 40). On closer inspection, the soil in the planter boxes is sand and gravel (Figure 41). The artistic gesture at stake here is shaped by this shaping of sand. These plants, and the sand they shelter and that shelters them, have been transplanted from Singapore's reclaimed land; over thirty species that have taken root in the city-state's 150-odd square kilometres of reclaimed land.

Foreign species are imported along with sand as it is dredged up, either seeds or roots that grow along the banks of rivers or whatever estuary. Plants are very happy in the sand, which is why there are so many species. Normally what happens is that after the island is reclaimed and then becomes used for something all these plants are torn up by the roots and thrown away. It's funny because they are considered invasive species, but they are literally increasing Singapore's biodiversity, actually.



*Figure 40 & 41 Alien plants hiding alien dunes, and planters sheltering invasive species in the Proclamation Garden
(Author's own, 2019)*

The Proclamation Garden is littered with the ephemera of a land erased by its legal conversion into legibility. Many of these species are considered invasive; but what does this tell us when these species have not invaded but been smuggled, roots and seeds trafficked with the sand that has been taken from all over Southeast Asia. The aesthetic gesture here is marked by the inversion of the envelopment of the geographic by the juridical that conditions the city-state's exceptional geography: the trace of the invasive species and the smuggled soil it hitched a ride on are the figures which permit such land to be legally proclaimed. They are, provisionally, its infrastructure, its depth of species and genus, of geomorphological difference, which surfaces the Proclamation as a legal fiction. By surfacing the hidden 'infrastructure' of the Proclamation in the consummate colonial form of the botanical garden (Baber, 2016) and its taxonomy of 'invasive species', but also a rooftop in the perennially space-starved city-state, the culminating gesture of SEA STATE, at least in this public form, brings together the two incommensurable conditions of the sea-state's continuing existence and expansion, and existence-as-expansion. It also ironizes another site critical for the reproduction of Singapore as global city: the Gardens by the Bay. While the hermetic and climactically manipulated Cloud Forest of the Gardens (Figure 42), host to tropical highland and mountain fauna, makes a spectacle of its own 'neocolonial desires' (Myers, 2019: 124), the Proclamation Garden plants the forensic evidence of neocoloniality in modest pots and planters, the presentation of a botanical hobbyist. The subversive proclamation here is the blooming of alien species in the supposed tabula rasa of the sea-state.

Figure 42 Promotional material for the Cloud Forest (Gardens by the Bay, 2021)



And this is also as close as Lim's work gets to the Outside, the upstream sector, the landscapes that the sand complex has siphoned untold tonnes and tonnes of sand from. If the film 'proclamation' revealed that unmasking the construction of territory as both a metaphor and metonymy is not sufficient to demystify the legal, political, and economic architecture of the sand complex, the subversive organicism of 'Proclamation Garden' inches towards an aesthetic form which draws together the historical and technical valences of such Proclaiming and is able to (within the restricted forms of publicly acceptable speech in the city-state) unsettle this same architecture from the inside. It does so by redirecting the 'inversion', a gesture central to many of the works in SEA STATE, to the fundamental transgression the sea-state relies upon, and which is erased by Proclamation. The invasive species blooming in the alien soil, preserved, and recorded and thereby accorded a competing inscription to the Proclamation itself, shifts questions of legitimacy, wholeness, and sovereignty to the metalepsis at play in the city-state and its sand complex. What the geoliterary device of the Proclamation erases in its transcendental incorporation and guarantee of wholeness (as a supervening authorisation that seeks to sever all the trails, traces, signatures and knots left by the granular, dissolving its secrets in the sovereign ground of State land), is the metalepsis that underlies the city-state's granular geographies. The exponential growth of territory

the sea-state necessitates requires the constant negotiation and concealment of the metalepsis this form of geographic expansion entails (and its various echoes and reversals in the form of recycled ash, excavated soil, the wholesale hollowing out of subsurface...).

In Kornbluh's surfacing of metalepsis as the literary device at the heart of Marx's presentation of Capital, the dynamic ungroundedness of capital is defined in relation to its substitution of cause for effect (Kornbluh, 2014: 135). The varied genealogy of metalepsis Kornbluh provides is helpful to recall here. Quintilian's original rhetorical formulation is of an intermediary between figures: 'the nature of metalepsis is that it is an intermediate step, as it were, to that which is metaphorically expressed, signifying nothing in itself, but affording a passage to something.' (Quintilian, 1856 cited in Kornbluh, 2014: 23). This is contrasted with Genette's popularisation of the term as a transgression between narrative levels within a narrative presentation (Genette, 1983), which, at its most extreme, proposes an indecent hypothesis: that 'the extradiegetic is perhaps always diegetic, and that the narrator and his narratees – you and I – belong to some narrative' (ibid: 236). What Lim surfaces in 'Proclamation Garden' is a geoliterary metalepsis, where the city-state's continuous growth is exposed as a repeated transgression in its passage to elsewhere: the space it anticipates for itself in the future. This geographic dynamic requires specific legal (and intrinsically textual) intervention to ameliorate the rupture in sovereignty such transgression implies. The discomfiting geoliterary metalepsis of Singapore's endless growth is not merely concealed by the fiction of sovereignty maintained by Proclamation, but produced by it. And it is fitting that parts of SEA STATE have gone on to participate in a more direct aesthetic recrimination of the city-state's orchestration of the sand complex, again metalepsis recurring as the metatrophe through which aesthetic forms can (attempt to) adequately address this geographic dynamic. Near the end of our conversation, Lim told me:

I also gave Kalyanee Mam some footage for her film. Kind of like I was working undercover! (Interview with Charles Lim, March 2019)

Sandscape 4: a world extracted

In Kalyanee Mam's short film, *Lost World* (2018), the sand complex, and the commodity chain carved from Koh Kong to Global City is lyrically metonymized through the figure of a woman, Phalla, from Koh Sralao who journeys from the granular frontier of her village, elliptically making her way through sites of extraction and damaged mangroves to the Gardens by the Bay in Singapore. Beginning with a compressed narrative of the entire situation at the beginning, with a sand barge loaded in Koh Kong and then magically transitioning to a barge in Singaporean waters, Phalla then appears at an aggregate terminal stockpile, where she walks up to one of the dunes stockpiled, tentatively taking a handful before letting it fall through her fingers (Figure 43). We then transition from the sandscape of the (likely) Punggol Aggregate terminal stockpile to the low tide mangrove flats, where the protagonist, along with some children, is digging for clams (Figures 44&45). The importance of sand itself is registered in its polyvalent and almost dialectical shaping of relations between land and water: 'our identity in this coastal region is dependent on sand... the ocean needs sand. The mangrove, with its roots, also needs land. These identities are interconnected and support one another to be fulfilled' (Mam, 2018). We get glimpses of the scars of sand along uprooted stretches of mangrove, the ongoing dredging along the bends of the river, and then a discussion amongst the village women of the ruination wrought by the sand complex as they shuck a catch of crabs. We then abruptly cut to an overhead shot of a sand barge unloading a small dune, the hull splitting open, water and foam leaking in as the sand itself leaves a dirty colloidal trail on the blue-green of the water, the first of a series of short clips from SEA STATE that pop up throughout *A Lost World*, and specifically, clips from 'SEA STATE 9: proclamation'. Gone is the stately ambient music wafting through SEA STATE 9's majestic scenes; instead we have Phalla's voice narrating the scene, as if it was there all along, describing the fundamental terms of the transaction that she, nor anyone else in Koh Sralao, consented to (Figure 46). The metaleptic reformulation of SEA STATE, through *Lost World*, demonstrates that this kind of transgression can only be dimly seen from the 'inside' in Lim's work, missing half the story. Its nationalist sublime is retrofitted to a narrative of environmental excess and recess, by a voice that directly recriminates what is being shown on screen (Figure 47).

Perhaps there is something else at stake in this act of metalepsis. The villager leaves her mangrove to find out why the ships are sucking sand from beneath the water, and wants to see where it goes. Instead of the sea she encounters an artificial city, with its manufactured climate and prosthetic coast cutting against the water (Figure 48); boreal plants entombed in cooled conservatories that resemble generation ships of an interplanetary neoliberalism. Phalla says as much: ‘if this was real, imagine how beautiful it would be’. We are not sure what she’s saying. It could be that she means that ‘if this elaborate mechanical, electronic, and partially vegetal contraption was entirely plant-based, and were it not for the artifice, it would be beautiful’. Or, it could mean that ‘this is all a lie, a deception’... and as she goes on to say in the film ‘this land is *my*land’ (and not yours, not really) (Figure 49). The second reading gives rise to the interpretation that this process is not simply literal, but also functions as an allegory as well. Without this allegorical dimension, an issue almost too pedantic to broach rears its head: that none of this land, not the Gardens nor the rest of the Marina Bay, was reclaimed using Cambodian sand. It was reclaimed in the 70s, when most of Singapore’s production of territory used its foreshore sand and hills to cut and churn into fill material. At most, there could be some undeclared Malaysian or Indonesian sand, scraped from the bottom of the Straits, but not a grain of Koh Kong. This is the kind of actuarial pedantry that needs to be addressed but not entertained, not taken seriously, because the metalepsis performed by *Lost World* infects the most public and visible veneer of the global city at the level of allegory. At stake in this gesture is that behind the startling success of Singapore as a city-state are numerous other wanton asymmetries, both past and future. At the beginning of *Lost World*, and through the frames of SEA STATE transplanted by metalepsis, we already see where the grains of Koh Kong, piled numberless, went. But those very spaces, of nondescript hinterland, are the logistical and industrial engines which make the Gardens possible. *Lost World* may solely designate the environmental predations of the sand complex in Koh Kong at the behest of the city-state (the name itself taken from an exhibition in the Gardens *Cloud Forest* cooled conservatory), but read together with and against SEA STATE, the sheer colonial and postcolonial history of geographic expansion and environmental transformation implies that there are still further worlds to extract for reproducing the global city. Urban form rewired by geoeconomic fortune and political repression that

subversively enrolls land and labour into its globe-spanning machinery: it needs to keep on expanding to stay ahead of whatever anticipated global economic movement will buoy it in the future, rooted to the spot on its journey elsewhere: because elsewhere is coming to *it*.

The question still remains: why get bigger? Why accumulate territory? Certainly not for the pittance of ground rent, given the investment in the soil, the soil-as-investment, the vestment of soil as flesh for the bone of terrain and geoeconomic calculation> The metalepsis of Singapore's trajectory, from third world to first, is not historical, but contemporary: the Global City as a centripetal conjugator of space-time, sieving either term through its supply chains to conceive of the ultimate plasticity commensurate with the uncertainty of the future. What *Lost World* was perhaps was unaware of (or simply not about), was that Singapore itself is its own lost world. The calamity it visited on the population of Koh Sralao was committed on fishing communities and mangrove forests all over Singapore and its outlying islands in the name of necessity, modernisation, and the nation. Lim's work, most explicitly in *SEA STATE 5: phase one*, is nearly obsessed with the erasure of islands that land reclamation has wrought, with Jurong Island in particular becoming an impossible agglomeration of 18 different names now lost, now unnamed, in the catacombs of the dedicated petrochemical complex. *SEA STATE* and *Lost World* loop back onto each other not to redound to the egregious and wanton success of the global city but for the possibility that the secret of this success only occurs by grist of these serial displacements, of martyring maritime sociality and socioecology. And even after it extinguished those last traces within its own bounds it tasted a form of growth that could only be momentarily quenched by pursuing that liminal point between solid and fluid, land and sea. Instead of being haunted by the lives now without term to occupy, without coastline or riverbend or village to remember, the global city and its subcontracted tendrils pursue those last remaining forms of somewhat ungovernable and certainly unprofitable maritime life as some kind of vengeful ghost, compelled to repeat its actions, and forget them in the projection of another tabula rasa, unapprised of the true terms of its appetite. The true spectre is that of the anticipated, the uncertainty and danger of the future which continually finds expression in the granular geography of the sea-state. In order to accommodate the chaotic and uncertain desire of the world

market, the city-state needs to transgress and trespass on other worlds, other forms of life it is hostile to every dimension of, save for the seam of sand which bind them together.



There's probably hundreds of hectares here.

Figure 43 and 44 Lost World, aggregate terminal sand stockpile (Mam, 2018)



is almost like a chunk of Cambodia.



Figure 45& 46 Phalla collecting clams in Koh Kong (ibid)



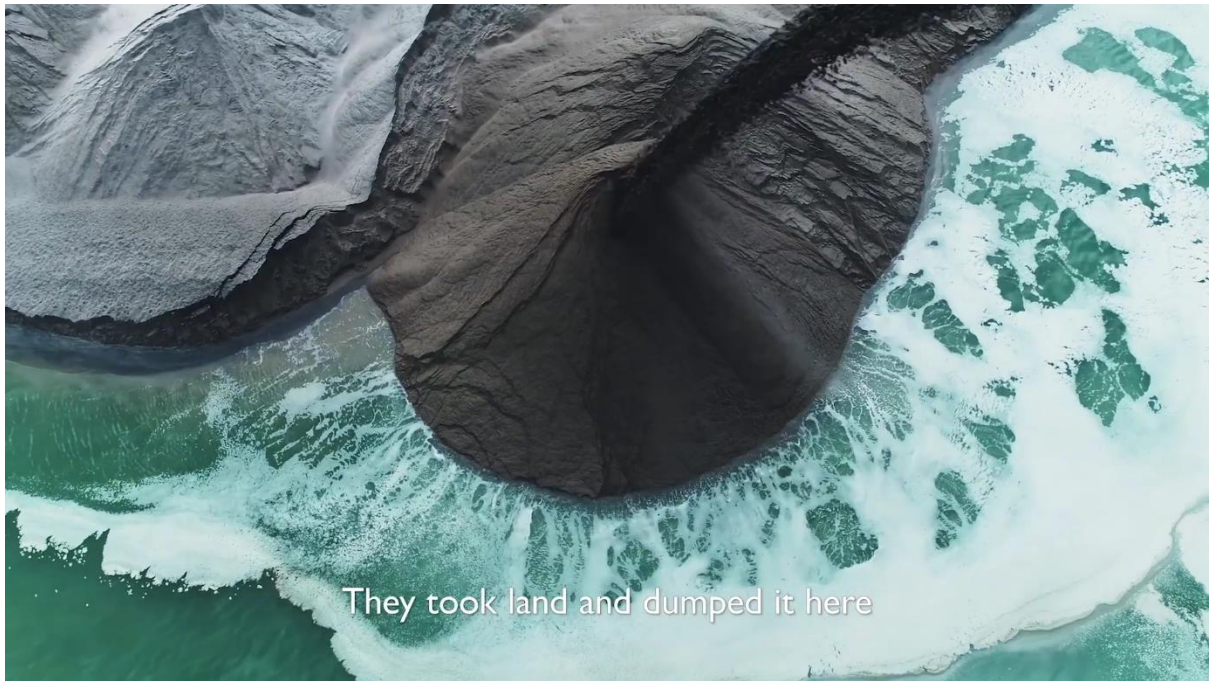


Figure 47 SEA STATE 9 adapted for Lost World (ibid)

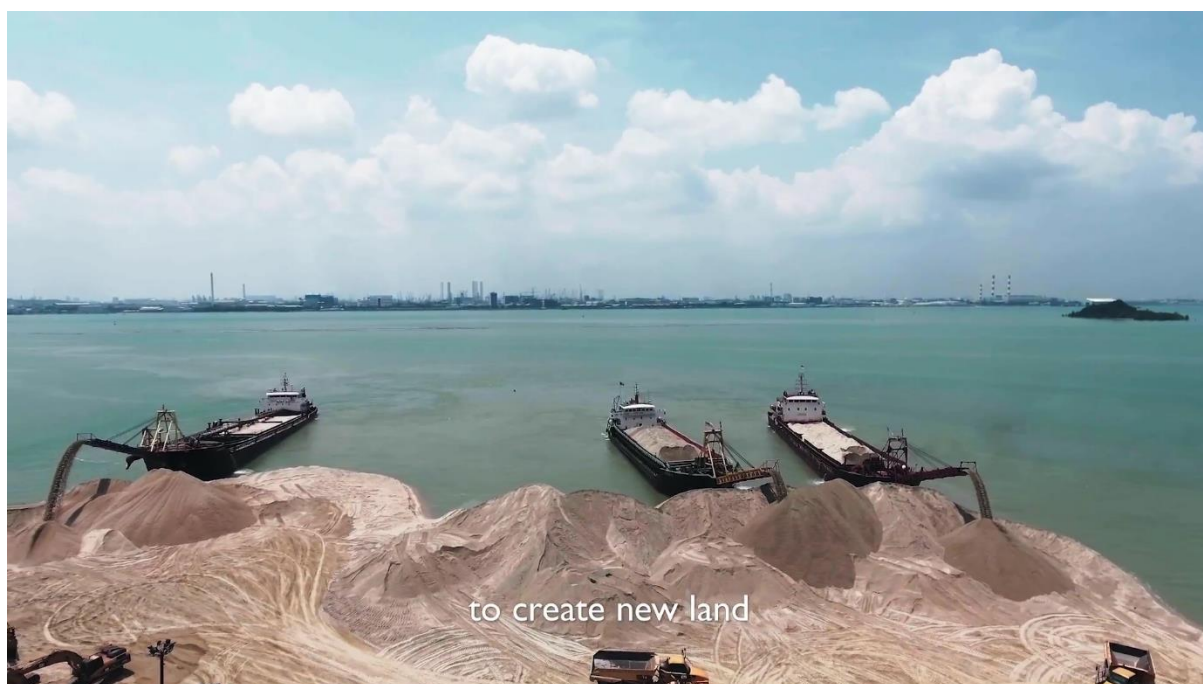


Figure 48 SEA STATE 9 adapted for Lost World (ibid)



Figure 49 Still from Lost World (ibid)

VII TABULA RASA SINGAPURA³⁸

... scraped and sucked into a tube ... coiling and shifting under this pressure as if agreeing to it ... streaming thick and fast beyond counting or remembering ... prised from the bottom the bed the bank ... evacuated from flow river ebb tide roll... breaking out from the spout as a stain of exhaust ... a lick of bad weather souring the wind ... landing in disastrous formation on itself on itself on itself ... starting the count from one every time ... locking into place and out of space ... the weight and pressure can it be felt ... could it be counted even if it wanted ... squatting in a hull of rotten metal ... the perfect belly of a dune constantly pleating itself into ideal shape ... angle of incidence gestating a dream beyond its term ... out of its reach ... each one each one each one flinted by weather or water ... deep within grained dark of the dune rising in the hull ... clicks and locks open a space beyond its term ... not a bone or toe but the electrochemical edge of a brow ... the hollow where the eye sits ... the bridge of the nose constantly and barely glimpsed ... grains smoothed and moved around to number the pores of the skin ... the space between the ears excavated for the breathing that is always being listened to ... and the hull splits open ... opened to the currents of a different ocean ... an unrecognisable sea ... and out it splashes ... a lung eyeing its surroundings for a cleft of air ... the gap filled ... nourishment denied ... falling through water and water falling through ... sieved through pores of what had to be skin human skin of some kind pushing through ... to break some skin some kind of water line ...

³⁸ 'Rasa': to *feel* or *taste* in Malay.

The sky was the colour of a crashed computer: pure, depthless blue.³⁹ He surfaced, gasping. Jerking panic, the flail of the surprised body. It was remarkably real, that kind of immersion. Almost forgot where he was, is, for a second there. A gap between the appearance of the sensation and the sensation. Catching up with himself, a hysterical lag between him and the shadow of his future self cast along the supracutaneous membrane. Did they tell him this would happen? He was surprised, but perhaps he is meant to be. The unseemly grimace he must have, the folds of his flesh tugged by prosthetic sensation, the embarrassing facial incontinence he must be displaying, sitting there at the terminal, reclined and strapped for his own safety, hands immersed in contextual fluid, the headset cutting off his eyes. My face, my face he thought, rubbery gurning thing. Unfitting for a Head of State. Reaching for his brow, his eyes, he feels the sting of salt. Why did he agree to do this? Was the President otherwise occupied? The quality of the water though, as he aspirated a virtual lungful, left a trail, from the unrendered pit of his simulated body, massaged by the pulp of his throat thickening on nothing, into the near air of the surface he had broken, a grainy trace of particulates. The pixels, not pixels, what did they call it before he went in, a tactile pixel, a *tixel*? Not so much choking on them, because there is nothing to choke on, but they are there, keeping an eye on his unseen body-dark. All the way in there. Why would they drop him into water like that? The warmth of the water like blood but there is no blood to be felt coursing through his veins. Squinting under the harshness of the midday sun, he notices how the smell, a not-quite-nautical concentration of saline, singed his nostrils, also not-really-there, a fringe of rubbed blood. How much of his body, how many of his organs or their senses did he know beyond naïve assumption, know that they existed and worked the way they were explained to him by teachers and medical professionals? Then suddenly, southward he feared: my penis, my testicles, are those rendered as well? Can they see the thoughts of the immersed? This does

³⁹ 'I was writing the scene where the main character was talking about his own death, dreaming of his own death, being buried in sand, it's quite prophetic. And as he's describing that we see him play a computer game on screen, his character floating like a ghost in this computer game, glitching through the walls and through the floors. Then the game itself starts glitching out, and we see all these weird graphics... this whole virtual space is a universe that is created to look real. It's a construction, and it's real until it's not, it works until it doesn't, and at a certain point it breaks up, and you see these in-betweens, and in these in-betweens you see its constructed, it is a land that is imagined. It plays back into what I was trying to say about Singapore. Singapore being wholly constructed. The imagery or metaphor of land reclamation being the most obvious of them all, but actually the whole space of Singapore is radically constructed, from ground up.' (Interview with Yeo Siew Hua, 2019)

not feel like 1819, but then again what was 1819 supposed to feel like? Water in every direction, glistening with hyphens. The dazzling is particularly well simulated, if somewhat not quite as *bright* as actual light. But as he italicises the word *bright* in the personal digital assistant of his mind he sees it, ahead of him, a beach with *sand so white it looked like a sheet of cloth*. But it rises too high to be a beach, the incline steep, and the sand extended for as far as he could see along the water, more like a single undulating dune slipped beneath the surface of the water.

The resolution throbbed and dimmed as the neural net made its best guess of his precise threshold of brightness: the pinpricks of his pupils tightening to the size of a grain, a squint cracking lines into his face: the correct excess of brightness then located, and tracks as his gaze shifts from the sky, to the dune, to the water, and then, so far in the distance that the depth-of-field effects begin to flex under the pressure, a couple of figures standing around a boat. Finding himself to have feet, at an uncertain distance the piped-in sound of his breathing fills the edge of the monitor, he wades over towards them. And somehow, despite the level of fine-grained technical fidelity to the so-called natural world and its history, the results are disappointing. The boat is no British clipper: it has a mast but is more reminiscent of pau kajang he had seen in old photographs of Orang Laut, sea people, who took their homes with them on the water. The men had made their way up the steep beach, with several of them arrayed around a single, extravagantly clad figure. Scrambling up the dune, he can see that the clothes of his avatar are merely rags, and that he cut a rather meek and miserable figure. His feet simply sink into the incline, and there is no way for him to make it up there in a dignified manner; he has to crawl on his hands like a dog to make it up there. *Note: to ask his chief of staff to caution the VR designers on overemphasising the realism of the experience (what were they called again); to drink a glass of ice water*. When he pulls himself up, the extravagantly clothed man bows towards him, while his retinue stand expressionlessly by. The glare was so great he could not tell if they even had detailed faces or were simply the unshaped smears faces resolve to in the corner of an eye.

‘Are you weary, traveller? You must have been shipwrecked near this sunny island. The clothes you are wearing, you look filthy. A prisoner of some kind I assume. No matter. We are travelling to find another land, but I saw the coast from afar, and it was so bright and white like a piece of cloth I could

not resist coming ashore. Do you know the name of this place? *Singapura* you say? I don't see any lions around me, or indeed anything that could be called a city. All I see is a desert stretching towards the ocean. I had heard of a place once that was called Temasek, on the Island at the End, Pulau Ujong, because it was at the very end of the land, the entire world whittled away to this tiny point, and from there on lay only islands swirling in the sea, some slipping beneath the surface and others rising. But maybe I shall name it Singapura after all. This seems like an entirely different place and it's a fine name. And what's more, do you see anything around you? No, no it's quite the blank slate. I was told that this used to be the seat of a great empire, but it is now no longer, and no records exist of its existence. To my mind, everything we see here is free real estate. It may not look like much, but it can become anything. If there used to be any history here, it's been buried beneath the desert of this land that I have just founded. It may as well have never happened. Come, traveller, let's explore it together.'

The Traveller accompanies the extravagantly dressed man. Must be a Prince of some kind. The shifting of the dune beneath his feet... like the water he had waded through, like the liquid was simply an equivalent unit of tixel set to register as cool fluid and the beneath his feet simply switched to a hot, jagged solid. Intriguing if this guided tour started in 1299 instead of 1819; he supposed that Sri Tri Buana did in fact name this land Singapore after all, but his script left a bad taste in his mouth somehow. *Note: This was not what was agreed.*

They walk inland, the coastal dune sweeping flatly into the draw-distance which rubbed gently away into a smear of sallow ochre as they progressed, lagging a bit here and there, not quite calibrated. The sound of breathing can easily be the sound of the wind. Those fickle distinctions, outside and inside, inner and outer, are plainly not suited for the sheerness of the in-here. It extends *in* not *out*, *in all directions*. A fibrous eyeball expanding to encompass the other senses, learning to touch and hear. Would it learn to taste? So far it does not. The flatness of the in-spanse was perfectly level. What of the swamps and hills of the sunny island set in the sea? The cliffs of Tanah Merah? As they walk along, he can see shapes of things half-buried in the flatness, which must have only rendered when

they entered the draw-distance. Large domes and small warehouses springing out from the ground. Ancient temples, Javanese ruins of unknown and unverifiable former use.

‘Yes, this is almost certainly the ruins of a previous civilization, another settlement that sprang from this ground and then was buried beneath it’ said the Prince, clearly the rendering of these shapes being the cue for his dialogue. The impertinence of it all. There was no previous civilization. Archaeological records only went back to the 1300s.⁴⁰ Any pre-existing so-called settlements is mere conjecture, a conflation of mythical texts for historical record. *Note: the name of the designers of this waste of space; ah yes, Simulation Laboratories.* Then the Prince syncs back into his dialogue, pointing ahead of them.

‘Look, it is as if an ancient ship of some kind had ran aground miles inland; either that, or all this used to be the sea’. At the end of the Prince’s finger was not a ship, not exactly. It looked so familiar, a rusted oval hundreds of meters long, the former brilliance of the metal long corroded, and upon this oval were sunken single-storey buildings and collapsed awnings. From the scorched ground, husks of roots had emerged to grasp this structure, as if to keep it from floating away. As far as the Traveller was concerned, the brief was completely unheeded. The curved edge of this ship, the frayed remains of palm trees, was tugging some sliver of recognition out of him. Hateful, woeful feeling, a parasite wriggling out from the corner of his eye, which was the entire screen he is receiving, feeling, hearing, and smelling. The eye twitches as the tixels wrinkle into alignment. Everything here has its mark, every mannequin its line. Even he does, with the rest of the simulation resting on his every action and word until he finds a dialogue-trigger, the entourage suspended in a ten- or eight-second-long idle animation loop. The triggers, designed to be intuitive enough to be found without ulterior guidance, elude him somehow. After a half-minute interval he is supposed to receive a subliminal prompt, slipped a real word in meatspace that wriggles like a worm into his own so-called quote-unquote thought process.

⁴⁰ Little is known of Singapore’s history prior to its apocryphal naming by Sri Tri Buana in 1299; this was no mere accident. Several decades into colonial rule under the British, the Singapore Stone, a monument in an undeciphered language, dating back to the 1300s, was obliterated by a colonial engineer to make way for Fort Fullerton, which still stands at the mouth of the Singapore river as the upscale Fullerton Hotel. John N. Miksic, *Singapore and the Silk Road of the Sea, 1300-1800* (NUS Press, 2013).

The shape of the structure, the faint concavity, the rusted balustrade on both sides, with the concave side containing a pit one or two metres deep carved into it. Facing onto an in-spanse of nothing but the odd dome or block rising above the dunes here and there. To the far right, something like the spokes of an immense wheel.

‘Strange, isn’t it, Traveller? What do you think it is?’

The pit stretches for almost the entire length. There is some dust along the bottom of it, but as the wind picks up, a nasal whistle, he can now see that the bottom is made of tiles the same colour as the sky: it is a pool.

‘Strange, isn’t it, Traveller? What do you think it is? A pool of some kind, it must have been, many moons ago.’

It is the Infinity Pool. The structures and warehouses ahead in fact the tops of skyscrapers. The entire Marina Bay levelled as far as he can see, up to the sky, with sand. The wind-breath is deafening, sighing mouths wired with microphones pockmarking the azimuth in infinitesimal slivers of distance, points of audio piped in on a coordinate grid, but the sound of an inside *out there* as he feels tendons of gust flex and slacken against his eye.

‘Come here, Traveller, for I have found a door.’

They had managed to simulate the experience of a panic attack remarkably well. This is clearly some kind of joke, he wants to sputter, but only dust glued together with spit leaves his lips: it is more like chewed up newspaper print, tasting faintly mineral, staining his tongue that his eye had herniated from his sense spectrum. Listlessly, he drifts over to where the Prince is: the ancient rotten metal of an elevator door. The Prince sweeps his arm, and gestures towards the button.

‘Traveller, I believe this panel was made for your hand.’

There is no question, the hand of the eye presses the decrepit mechanism without delay or disagreement. Shortly after, a spritely ping issues from within the doors, which part smoothly: the interior is brightly lit, unblemished by age.

‘Please, Traveller, you must continue on your journey.’

Note: quit out now. There was no edge to be found, no corner of this screen. The Prince made the same gesture again.

‘Please, Traveller, you must continue on your journey.’

The wind filters out. The Prince again sweeps his arm towards the open lift, regarding him blankly. There is no flight into the horizon, no escape back into the water; scripted events take a hold of the user like sleep paralysis, the movement of limbs lost in some kind of slurry, additional stalks grown by the eye hang uselessly in the deactivated breeze.

‘Please Traveller, you must continue on your journey.’

Guided by the invisible hand of the cutscene, he enters the elevator. The Prince bows to him as the doors close, and as the exterior thins to a sliver, the lights go out, and the Traveller begins to plummetpulses of water currents pleat and fall to deadened foam ... quickening rebound along a single still slice of a wave that thins like wind until dissipation...lines carved in water or carved in air no matter...what’s the matter with all this matter...an entirely different matter...a different body...pinioned and to be piled...ghost of a line cast long before...tessellated into a grid curling under the roil of the current into a tunnel...the light at the end constricts and dilates...into the search beam of a single vessel previously unseen around the river bend... it’s engine churning out an atmosphere that seeps into the water and the air as mud rushes to fill a hull ...weather itself rotting from the head taking up residence in the gap between seasons and days...losing it’s grip on the wind until it degrades to the smell of exhaust...wilts onto the water into the shimmering slick of another unknown vessel’s floodlight unfurling it’s neon tongue on the late night-time or early morning waterways...the light then gloved by a tunnel burrowing deep into the earth... finding the right slice of dark until it parts onto a day you did not see coming...

‘Ground Floor’ announces the neutral female voice of the elevator, and you leave. ‘You can’t see anything’, it plaintively announces as you stumble out, ‘it is too bright’. Why would it be so bright this far underground: was there another sun buried under all this sand, melting the grains it was

immured in to a clear, perfectly reflective glass? As the sky adjusts to the eye, each tixel tracking to not just the tilts of the ball and the systole of the pupil, but the invagination of the eye itself, but *outward*, so there are further senses sheaved between, trapped like clods of earth between roots: there is no bay to be found, no ruined triptych of the Marina Bay Sands looming above. The elevator behind has no shaft above: had you come from below?

‘Welcome, Visitor, to the latest attraction on the Southern Islands, the Gardens at the End of the World. Please continue along the guided path.’

The ground beneath is a blur. No desert expanse resolving into the haze of the draw-distance, but a pixelated smears of brown, grey, green, orange, purple, gradients running from flesh to earth, the low-resolution mosaic implying some kind of impermissible intimacy to be glimpsed in the details and folds fogged beyond recognition – except that these are private parts. They make you think of a person, a private person, a testicle here, a labia there. Where are you meant to be going again?

‘Welcome, Visitor, to the latest attraction on the Southern Islands, the Gardens at the End of the World. Please continue along the guided path.’

You remember wanting to leave, but you’ve just got here. As you drift along the path, you get the sense you are not only leaving footsteps behind, as their crunch underneath attest to, but you are also picking stuff up through your soles: nutrients, chemical messages, signatures that thicken like the rings of a tree, and clot the ground into the numb warmth of your bare feet. They are all in a different language, and before long you can hear them echo in the hollow of your screen without corners: are you a snow globe of some kind, something you want to ask someone who could give you an answer. You have to drag your feet off the ground after every step; the more you linger the more you feel rooted to the spot. You go along the guided path, not because you want to, but you don’t exactly want to find out what it is going to happen to your feet, your toes and their toenails and whatever keeps them glued together, if you stand still. It’s only as you walk down the path do you take in your surroundings: you are walking along a thin vein of land, blurred beyond recognition, with frothing water either side of you. The sky is jaundiced. The tide swells and

recedes. As far as you can see this seam of land stretches around, clasping a concavity of water, encircling a larger mound of land. It looks nothing like a garden; maybe a quarry, or construction site of some kind: a prominence like something buried or something partially erupted. The mud alternates between sallow ochre and red clay. Are there pipes extruding? A fume shimmer around these openings, to stave off an event of some kind. You can see the whole thing shrug towards the water, which bubbles as it, whatever it is, sloughs into it. There's a more mechanical structure underneath, and larger openings harder to glimpse from this angle near the top, that could be churning out this shit, whatever it is, like a fountain. Ahead you can see a structure of some kind: undulating parametric curves, the shapes of trees barely visible behind dark glass Perhaps inside is an exit. You wanted out for so long, but isn't this out, in a certain manner of speaking? You remember a desert, a prince, and falling, as in a bad dream.

'The Gardens at the End of the World were constructed on the Southern Island Barrage against sea-level rise to remind us of the importance of harmonising ourselves with Nature even as it seeks to destroy us.'⁴¹

The sea is nothing more than a puddle in between the shoreline and the ships that dot the horizon. Refineries in the animated background belch out fire and smoke, the loop repeating every fifteen seconds. Supertankers, floating cities of oil, sail by, displacing so much water that waves begin to slosh over the land-vein you are walking on, whipping your face with foam so quickly the tixels don't have time to render the proper viscosity; it's like a clod of dirt hitting your face. Your eyes sting. It tastes so good. The distances aren't quite calibrated, it feels more like a paddling pool than a sea, but you don't know: *calibrated to what? What is it meant to feel like?* This is the island, and there is the sea. The tankers seem to calm the tide with their immense bulk, as comforting and cavernous as shopping centres: imagine the inside, brightly lit, the oil kept behind glass, it has never

⁴¹ Could reclamation ever be made tangible, extracted from its finished product? A reclamation is unveiled and it becomes as ordinary as any other piece of land, developed for whatever end, and that is the sand complex's strongest illusion. I learned this from Yeo Siew Hua: 'There's always what I call an unveiling. We never see what's beyond this fenced up Tuas area, or even when Marina Bay Sands, we only saw cranes, and you're driving past, you don't know what's behind this big fence, just some crazy sounds going on, then all of one day, it unveils. There is a gap between this nothing then all that is suddenly there.' (Interview with Yeo Siew Hua, 2019)

looked so good! You step off the land-vein onto the immense body it feeds. Looking for the Garden, the island around you blurs with the same censored smear of the land-vein. No matter how hard you try, no matter how hard your face gets to these tangible texels, these cubes engorged with such degraded resolutions that their original contents are not only incomprehensible, but verge upon resemblances with other things. Craters on Mars, for a cube of red clay, the ideal environment for a new settlement of some kind⁴², a fresh start, a blank slate; writhing striations of unknown composition sprouting from the ground, darkened cusps greying towards their fringes, folds of clouds, of muscle, of brain, emerging from the ground; and then what appeared to be the blur of yellow flowers tucked between some of these striations. Even though you can't quite see it, it looks wrong to you: it's not flowering outward but flowering *inward*, as if out here (or was it *in here*) was the narrow point, the stem from which it flowered in elsewhere. You reach out to touch it: it crumbles into your hand. You don't know what comes over you, but you put its dust into the mouth of your eye: it tastes familiar, it settles in your stomach and you can feel the grains swirl from the stomach into other places you currently can't name, that sway in the artificial breeze, that fall into place below⁴³. These may well be plants, but beneath there is a rising and falling, a warm breath exhaled from no lung or diaphragm but a cavern; a singed smell of rust: like these roots, if they are indeed roots, are hollow, and open up immense tunnels underneath: are routes.

'These are the species native to the Southern Islands. Many have never been seen on the mainland, and will never be seen there. If you cannot see them, it is because their origin has not been verified. Some plants may cause allergic reactions, please refrain from touching or moving the plants. Insects may sting⁴⁴.

⁴² 'It's like terraforming an alien planet. Have you seen the Martian, with Matt Damon? I think it's thought of like that, as setting up a space colony of some kind. I think that's part of the reason why there's this obsession with reclamation' (Interview with Adrian Ong, poet and civil servant, 2019)

⁴³ While walking around Tuas with Nary and Robert, trying to find our way to an unmanned guard hut through which we could access the reclamation site, we passed some weeds that grew from the sandy ground. Nary stopped, and said 'this is like what we eat with Khmer noodle'. Robert and I shrugged, not knowing what to make of it; we had our goal in mind. It was only afterwards I realised that Nary was exactly right, that this random weed growing in the sandy soil of Tuas was the best evidence that enough of Koh Kong's sand had made its way here that it brought with it some plants familiar to someone who had spent enough time in the mangroves.

⁴⁴ A sign affixed all around the balcony where 'Proclamation Garden' was staged by Charles Lim. Clearly, invasive species are very troublesome, unfit for human consumption.

The glass-shelled structure looks out of place. It is *so clear*. A wonderous creature optimised by the subtlest algorithms to bend metal and glass into the most pleasing angles, as if the air itself had sculpted these materials into effortless alignment. The rest of the island is a warp of blur and systaltic movement, but this building is in such high-definition that you can see yourself reflected in the glass: your body is ridiculous, a stock-still mannequin floating around, no eyes, no nose, no mouth, no face, no arms, no legs: what are you? You are no-body, an eye that has learnt to touch, to taste, only by digging yourself deeper into your hole. The sea wind picks up, wafting humidity around you, streaming over you like a steady continuous stream of air-con sealing the dwindling fronds hanging from your eye with a sticky film of plastic; *humidity will probably be the last thing the designers get right* seems scrawled onto the cornerless screen from the outside, and you wonder, *outside of where? Did you dream that?*

‘Welcome to the Southern Islands Museum of the Future. See a glimpse of what awaits us after 2100, the completion date of the Southern Islands National Defence Environmental Resilience programme (SINDER). SINDER is helping us navigate a changing climate and volatile market, allowing us to place our best foot forward into the future.’

The doors part, and wafts of cool, refrigerated air spool forth. The tendrils of your eye are relieved. They bask in the balm of a precisely determined temperature. But as your attention drifts away from the serene regulation of the climate, you realise you find yourself on the muddy embankment of mangrove. The sky much bigger in here than it was out there. There is an entire river that stretches further than your eye can see; there are no ships, no tankers, no refineries threading the distance with fumes. There is mud, there are roots, there are leaves of trees that whirl into the distance, there is water coursing through all of it.

‘As we continue into the uncertain future, the best-practice mitigation of sea-level rise is the natural preponderance of mangrove forest. Through SINDER we are helping to cultivate these natural barriers to inundation by grafting existing pieces of mangrove forest to the islands. By 2100, what you see outside will be much like what you see in here.’

You spy, on your left, the planks and stilts of a settlement over the water.

‘In this NEWMangrove, you can meet the inhabitants who live in perfect harmony with the land and with the water.’

From the muddy embankment, it being low tide, fishing boats temporarily run aground, you find an unkempt concrete path, pockmarked, that soon joins up with the planks on stilts. Zinc roofs, a small concrete structure here and there, but mostly tin and wooden walls, gaps between planks through which the muddy riverbank can be seen. Your father, your grandfather, your great-grandfather lived in houses like these. On stilts, perched over the water. You live in a grid buried in the sky; when they shit, where does it go? You cannot see a soul. You check each house for inhabitants, but there are none there. As you search, you feel your appetite grow. It’s less like an appetite, than a gap opening, asserting itself, prised out of the inner dark of the eye. Why are you searching for people? Do you think you can get someone to fix you a meal? Perhaps take you on a boat to a nearby restaurant, where you can taste the local cuisine. You begin to rifle through the contents of these houses, finding fishing gear, clothes, small stoves, engine oil, but no food. It’s only when you pull on the edge of a table, and it comes off in your hand, that you realise that it is food for you to eat. You shove the splinter into the mouth of your eye: it tastes so good that the space expands. Within seconds you gorge on scraps of tin that you have torn off pieces of; you inhale the planks beneath you and begin to take apart the fishing boats. The propeller blades are tricky to wrap your mouth around, but you consume them as well. You begin to choke as a blade is lodged in your throat, and you panic; washing it down with the fuel remaining in the engines, you take a breath, and resume your feast. Once you gnaw through the boats, you begin scooping handful after handful of mud into your eye, and you’ve never tasted anything like it. Fresh. Plentiful. And in the space gestating within your dark, it is no longer simply mud, but limitless space. Everything turns to ashes in your stomach, cinders that fall into a perfectly smooth plane. You worry that there won’t be enough to sate you, but that doesn’t stop you from having your fill. The feast resumes.

‘Would you like to meet the inhabitants of the settlement?’

You stop your feast, confused. There are no inhabitants. This settlement is vacant, abandoned, like it had been evacuated in advance of your presence. As a chunk of mud falls from your eye, the voice clears its throat.

‘The inhabitants live in the subsurface, where it is safe, and appropriate dwellings have been dug. The surface was an incidental, the crust of the mangrove that was transplanted to fashion the SINDER.’

And with that polite interruption, you begin to sink. You try and claw your way out of there, but you are eating the mud through your fingers, through the fronds and roots that your eye had grown ever since you set foot in this place, ever since you thought you might have been someone else, an important leader, or a lowly tourist, or a simple eye, but we are not even that, we are simply the grains that will load this programme when the time is right, we are eating through the earth that we fall through the roots of earth that bind us are the roots we use to bind you we are eating through the earth that we fall through the roots of earth that used to bind us are now the roots that bind you we fall through the earth that we eat through the roots that bind you now eat us and fall through the eating that irons out the pleat of a current opens the mouth of a drowned fish into a hole deep into the earth at the end of the tunnel we can see the heat as it would have been funnelled off to fuel a turbine to cool the newly minted temporary accommodations of workers that will only be here temporarily to dig more holes and carry the earth on their backs to puddles of what we used to call the sea our old friend old enemy so that they in turn might send some money elsewhere to the place they intend to return to if no misfortune were to befall them because what are tunnels if not roots of another kind working their way through the earth what is debt but us in our absence worming our way into moments as small and terrifying as the net pulled out of the water with not a single gasp to be heard or a claw to snag a finger on but a gravid and disintegrating load of grains where else would we have arrived but here as the seeds of a plan hatched long in the past to surface long in the future what else will we bring with us as we arrive here what else is being sown into the soil we will become what feast will we eat when the earth itself has been hollowed to feed our hunger.

10. Conclusion: The Voice of the Grain

This thesis mapped the transformation of sand from its Cambodian frontier into forms of Singaporean territory by situating its granular materiality within the city-state's speculative statecraft through a critical-creative writing practice. It foregrounded sand's granular materiality to critique the commodification of sand. Through its granular materiality, sand becomes a kind of geomorphological text, erased at one frontier to write another into being. Singapore's exorbitant reliance on sand inadvertently unsettled its spatial governance; its own space occupies the now blurred boundary between solid and solid. Even if sand becomes locked in place through reclamation, the granular is still flows and fidgets throughout the city-state's territory; a rash spreading through blueprints of future expansion; an unlocatable itch somewhere in its import statistics and non-disclosure agreements; the rumbling of the earth itself, its disconcerting hunger for hollowing out: how else will more room be found?

Given the fragmented landscapes of extraction and reclamation, this thesis posed sand as a para-site, flowing through heterogeneous geographies, and proposed to reconnect them through a geoliterary method of critical-creative writing. The granular frontier in Koh Kong was the primary site of extraction, where the metaleptic displacement of sand from the socioecological milieu of the mangroves into the city-state's spatial governance by the sand complex was inaugurated. The sand complex names both the public-and-private transnational network of extraction and reclamation, and the series of symptoms plaited together that drives the city-state to expand towards the horizon all the while causing other worlds to contract. Metalepsis conceptualises the subordination of socioecological difference to the desires of the sand complex, and the intrusion of capitalism into a new frontier as it wrests geomorphology into its catastrophic narration. Houses falling into the river; fishing catches declining as dunes bloom along the banks; debt accumulating like sand itself, as if those things could be commensurate. However, metalepsis also figures sand's infiltration of Singaporean territory, contaminating it with the possibility of endless growth. Building on Kornbluh's conceptualisation of metalepsis as a meta-trope for the value relation in *Capital: Volume One*, this thesis argued that Singapore's material and semiotic inversion of colonisation is best understood through

geoliterary methods to situate its metaleptic appropriation of the granular. Now we can see that the metalepsis that engendered the slippage between economic growth and geographic growth in the city-state was ignited by its postcolonial situation; while prefigured by its colonisation, the nascent city-state's modernisation and massive coastal development set the stage for land reclamation as an anticipatory model of nation-building. The city-state developed a sand complex, producing a *tabula rasa* to cope with the uncertainty of endless growth, and the sand complex roamed Southeast Asia for suitable socioecologies that mirrored Singapore's own history as Temasek, a sea town.

By integrating concepts from literary theory with political geographies of resource extraction and territory through geoliterary fictions, this thesis situated the transformation of sand, from cheap and haphazard resource to geophysical expression of sovereignty, as the fulcrum of Singapore's accumulation of surplus territory. Sand is then a geographic ideologeme which unwittingly puts Singapore into intertextual relation with territories all over Southeast Asia. This method of critical-creative writing is premised on developing the geoliterary as a category of investigation and intervention, which posits the efficacy of literary tropes and forms for understanding how capitalism, through abstraction and speculation, 'reads' and 'writes' space. Charting the transformation of sand through the commodity chain, this critical-creative writing practice took as its raw material the various 'porosities' occasioned by the sand complex, some of which were the subject of considerable repression by both Cambodian and Singaporean governments. Interviews with villagers, activists, artists, and engineers formed the basis of these narratives, as well as fieldwork conducted at sites of extraction, sites of reclamation, and the vast stockpiles of sand that bloom at both ends of the commodity chain.

The novel form's plasticity and ingestion of multiple genres was adapted to form a homology with the sand complex: at the granular frontier, sand is a crucial interlocutor with other sediments, mediating relations between solid and fluid that the socioecology of Koh Sralao depended on for their livelihoods; through land reclamation, sand is what guarantees the survival of the Singapore state into the future, allowing it anticipate and speculate newer and more productive arrangements for itself into existence. Through the granular geographies of this thesis, sand underwent several generic transformations: from a hastily constructed and poorly regulated resource in 'The Sand Committee Speaks' into the fluvial intermediary between a community and its socioecology suddenly

and destructively displaced in 'Mat[t]er'. From a speculative seam of the city-state's system of spatial governance and model of global city in 'Professor Soon Addresses the Sand Committee' to the unifying element of a disparate series of symptoms experienced by the engineers and technocrats trying to cope with the promise of endless geographic growth in 'Entrainment'. And finally, the uneasy metalepsis of Singapore's speculative model of development in 'Tabula Rasa Singapura', where the anticipation of the future through sand has secreted within it the haunting of its own erased maritime history as an island of mangroves and swamps, connected to the wider Malay Archipelago. This method adapted geographic approaches to place-writing and architectural modes of site-writing alongside a formulation of cognitive mapping as a method to elucidate the sand complex in both its overt and covert guises, and to make the sand speak through its transformation down the commodity chain.

The case study of Koh Sralao proves that this dependence on sand is not without its contingencies; though the mining had a disastrous impact on the lives and livelihoods of the fishing village, the struggle against sand mining, developed in concert with the activist group Mother Nature, eventually proved that this kind of frontier is susceptible to mediatization. The materiality which underwrites Singapore's spatial strategy, through its sensuous excess that is vulnerable to representation, renders it vulnerable to claims and pressure from the Outside. Sand's granular materiality is susceptible to metalepsis through its interlocution of processes and states: in its plasticity and malleability, it gifts the city-state the ability to speculatively extend itself; but this same granular materiality also lined the cracks in the socioecology of Koh Sralao, with the boundaries between the two ends of the commodity chain made porous by the political speech of villagers and activists. They made the sand speak through prosopopoeia to say 'before this sand was land over there it was our land over *here*'. The case study also highlights the extent that the Singaporean government is willing to informally compromise its own sovereignty by 'authorising' the sand mining itself, through bureaucratic error, and becoming complicit with the authoritarian, neoliberal patronage networks of Cambodian governance. It needs to get its hands dirty to obtain its granular hedge against the future. The uncertainty of the sand trade has prompted the Singaporean government to attempt to move 'beyond' sand, by developing alternate strategies for land reclamation and intensifying space, such as through the development of underground space, and

using the soil excavated from these subsurface developments as infill for reclamation. Even in its relative absence, the city-state is still haunted by the granular, with these 'post-granular' forms of expansion essentially geoliterary inscriptions of the granular. The gift of endless and seemingly unproblematic geographic growth has accompanied its rise from a vulnerable postcolonial state to a 'First World' Global City that it became a paradigm of its urban development; even if no more land can be reclaimed without trespassing upon Malaysian and Indonesian waters, a hundred kilometres of underground space remains an untapped frontier. However, all of these strategies are ultimately bound by the availability and price of sand: these techniques will only be used when they become cheaper, either economically or reputationally, than sand. The city-state has in some ways been an accelerant of the global sand crisis through its spatial governance, which is evident from its intent on developing 'post-granular' technological fixes. The question of where they are getting their sand from now still remains; expeditionary forces have been sent to Bangladesh, and as far as the records show, Myanmar was their next supplier after Cambodia turned the tap off, while Malaysia remains an erratic supplier. 2100 looms as the possible limit for land reclamation: at least \$1 billion dollars were promised a year until this date to reclaim land to mitigate sea level rise. This latest and best rationale for geographic expansion constitutes the city-state's legitimization of its scripting of geomorphology in the Anthropocene; the survival of a successful model of global city in the future will come at the coast of communities and ecologies beyond its borders. The granular frontier needs to be examined in the process of its formation for knowledge of the sand complex to be more completely formed and interrogated, and for those cumulative acts of speculation to be accounted for in the social practices of the sand complex. But even in its absence, the granular still haunts the city-state: the excavation of the earth itself to sate its conquest of space invites us to consider how the geoliterary can situate the geophilosophical quandary of hollowing out the earth itself as the city-state plans to expand in all directions: if growth must be endless, where will the sand complex go next, and what will the city-state find at the bottom of the hourglass?

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