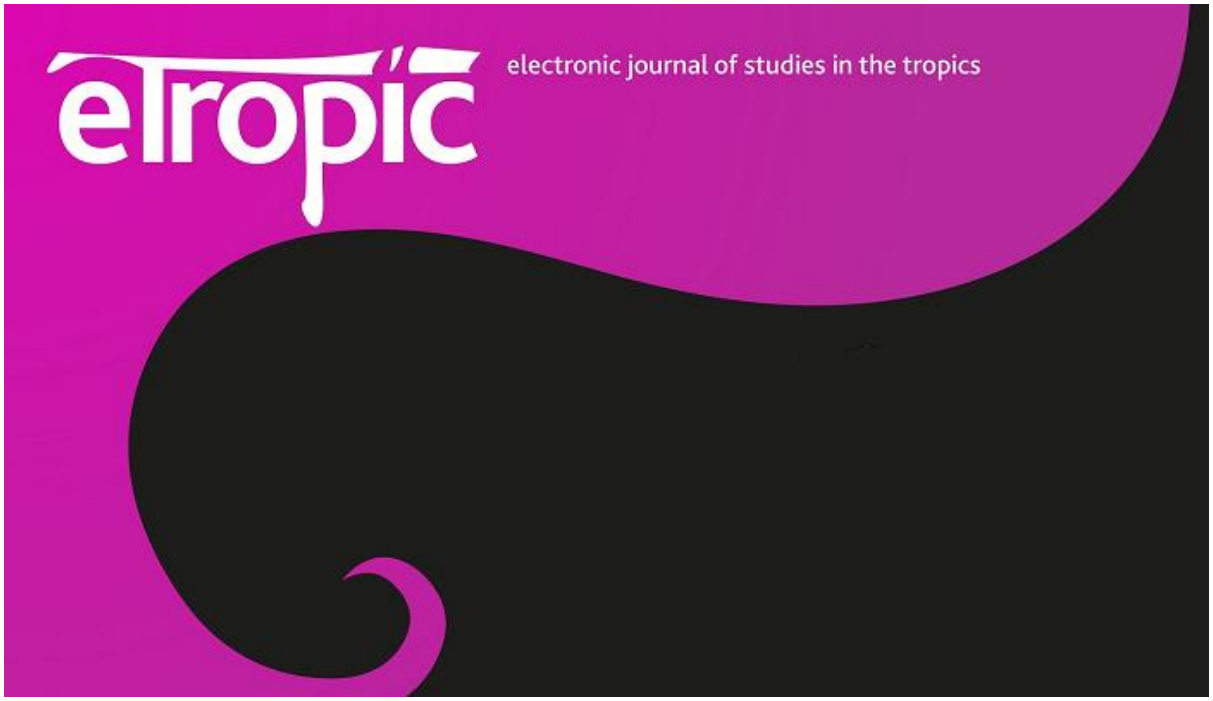
eTropic: electronic journal of studies in the tropics

Tropical Imaginaries and Climate Change

Special Issue



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Tropical Imaginaries and Climate Crisis: Embracing Relational Climate Discourses

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Abstract

In this Introduction we situate the Special Issue on 'Tropical Imaginaries and Climate Crisis' within the context of a call for relational climate discourses as they arise from particular locations in the tropics. Although climate change is global, it is not experienced everywhere the same and has pronounced effects in the tropics. This is also the region that experienced the ravages – to humans and environments – of colonialism. It is the region of the planet's greatest biodiversity; and will experience the largest extinction losses. We advocate that climate science requires climate imagination – and specifically a tropical imagination – to bring science systems into relation with the human, cultural, social and natural. In short, this Special Issue contributes to calls to humanise climate change. Yet this is not to place the human at the centre of climate stories, rather we embrace more-than-human worlds and the expansion of relational ways of knowing and being. This paper outlines notions of tropicality and rhizomatics that are pertinent to relational discourses, and introduces the twelve papers – articles, essays and speculative fiction pieces – that give voice to tropical imaginaries and climate change in the tropics.

Keywords: tropical imaginary, climate imaginary, climate crisis, Tropics, climate change, rhizomatics, tropicality, relational, more-than-human worlds

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Entrée: Into the Tropics

Heat waves and wave-inundated islands, prolonged droughts and rainforest fires, tropical storms and monsoon deluges, melting glaciers and flooded rivers – although climate change is global, it is not experienced everywhere the same. Climate change has pronounced effects in the Tropics.

Human caused global warming of the atmosphere, land and ocean, has been confirmed with 'unequivocal' certainty (IPCC, 2021, A.1). It is also confirmed that climate systems become greater "in direct relation to increasing global warming." Which includes "increases in the frequency and intensity of hot extremes, marine heatwaves, and heavy precipitation, agricultural and ecological droughts in some regions" and the "proportion of intense tropical cyclones" (IPCC, 2021, B.2). Global sea level rise has also been reported with 'certainty'.

However, relative sea level rise, along with other climate change effects, is predicted to be higher in the Tropics. The melting of the Greenland and the Antarctic ice sheets creates a dynamic where reduced gravitational attraction close to melting ice sheets in the Polar regions causes local sea level fall, while substantially increasing sea level rise farther from the ice sheets in the equatorial Tropics (IPPC, 2021, TS-45; Lundberg, 2021). While ice sheet melt is the main source of rising sea levels, oceans also absorb excess atmospheric heat which results in thermal seawater expansion.

Ocean warming further impacts the atmospheric systems of the Indian Ocean Dipole (IOD) and the El Niño-Southern Oscillation (ENSO), which causes El Niño and La Niña events. The predicted increase in intensities and frequencies of these regional atmospheric-oceanic phenomena will have far reaching effects on weather patterns throughout the tropics and subtropics – causing extended drought in some regions and extreme rainfall in others (Lundberg, 2021). Global warming also increases intensities of oceanic-atmospheric events which cause tropical storms (see Albino, 2021, this issue). Locally called 'cyclone' in the Indian Ocean and South Pacific, 'hurricane' in the Western Atlantic, Caribbean Sea, and Eastern Pacific, and 'typhoon' in the Western Pacific, the reach of tropical storms is extending further poleward into the temperate northern and southern zones with global warming. While tropical storm intensities are extending, sea level rise will, in turn, increase storm surge levels and flooding of coastal areas.

While oceans, along with rainforests, tropical peat swamps and mangroves, are major carbon dioxide sinks, global warming means these sinks can reach saturation and begin to emit sequestered carbon dioxide back into the atmosphere – adding to, rather than reducing, global warming. Coral reefs, rainforests, and mangroves are incredible

tropical biodiverse ecosystems which have developed over thousands of years: however, ocean warming, sea level rise, and acidification, bleach and kill protective coral reefs; while deforestation and fires add greenhouse gases to the atmosphere. The Tropics – which has long been imagined through visions of rampant jungle entanglements has become a critical zone of cascading tipping points, the site where the full scale and scope of climate change and its associated challenges and deathly consequences are becoming materially manifest.

This year marks the long-awaited United Nations Climate Change conference. The agenda includes the 26th Conference of the Parties (COP26) to the United Nations Framework Convention on Climate Change (UNFCCC). Following the Paris Agreement and the Kyoto Protocol, the conference aims to commit nations to a revitalized effort to urgently reduce anthropogenic carbon dioxide to net zero emissions in order to limit global warming at 1.5˚C. While acknowledging the importance of the UN Climate Change global agenda, this Special Issue draws attention to the tropical regions of the world: regions that are undergoing rapid development, yet suffer serious poverty; hold the planet's greatest biodiversity; and will experience the largest extinction losses (see Sodikoff, 2021, this issue); are home to many of the world's rainforest, mangrove, and maritime peoples, but endure legacies of colonialism and the increasing manoeuvres of neo-colonialism. In this Special Issue we advocate that climate science requires climate imagination to bring science systems into relation with the human, the social, the cultural and material (see Kandolkar, 2021, this issue). In short, this issue contributes to calls to humanise climate change discourses. However, this is not to put humans at the centre of the climate story; rather it is to engage the *anthrōpos* (human), within more-than-human worlds – to entangle us in the world with atmospheres, oceans, plants, animals, microbes (see Chao & Enari, 2021, this issue).

To perceive the vast intricacies involved in climate change phenomena requires imagination; a poetics of thought. Tropical imagination as expressed in this Special Issue collection is informed by Indigenous knowing, vernacular knowledge, ethnography, patchy Anthropocene, Plantationocene, Chthulucene, phenomenology, more-than-human worlds, rhizomatics, material culture and material poetics, archipelagic imaginaries, ecocriticism, ecofeminism, postcolonialism, and tropical climate change storying, including through literature, mythologies, comics, climate fiction (cli-fi), speculative fiction and hybrid memoir.

The Special Issue brings together a wide range of articles, essays and literary works from researchers who engage with the tropical regions of the planet. Thus, these papers are also bound up in the long histories of how the tropics have been imaginatively constructed.

Tropicality

The notion of tropical and the tropics are factually and imaginatively multidimensional. While the tropical has a propensity to be defined in geographical terms – the Tropics as the band around the Earth extending from the equator out to the Tropic of Cancer and the Tropic of Capricorn – this reduction of the tropics to latitudes does not adequately describe the sense of the tropical.

Human and cultural geographers have more recently revealed how the tropics is an imagined geography – a space conceived through a Western imperial lens. The term 'tropicality' gives a sense of this complex phenomenon. As Dan Clayton articulates:

> Tropicality is the age-old discourse (or suite of ideas, experiences, sensations and representations) through which 'the West' regards itself as 'temperate' (moderate, secure, comfortable, self-controlled and staid) and 'the tropics' as alien and its opposite (a domain of allure, seduction, danger, riot and excess). This temperate/tropical opposition has been conceived foremost in environmental terms, historically through capitalist and colonialist expansion and exploitation, and with factors of climate and disease…paramount. Tropicality helped to produce empire and buttress Western ideas of dominance and superiority. But it has outlived the age of European colonial empires and continues to shape and split 'global' understanding and experience (Clayton, 2021, p.55)

The concept of tropicality, similar to Edward Said's seminal work on *Orientalism* (1978), asks us to analyse the ways in which the tropics have been intimately imagined through multiple discourses. Or, as Clayton explains: "*constructed* – viewed, encountered, invented, coveted, and controlled – by Western travellers, scientists, settlers, soldiers and traders as they explored and moved into tropical regions and derived a set of 'temperate' values and 'tropical' vistas from their experiences" (2021, p.56). While tropicality has been constructed through these imperialist renderings, it also has more ancient pre-conceptions, going back to 320 BCE and Aristotle's notion of the torrid zone as uninhabitable to humans.

The imagining and construction of the tropics through a temperate imperialist gaze was well understood by the Caribbean poet, author and politician Aimé Césaire. Conceived through experiences of his native Martinique, Césaire used the term *tropicalité* as an anti-colonial concept that subverted and reverted the colonial agenda (see also, Lacuna, 2021, this issue).

As Clayton explains:

> Césaire saw 'the tropics' as a scene *par excellence* not only of colonial rapacity but also of how the violence embedded in a host of oppositions – between the usual and strange, normal and pathological, moderate and excessive, refined and gaudy, hallowed and plagued, immune and susceptible, hospitable and inhospitable, resplendent and insipid, and vigorous and languid – had been disguised and deflected. (Clayton, 2021, p.58)

The colonial roots of tropicality have been significantly addressed in many publications of the *Singapore Journal of Tropical Geography*, including Victor Savage's paper 'Tropicality Imagined and Experienced' (2004) which offers a clear entrée into the concept. However, it is important to note that tropicality has not disappeared with postcolonialism and the turn to discourses of globalisation – which are also embedded in the phrase 'global climate change'.

As James Sidaway, Chin Yuan Woon and Jane M. Jacobs in 'Planetary Postcolonialism' (2014) advise, postcolonialism and new forms of transnational imperialisms are rooted in notions of globalisation. Thus, while many theorists in the social sciences have adopted globalisation to imagine the world, in the humanities, some theorists believe that the 'planetary' offers a richer way in which to understand the world. The authors note that Gayatri Chakravorty Spivak proposes 'the planet' over 'the globe'. For while globalisation renders the same system everywhere, an "abstract ball covered in latitudes and longitudes, cut by virtual lines", the "planet is a species of alterity" (Spivak, 2003, quoted in Sidaway et al., 2014, p. 5).

The authors argue that Spivak ruptures the taken for granted imaginary of the 'global' and returns us to its colonial genealogy. Venturing into this background they further remind us of how "imperialism has always been an ecological project, in which humans, plants and other species were shifted around the earth in schemes for colonization/conservation" (Sidaway et al. 2014, p.5). In the current age, they note that globalisation is also at the heart of the concept of the Anthropocene. However, even as the Anthropocene firmly acknowledges human activity as the dominant agent of climate change, the concept simultaneously internalizes an imaginary of the globe and the environment conceived through a Western scientific worldview.

The term lends itself to conceiving of the planet and humans as homogenous. In order to counter this simplification, anthropology has engaged the notion of patchy Anthropocene to reveal fragmented landscapes of ruin wrought by colonialism and industrialization (see Das & Routray, 2021, this issue). Taking these fragmented

landscapes a step further, the interdisciplinary team of Anna Tsing, Jennifer Deger, Alder Keleman Saxena and Feifei Zhou, in *Feral Atlas – The More-Than-Human Anthropocene* (2021), have begun to trace landscapes whose ecologies sprout from human built infrastructure and spill beyond human control, going feral. In turn, Donna Haraway (2015), the feminist science and technology studies scholar, has suggested using the term Anthropocene critically, along with other terms, including Plantationocene (see Jerez Colombié, 2021, this issue) and Chthulucene (see Boswell, 2021, this issue), in order to retain critical awareness of local manifestations of human induced environmental and climatic crises.

This Special Issue advocates the need for situated analyses within the global climate change discourse at the level of elements, humans and places. We remain aware that even carbon dioxide is "produced in particular places and travels, with local results" (Tsing et al., 2021). We remember that Chakrabarty has declared that, 'the crisis of climate change will be routed through our "anthropological differences"' (Sidaway et al. 2014, p.5). And, we add, that climate change will manifest unevenly within specific human geographies.

The two terms 'Tropical Imaginary' and 'Climate Crisis', that frame and inspire this Special Issue likewise manifest in various ways influenced by cultural, geographical and disciplinary-interdisciplinary perspectives. Here we offer a rumination on 'Tropical Imaginaries' (see also Benitez, 2021, this issue) from an ecocritical-postcolonial perspective with examples drawn from literature and climate in India (see also Lacuna, 2021, this issue, re Philippines); followed by a deep reflection on 'Climate Crisis' from a science, technology and environment perspective illustrated through examples from animation and climate in Brazil.

Tropical Imaginaries

In one imaginary, the Tropics is rendered as a geographic space of beauty, where it is warm and humid, with modest variations in temperature throughout the year, and thus host to the most exotic flora and fauna. Yet, the Tropics is also the food belt of the world where the warm wet climate is conducive to the growth and production of many varieties of food crops like sugarcane, rice, sweet potatoes, soya bean, banana, mangoes, cocoa, coffee and tea. With the advent of colonialism, capitalist machineries started operating and exploiting the region and denuding it of its rich flora, fauna and other natural resources, including minerals – as well as decimating the original inhabitants of the region. Colonial capitalist machineries operated at local levels and accelerated the global natural resource crisis. The environmental concerns of the people living in the tropics, who are economically, politically, culturally, and even, geographically marginalized due to capitalist colonial invasions, are quite different

from those of the developed world (see also, Hartnett, 2021, this issue). Scott Slovic, Swarnalatha Rangarajan and Vidya Sarveswaran (2015) note that the Global South – which is primarily comprised of tropical countries – "takes on the task of articulating the socio-ecological plight of the world's poor by drawing attention to the fact that the uneven patterns of neoliberal development in the Global South threaten the millions who depend upon access to natural resources for their survival"(2015, p. 3). Amitav Ghosh (2016) believes that capitalism is the pivot on which the narrative of climate crisis turns. He further states that this narrative of capitalism "often overlooks an aspect of global warming that is of equal importance: empire and imperialism....To look at the climate crisis through the prism of empire is to recognize, first, that the continent of Asia is conceptually critical to every aspect of global warming: its causes, its philosophical and historical implications, and to the possibility of a global response to it" (pp. 117-118). The demand for rightful living and a healthy life of the impoverished people is ignored and the looming problem of resource depletion underlines the discourse of the "environmental justice that has moved ecocriticism to consider how disenfranchised or impoverished populations the world over face particular environmental problems" (Roos & Hunt, 2010, p. 7). The actual environmental problems reside in depletion of resources which in turn lead to climate change and go hand in hand with denial of justice to local populations. India is one such country that has suffered from both colonial onslaught and neo-imperial capital hegemony. Pankaj Shekhsaria describes the condition of the India united territories of Andaman and Nicobar Islands under colonization and capitalist invasion in his books *The Last wave: An Island Novel* (2014) and *Island in Flux: The Andaman and Nicobar Story* (2017). Imperialism and capitalist invasion have corroded and thereby changed the face of the Andaman and Nicobar Islands, a territory which was once extensively covered in rainforests and supported a rich variety of flora, including 200 endemic species, as well as fauna including land animals, birds and butterflies, and aquatic treasures. The islands were also home to indigenous Andamanese peoples and Austroasiatic Nicobarese peoples. Sekhsaria notes that a Jarawa tribal reserve was finally established by the Government of India in 1957 with an objective to protect the Jarawa (one of the endangered tribes of the Andamans) inside the 1000 km^2 reserve and to prevent settlers from encroaching upon it: "Today, there are only about 250 of them and vast expanses of their rainforest homelands have been cleared to accommodate settlers and to feed the huge timber industry on which rests the economic foundation of the Andamans" (2017, p. 60). Sekhsaria explains how deforestation breaks the water cycle which is crucial for existence of life and describes how Baratang, a settlement in the Andaman Islands, "is like a furnace, and the villagers there have a serious water problem. It's not just the forests that suffer, people do too – the entire hydrology of the area changes" (2014, p.189). The situation on the territory of the Andaman and Nicobar islands supports Vandana Shiva's observation that "The drying

up of India, like that of Africa, is a man-made rather than a natural disaster" (1988, p. 171).

Dipesh Chakrabarty in his essay 'Climate of History: Four Theses' published in *Critical Inquiry* in the winter of 2009 links the crisis of climate change to governmental neglect, capitalist lies and denial, and more importantly the disconnect and indifference of the actual stakeholders. Environmental critics like Scot Slovic, Promod Nayar, Susanna Priest and others have felt that the climate crisis has traditionally been addressed by scientists, economists, politicians and the media, which overpowers dialogues at social levels. Priest (2016) believes that "climate crisis is something of a communication emergency" (p. 9) which should be addressed as a priority so that climate change discourse can be transformed and people can engage constructively with the reality of the crisis. Scot Slovic (2005) also emphasizes the role of language, especially literature, in addressing the vital issue of climate change. Yet, we note that: "Ordinary language would be inadequate to articulate such complex and politically coloured situations. Therefore, myths and metaphors that cannot be evaluated in terms of truth conditions are often used by writers to throw light on the vital problem of anthropogenic climate change and Earth's ecological distress" (Das, 2020, p. 71-77).

In the last few decades the world has suffered from acute climate change induced conditions with warming temperatures that affect high mountain glaciers, as well as rising sea levels that inundate low deltaic plains. We have experienced severe storms, excessive cloudbursts and flash floods. These seem uncanny and beyond the comprehension of the ordinary human.

The Churabaari Glacier in the Himalayas of the Northern Indian State of Uttarakhand, is the source of the Mandakini River which merges with other river systems, flows past the 8th century Kedarnath pilgrimage shrine to Lord Shiva, and eventually drains into the great Ganges River to be dispersed across the fertile deltaic plain of India-Bangladesh and finally meets the sea at the Bay of Bengal. On the 16-17th of June 2013, the river Mandakini experienced a massive flash flood, induced by extreme rainfall 375% above the monsoon average. The rain caused melting of glacier ice and broke the banks of the glacier lake. It wrought unprecedented havoc in Uttarakhand destroying everything in its path: houses, bridges, dams and the town of Kedarnath and Rambara (Joshi, 2016). Thousands died in the flood and consequent landslides, including locals and pilgrims; of those who lived, many lost their homes and livelihoods. The disaster was so sudden and its dimensions so vast that people are still unable to comprehend it. The fear and the trauma of this eco-disaster would have been gradually forgotten as an uncanny event had Hridayesh Joshi not documented it in the form of stories (also see Nakai, 2021, this issue). The ecological uncanny generated in the sites of eco-disasters tempt humans to imagine the ghostly, the mythic, the alien, the familiar and the strange in order to make some sort of meaning

of the disaster. Pramod K. Nayar (2017) contends that literary texts are the only means of delivering the urgent news of climate change, eco-disaster and the fragility of human–nature relations.

Climate Crisis

In 2011, the Brazilian animated short film *O Diário da Terra* (Earth's Diary), directed by Diogo Viegas, was released. In just over a minute of animation a girl narrates how climate change is affecting her life. A fan of winter, she can no longer go out to play in the snow as before, due to the extreme cold in recent years. A lover of sunbathing on the beach during the summer, she finds herself equally limited due to the higher incidence of days of heavy rains with winds strong enough to drag away people (reminding us of hurricanes). Both situations illustrate the extremes of weather provoked by climate change on the entire planet (from extreme winters of temperate zones to monsoonal tropical summers). The girl's diary contends that humans are destroying this planet, and the pages of her diary – narrated in her sweet childish voice – show images of factories, deforestation and setting land on fire. The character of the planet, with its sad countenance, reinforces this classic notion of the finiteness of the natural resources of the Earth and leaves the viewer with a sense that this is our world, made for us, and managed or mismanaged by us – a classical environmental notion. However, in the last scene, the girl narrates how one day when the page of her diary is turned, it will be the last page of Earth's diary. And her words are reinforced by the flashing of empty pages. The abrupt end leaves a gloomy atmosphere of a world without us (see Weisman, 2007; Thacker, 2011, p. 14). The allusion of an end to humanity, ruptures the environmental storyline, and is followed by the eloquent silence of the movie credits. Horror is present in this end, a contingency suggesting the possibility of self-annihilation.

Animations are anchored in broad political, social, cultural and environmental contexts that, while questioning reality through their subversion, also expose the fears and anxieties of the period in which they are produced (Wells, 1998). Animations of the environmental genre, through imagined scenarios, produce knowledge and subjectivities anchored in the environment as a subject, problematising and speculating about the future of the planet (Starosielski, 2011). If, on the one hand, the emphasis on nature as a harmonic whole in danger, and lacking in humans engaged in its salvation, was strongly present in animations of the 1970s; there are currently animations where non-humans are presented and the emphasis is on the multiplicity of forms of existence which emerge though a threatening dimension, evasive to thought and, therefore, inducing uncertainties and ruptures (see Vital, 2018; Vital, 2019). The mere suggestion of the end of the world as an end of humanity in an

environmental animation such as *O Diário da Terra*, is a symptom of the anxieties and the climate of uncertainty emanating from the multiplicity of unprecedented phenomena related to the climate crisis that permeates the tropics.

Unprecedented phenomena are found in what the historian Zoltán Simon (2021) refers to as inducing 'evental' historical transformations, that is, disruptive events that produce ruptures (Simon, 2021, p. 149). However, being contingencies, they are simultaneously within the scope of possible persistence (continuity) and possible expiration (rupture); they are – as in the definition of contingency set forth by Quentin Meillassoux (2008, p. 62-63) – a pure possibility that may or may not happen. They are thus contingent events not only through producing ruptures, indicating the precariousness of human and non-human things; but through feeding feelings and thoughts about multiple possibilities (which include the annihilation of human life as we know it). Some of these phenomena, widely reported by the media, illustrate the concrete circumstances in which these feelings and thoughts emerge.

Up until February 2004, it would have been absurd to talk about the possibility of hurricanes in the southern hemisphere of the Atlantic Ocean. However, on March 24, 2004, what was an extra-tropical storm became the first tropical cyclone recorded in the South Atlantic. Catarina (also called Aldonça and 50L), a tropical storm system with an intensity similar to that of a Category 2 hurricane on the Saffir-Simpson scale, struck the State of Santa Catarina, Brazil. As an unprecedented event, Catarina produced numerous ruptures and uncertainties. The predictive models largely failed: most of them underestimated the intensity of the storm when reaching the Brazilian coast and the system followed a consistently linear trajectory, both in terms of intensity and direction (something considered unusual for such a dynamic system). Finally, Catarina raised an intense scientific controversy in the international community, with Brazilian meteorologists arguing that it was not a hurricane, as US scientists had immediately identified it as, but a "rare cyclone with hybrid structure between typical tropical hurricanes and extra-tropical systems" (Silva Dias et. al., 2004). In any case, the event was seen as a warning about the possibility of climate change materialising under exceptionally favourable conditions for the transformation of the emergency patterns of extreme hydrometeorological phenomena (Pezza & Simmonds, 2005).

In October 2015, predictive models again failed – but in a more dramatic way. The storm Patricia hit the west coast of Mexico and the initial forecast was that it would be another typical low category hurricane in the Pacific. However, Patricia changed her trajectory and intensified at an unprecedented speed, becoming, in approximately 24 hours, the most powerful hurricane ever recorded in terms of maximum sustained wind velocity (325 km/h), breaking several global records in the western hemisphere (Rogers et. al., 2017; Nystrom & Zhang, 2019). Following a completely contingent

behavior, while still over the sea hurricane Patricia surprisingly weakened, also very quickly, thus reaching a only a scant rural land area in the state of Jalisco, Mexico, leaving seven dead and approximately 325 million dollars in damage (Kimberlain et. al., 2015). In comparison, the damage caused by hurricane Katrina (2005) is estimated at more than 100 billion dollars, with about 1,500 deaths directly caused by the phenomenon (Beven et. al., 2005). In the end, the behaviour of hurricane Patricia followed a trajectory of unpredictability as set by the models used to predict phenomena of this nature and by the official channels; being at first greatly underestimated, and then later overestimated for its potential damage.

Extreme hydrometeorological phenomena such as these induce at the individual and global level several speculations related to the possibility of a world without us. In the wake of these speculations and the imaginary linked to climate change, more precisely related to the incidence of storms, there is the case of skulls seen in infrared images of hurricanes made by satellites that frighten internet users on social networks, as in the cases of Hurricane Matthew (2016) and Michael (2018) (see Zenteno, 2016; Phillips, 2018).

However, the climate crisis materialises in many other ways besides the incidence of cyclones, hurricanes or typhoons. Events such as extreme droughts, floods, and other phenomena impact a number of processes at the local and planetary level, including the lives of microorganisms that may or may not be pathogenic. Insects and other animals are also impacted, constituting vectors or intermediate hosts of microorganisms harmful to human health, dramatically diversifying the distribution and transmission of diseases in the tropics. Currently, there is strong evidence pointing to the incidence of extreme weather events and changes in rainfall and temperature patterns, among other factors associated with climate change, playing an important role in the emergence and re-emergence of multiple neglected tropical diseases (such as dengue, chikungunya and leishmaniasis), including their transmission periods and expansion to areas never before affected (Tidman et al., 2021). In addition, permafrost thawing in the Arctic region has been releasing fungi and bacteria dormant for thousands of years, also constituting a risk to human health (Revich & Podolnaya, 2011; Lagendre et al., 2015). In a related sense (and with a sense of prescience), the Brazilian animated short film *Entrevista com o Morcego* (Interview with the Bat), launched back in 2000 by Dustan Oeven and Moisés Cabral, depicts, from the animal's perspective, how the destruction of bat habitats by floods, for example, bring these animals closer to urban centres, intensifying the spread of diseases. Similarly, the entanglement between the dramatic persistence of the COVID-19 pandemic and the rising ocean level in the speculative fiction "Goodbye on the Seas" (see Yin, 2021, this issue) is pertinent in remembering that very distinct events can originate in climate and

terrestrial changes of anthropogenic background, with possibilities for tragic futures in their joint performance.

Thus, human action, conscious or not, induces unexpected effects that feed an imaginary that suggests the future as a catastrophe. Fiction and reality go hand in hand because we are not able to delineate a tangible boundary between them, even as we are engaged in constantly chasing phenomena that manifest themselves in total indifference to human reason. The IPCC itself is aware of the problem of 'uncertainties' and 'deep uncertainties' that permeate scientific studies and the communication of their results, since climate change is felt in different ways in various regions of the planet, while various social variables (such as political positions and ethical values) also interfere in the way different groups react to the very possibility of climate change (Chen et al., 2021, pp. 29-32). For this reason, analysing how climate changes, and their signs, emerge in the imaginary of the tropics is fundamental for generating responses to the unprecedented phenomena that humanity is experiencing in the 21st century.

Articulate Imaginings

The articulation of various tropical imaginaries as they emerge through climate crises, is the work of the twelve papers brought together in this Special Issue. Here, the authors articulate nuances of climate change related events as they effect specific tropical countries and regions. In addition to addressing tropical imagination and many inter-related aspects of climate crises, the papers have in common a concern with how various forms and eras of mercantile colonialism and capitalist neo-colonialism have impacted the tropics. Individually and collectively the papers stress how a new imaginary requires local voices, including voices from the many diverse cultures of the tropics – indigenous as well as cultures formed as legacies of slave trade, indentured labour and migration.

There are many resonances between these papers – which we invite readers to explore for themselves – and here we offer merely one of many ways in which to read them for their thematic reverberations. We do this by grouping them under subheadings. Thus we bring together several essays under the theme of *Decolonising Climate Change*, two articles under *Material Culture & Vernacular Knowledge*, a variety of forms of literary analysis under the heading *Ecocriticism & Postcolonialism*, and end with speculative fiction pieces under the theme *Tropical Apocalyptic*.

In these papers we encounter tropical imaginaries as they arise in varied articulations: storied existences of both human and beyond-human communities; of minifauna parsed through DNA barcoding; of rhizomatic identities formed and morphed in

mangroves through photography; the architectural heritage of a climate ravaged Basilica; revival of vernacular knowledge for natural and climate disaster resilience; the entwined relation of fossil fuels, capitalism and climate change; the reimagining of hurricane tropes in contemporary comics, and in another paper, storm tropes in early postcolonial writing of the fin de siècle; the material poetics of a long El Niño drought; ecocide in novels set during civil war; climate fiction of nuclear testing and biohacking set in the far climatic future looking back; and a hybrid fiction combining real life and dystopian speculative futures in rising seas.

Decolonising Climate Change

The first three papers are all involved in decolonising climate change by setting the current climate crisis within legacies of the colonialism. Each proposes the need for local voices and different forms of climate storying. The papers bring us to Papua and Samoa in the Pacific Ocean, to the Indian Ocean Island of Madagascar off the coast of Africa, and to the 'Black Pacific' coast of Ecuador in Latin America.

Beyond-Human Imaginaries – Papua and Samoa

Drawing on personal and academic knowledge from West Papua to Samoa, Sophie Chao and Dion Enari call for transdisciplinary, experimental and decolonial imaginings of climate change for the future of the Pacific. In their paper, 'Decolonising Climate Change: A Call for Beyond-Human Imaginaries and Knowledge Generation' (2021, this issue), the two scholars set out practices and principles that call for a rethinking of our relation with the more-than-human world. In their view, it is not the imagination that is at issue but the small and "exclusionary scope of voices and beings heeded and represented by current dominant climate imaginaries" (Chao & Enari, 2021, this issue, p. 34). Such imaginaries perpetuate visions of human mastery over a passive nature that remains merely an inert resource for the machinations of humans. They argue that the climate and environment itself can serve to ignite and unite our imaginings through animate cosmologies and philosophies. This reframed relational imagination can begin through including voices of Indigenous peoples of the tropics and beyond who have always recognised the interdependencies of human with other-than-human beings and, further, the elemental forces. They also argue that in academic storying it is imperative to decolonise our texts and note that a reflexive and relational ethnographic and theoretical practice offers one way to move beyond Western theoretical domination and take seriously Indigenous peoples' theories and philosophies of climate and environmental crisis. As the authors state: "The climate crisis is a multi-faceted problem, therefore it demands transdisciplinary responses" (2021, p. 42).

Importantly, Chao and Enari offer stories as hope. “In repeating the names and stories of organisms pushed to the edge of extinction, we refuse to forget their liveliness, symbiotic existence, and consequential presence….Drawing into stories our peoples, oceans, forests, mountains, animals, and ancestors, we *fa’aola* (bring to life) the urgency of the climate crisis and the responses it demands of us (2021, p. 38)

Cryptic and Miniature Species – Madagascar

Recent photographs and reports of “new” miniature species has captured the public imagination. However, as Genese Sodikoff, in her article ‘Shrunken Life: Discourses of the Cryptic and the Miniature in Madagascar’ (2021, this issue) reminds us, this discovery of minifauna evolves out of habitat loss as a result of environmental degradation and the impacts of climate change. The species discoveries come as scientist scour remnants of forests or they are revealed through DNA barcoding which is capable of detecting nuanced differences in species.

In Madagascar, discoveries of miniature frog and chameleons are photographed on the tips of human fingers, while a mini lemur is cradled in a hand. In a finely rendered analysis, Sodikoff notes that this imagery of scale evokes how the giant finger or cupped hand can be read as the outsized impact of humans on the planet. She states that: “the quest to find novel species in a context of mass extinction and global warming resembles the impulse of White museum curators of the nineteenth century” (2021, this issue, p.56). To understand why the ‘new’ minifauna are so fascinating, Sodikoff takes up Susan Stewart’s evocative work, *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection* (1996), and uses its insights to follow early imaginaries of dwarfism and giantism in European scientific, anthropological and literary texts – with their theories of evolution and extinction – as well as local Malagasy mythologies.

Sodikoff, never loses sight of how the wonder of these tiny species must be read against the backdrop of mass climate extinctions, which will be more pronounced in the tropics where rainforests and other tropical ecologies have supported rich species biodiversity.

People of the Mangrove – Ecuador

Yairen Jerez Columbié’s paper, ‘People of the Mangrove: A Lens into socioecological interactions in the Ecuadorial Black Pacific’ (2021, this issue) explores the inter-relations between mangroves, children, legacies of colonial slavery, the struggle for livelihoods, and mangroves as places of play. The piece shows the relation between people and the plants they live among and the ecosystem on which their lives depend.

Set in the Ecological Mangrove Reserve Cayapas-Mataje in Ecuador, this ethnographic study of the Afro-Ecuadorians who live in the mangroves is articulated through photographer Felipe Jácome's photographic essay *Los Reyes del Manglar* [The Kings of the Mangrove]. Jerez Columbié furthers the rhizome imagery of the mangrove forest through Caribbean thinker Édouard Glissant's work on rhizomatics in order to think though a "Poetics of Relation, in which each and every identity is extended through a relationship with the Other" (Glissant, 1997, quoted in Jerez Columbié, 2021, this issue, p. 78). She notes that mangroves are rich material for the study of the history of these forests and the entanglements with people's lives, cultures, and histories.

Mangroves survive in the interstice between land and sea and are vulnerable to the impacts of climate change, they also play an important role in carbon sequestration and climate change mitigation. Jerez Columbié argues that cultural representations of mangroves can go beyond their metaphorical meaning, for they are socioecological systems that support people's struggle for climate justice.

Material Culture & Vernacular Knowledge

The two papers that follow are set in different parts of Monsoonal Asia. One article addresses material culture and argues for vernacular knowledge in architectural heritage conservation in Goa, South Asia. The other article argues for the need for vernacular knowledge in the materiality of natural and climate disaster resilience and management with case studies from Japan, Thailand, and Indonesia.

Rain in the Basilica – Goa

In many parts of the tropics monsoon deluges are becoming more intense due to climate change, including Goa. Vishvesh Prabhakar Kandolkar's study, 'Rain in the Basilica: Protecting Goa's Bom Jesus from the Ravages of Climate Change' (2021, this issue) explores the effects of monsoonal climate change on the architectural heritage of this small coastal state which was once under Portuguese colonial rule, but during postcolonial manoeuvres was annexed to India. The Basilica of Bom Jesus, is one of the most important cultural icons of Goa and a symbol Indo-Portuguese heritage. It also holds the relics of St. Francis Xavier and is thus an important pilgrimage site. The sixteenth-century building is still in use, despite its roof having been breached by rains, and its laterite stone exterior walls being eroded by the lashing of monsoon deluges. As he takes us into the controversies surrounding the conservation of the Basilica, Kandolkar argues that in these pressing times of climate change, architectural conservation cannot be about just the preservation of cosmetic

appearances of buildings, but must involve safeguarding monuments against major structural damage. The article explores the cultural, historical, colonial, political, architectural, and tropical monsoonal factors affecting the Basilica's current deterioration and its future conservation. Kandolkar notes: "Because monuments like Bom Jesus do not stand independently of their environments, the imagery of climate change is incomplete without considering its effect on architecture" (p. 98).

As this issue goes to press, Kandolkar's work on material culture and monsoon is extending its reach through his photographs which are opening in the group exhibition entitled 'Goa: A Time that Was' (D' Souza, 2021). Kandolkar advises that he has hung woven palm fronds, called *mollam*, in front of a large photograph of the Basilica in reference to indigenous practices on vernacular architecture – which was inspired by his article for this Special Issue (see p. 106). (Kandolkar, per com, 6.9.2021).

Vernacular Knowledge and Natural Disaster – Monsoon Asia

In his article 'Vernacular Knowledge, Natural Disasters, and Climate Change in Monsoon Asia' (2021, this issue), Senjo Nakai discusses how climate change impacts the ability to predict and prepare for natural disasters, thus increasing the risks of climate related hazards. In the modern past, science and technology were instrumental in the management of natural disasters. However, with the contingencies of climate change, predictive measures are proving less reliable as Monsoon Asia experiences extreme weather events.

In the more distant past, the peoples of Monsoon Asia had for centuries prepared themselves for natural disasters through a repertoire of mythologies, collective memories, artefacts, songs, sayings, artworks, and customs. As Nakai argues: "Such knowledge, while not readily compatible with scientific discourse, is by no means at odds with it. With ingenuity, vernacular knowledge can be a valuable medium for people to understand and cope with such multifaceted phenomena as climate change" (p. 116). Indeed, his article offers examples of how such local knowledge has been utilised successfully by peoples of Japan, Thailand, and Indonesia in local disaster management.

Nakai's article offers us an in-depth examination of the concept of Monsoon Asia and discusses the relation between climate change and natural disasters, he also provides the reader with inspiring examples of vernacular knowledge of disasters and their articulation through tangible and intangible heritage.

Ecocriticism & Postcolonialism

This subtheme brings into relation papers employing literary analyses. The first paper, written from a global studies perspective, is a critique of colonialism, extractive industries and imperialism. It argues for the joining of ecocriticism and postcolonialism and draws on examples from the tropics. The following papers put into practice this ecocritical-postcolonialism through finely articulated pieces that arise from local climate change conditions in various tropical locations, including: hurricanes in Puerto Rico analysed through comics; journeys of weather and storm tropes in the fin de siècle writings of José Rizal in the Philippines; a deep musing on the phenomenology of time during an El Niño drought in the Philippines through poetry and farmers' protests; and an exploration of ecocide, eco-anxiety and climate change in two novels by Aminatta Forna set in war-torn Sierra Leone, Africa.

Climate Imperialism – the Global Tropics

Rachel Hartnett, in her paper, 'Climate Imperialism: Ecocriticism, Postcolonialism and Global Climate Change' (2021, this issue), writes from a global perspective which is punctuated and elucidated through numerous examples from tropical regions. Arguing for a joining of ecocriticism and postcolonialism she sets out the background of each field and the work that has recently been undertaken by theorists to bring them into relation. The paper utilizes, with close attention to quotations, the works of leading academics in each of these fields. Her critique is especially rigorous of America and the Global North, from where the author hails; while the many climate change examples cited throughout the article are in themselves a testament to the climate emergency unfurling in the tropics.

Hartnett argues that "Global climate change reinforces disparate economic, social, and racial conditions" – following the paths that were laid out during colonialism. This, she elaborates, inscribes "climate change as a new, slow form of imperialism" (p. 139). She further argues that the negative impacts of climate change "will be distributed not just unequally, but in a direct echoing of colonial pathways" (p. 140). She reasons that climate imperialism can only be ruptured though a postcolonial focus and indigenous resistance.

The paper concludes by demonstrating how an ecocritical-postcolonial relation is arising through critical and creative works of peoples from countries of the tropics. She notes: "That these scholars and writers are rising up from tropical nations that have faced the longest and most intense colonialism is not a coincidence" (p.152).

Gifts of the Hurricane – Puerto Rico

This paper introduces comics as a source of decolonial imaginary based in experiences of hurricanes. Daniel Arbino's '"The Gifts of the Hurricane:" Reimagining Post-María Puerto Rico through Comics' (2021, this issue), acknowledges the tragedies following hurricanes Irma and María in Puerto Rico, but also brings to our awareness a series of comics that have emerged to form a small literary canon that "explores the storms as an opportunity to rethink the island's future" (p. 157).

He notes that the hurricanes forced artists and writers to engage with both climate impacts of rising seas and intense tropical storms, and with re-evaluating the colonial relationship of Puerto Rico with the USA. Arbino argues that these seemingly disparate elements became connected through the United States' mishandling of the ensuing recovery which prompted a responding outpour of decolonial imaginaries, which he defines as "a rupturing space, the alternative to that which is between the colonial and postcolonial, that interstitial space where differential politics and social dilemmas are negotiated" (Pérez, 1999, quoted in Arbino, 2021, this issue, p. 157). Arbino notes that the notion of this interstitial space is particularly pertinent to the situation of Puerto Rico where cultural production must manoeuvre the in-between spaces of being Caribbean, American and Latin American simultaneously.

Guiding the reader through selections of texts from both English and Spanish comics, Arbino shows us how the comics, through Hurricane María, create an autonomous island future. Collectively, these comics offer both a return to pre-colonial indigenous values, and an imagining of new technologies "to empower Puerto Rico to break from the United States and withstand future storms" (p. 157).

Atmosfera Rizaliana – the Philippines

Storm tropes emanate throughout Isa Lacuna's paper 'Atmosfera Rizaliana: Metonymic Journeys of Weather in José Rizal's Philippines' (2021, this issue). As she notes, stormy weather is a recurring theme in the literary and political oeuvre of José Rizal, one of the Philippines' most celebrated figures – as both writer and political martyr.

Through Rizal's stormy tropes, Lacuna undertakes a theoretical and material excursion into exploring the metonymic logic that threads not only through the writer-political activist's texts, but also other movements of the fin de siècle across cultural, technological, and political landscapes between the metropole in Spain the Philippine archipelago. Lacuna writes of the weather in fragments as the circulation of ideas and

discourses, travelling along cultural circuits of books and films, but also as technologies – ice shipped in tons to the archipelago (the temperate reaching the tropics). As she states: "It is instructive to view turbulent weather, both in the historical and contemporary case, as not simply a natural phenomenon that happens, but as a catastrophic intersection of technological, historical, and political factors whose experiences are never divorced from one another" (p. 202).

Just as Rizal deployed weather as part of a political and anticolonial rhetoric of solidarity across space, Lacuna suggests that the climate crisis may be informed by the logic of metonym deploying "horizontal relations between peoples and their surrounds, asserting the significance of lateral disruptions to metaphoric hierarchies." And moving further into "larger horizons that span the full scope of the planetary" (p. 203).

Time and an El Niño drought – the Philippines

The imagery of a long drought frames Christian Jil Benitez's paper 'On the Weariness of Time: El Niño in the Philippines' (2021, this issue). Here, in the form of a 'tropical imaginary' and a 'material poetics' Benitez accentuates the entanglement of literature (through poetry) with the material world (through farmers' protests). He 'coincides' the 1965 poem 'The Weariness of Time' by Jose F. Lacaba, with the 2015 El Niño drought in the Philippines which culminated in a violent clash between police and farmer-protesters in Kidapawan City, Mindanao.

Benitez's text is framed by poetry at the beginning and end, thus moving the reader in and out of poetic reverie, literary analysis, specifics of weather, and political critique. He moves us between the farmer of the poem and the farmers of the El Niño event. Yet the two also 'coincide' and begin to seep one into the other. Benitez writes: "as the river runs dry and the earth becomes barren, the farmer still possibly dares to imagine the prospects of adapting, if not outright flourishing, amid the present crisis – albeit in ways that may differ from what they were formerly accustomed to" (p. 212).

As the author muses, 'the weariness of time', is also manifest in the continuing applicability of Lacaba's poem across a period of 50 years to the El Niño event, for it indicates that in some ways time has not changed, and farmers "are still ultimately deprived of sufficient relief and structural support from the government, and instead coerced to perceive that their suffering will always be "how it really is," leaving them to their own devices" (p.216).

Climate Change and Ecocide – Sierra Leone

Shruti Das and Deepshikha Routray in their paper, 'Climate Change and Ecocide in Sierra Leone: Representations in Aminatta Forna's *Ancestor Stones* and *The Memory of Love'* (2021, this issue), analyse how Forna's two novels direct the reader to the issue of climate change due to the severe impact of mining and deforestation in Sierra Leone. While both activities began with colonialism, they were especially intense during the nations postcolonial period which instigated a series of civil wars which continued for over eleven years from 1991 to 2002 and wrought havoc on both land and forests. The authors are particularly interested in how the trauma of ecocide is represented within the two novels, including through personal trauma depicted through various characters.

In order to analyse trauma of the characters, the paper draws on scientific and sociological data and places it within the context of narrative episodes in the novels. The anxiety and post-traumatic stress disorder – of both war and ecocide – suffered by the fictional Sierra Leonean characters are explained through Cathy Caruth's trauma theory, "which sheds light on the metaphorical representation of inexpressible trauma" (p.230).

War as an instrument in the destruction of land and forests is a major contributor to climate change. Mining is carried out for minerals to fund wars, and deforestation is caused by felling of trees as well as setting areas on fire in order to destroy forest cover, thus preventing people from hiding. Das and Routray point out that the anxiety and trauma suffered by people exposed to war, not only includes the more visible aspects of human ethnocide, but also the long lasting effects of ecocide. Their paper demonstrates how narratives can metaphorically represent both ecocide and climate change and their revelation can help people to face stress in the physical world.

Tropical Apocalyptic

The two final papers are speculative fiction pieces set within watery realms. One paper is a climate fiction piece that takes us to Enewetak Atoll in the isolated tropical Pacific Ocean and the far future. The other paper, which combines memoir and speculative fiction, begins in the contemporary era – with a projection into a future of forever morphing pandemic and rising seas surrounding Malaysia and the island of Borneo.

Post-Quantal Garden – Enewetak Atoll

Enewetak Atoll comprises forty low-lying islands surrounding a deep central lagoon. During the cold war, along with other atolls in the Marshall Island group of the Pacific,

it was a major site of nuclear testing. In Jake Boswell's, The "Post-Quantal Garden" Annotated (2021, this issue), we enter the realm of climate fiction (cli-fi) set in the future and looking back on a post-apocalyptic planet. Boswell opens his story with these words: "Of the many tragedies that befell the world in the wake of climate change, the loss of the Marshall Islands was a minor but important early augur of the devastations that would mark the latter half of the 21st century." He continues by noting that the small group of coral atolls, which rest only a few metres above sea level: "were among the first places in the world to disappear beneath the rising waters of the diluvial period" (p. 241).

'The Post-Quantal Garden' is a fusion of fact and fiction incorporated into a rumination on nuclear testing, on bio-hacking, and climate crisis. It brings J.G. Ballard's 1964 short story "The Terminal Beach", and that author's fascination with tropicality and the apocalyptic, into relation with the techno-political history of nuclear bomb tests and radiological clean-up – during which the diary of the "Post-Quantal Garden" was (fictionally) discovered. The author provides a detailed map of the atoll and test sites.

The piece also holds hope in the form of the discovery of a new species of giant kelp, *Macrocystis enewetaciae* (named after the atoll), the 'seasteading' movement, and carbon farming and sequestration. Boswell reminds us: "If there is a single point on Earth where the entangled origin of the Chthulucene can be located, it may very well be the sublime blue of Enewetak's submerged lagoon" (p. 241-242).

Rising Waters, Submerging Lives – Malaysia and Borneo

In the last paper in this collection, Christina Yin, in "Goodbye on the Seas: Rising Waters, Submerging Lives" (2021, this issue), makes us reflect on our current years of pandemic and climate crisis, and projects us into the future. Her hybrid memoir-speculative fiction begins and ends with the sea. Starting with real-life story, the author brings us to the Straits of Malacca off the coast of Peninsular Malaysia where her father's ashes are spread into the waters. The second part of the story takes us to 2050. Here we meet the author again, older and worn down by the double crises of pandemic and climate. Here in the future, we find that the pandemic has never ceased as the coronavirus continues to morph, while global warming and the melted polar icesheets have caused the rising seas to engulf cities of her native tropical island of Borneo in Malaysia.

The ending comes in the form of the daughter telling the spirit of her deceased father a fictional story of setting out into the engulfing waters. In the author's final words:

> When the sun has peaked overhead and it is the hottest part of the day, I take off my jeans and t-shirt, stripping to my swimsuit. Then I step into the water. The waves are gentle and the water is warm, just like how I remember. When the water is waist high, I push off with my toes from the sandy sea bed…. With long smooth strokes, I reach out to the horizon where the sea never meets the sky. I am swimming in the South China Sea which is slowly rising in a world that will never be the same. It's not a world I belong in, so I will find my way in the rising seas. (p. 262)

Finalé: Entwined Futures

The double crisis of pandemic and climate also acts to remind us of the threats of emergence diseases as the world warms and the tropical zone expands outwards further into temperate latitudes. This expanding tropics, as a manifestation of climate change, also requires expanding tropical imaginaries. How can we move away from global discourses of Norths and Souths as climate change ruptures – through heat waves and tropical storm bursts – what has always been imagined as the temperately-restrained latitudes?

At the same time we need a Tropical Imaginary to address how climate change is also changing the tropics itself, climatically, culturally, through neo-colonial practices – and how the current crisis rests with the history of mercantile colonialism. Furthermore, we need to think through and with climate, weather systems, archipelagos, animals and plants; and listen to the voices and cosmological worldviews of Indigenous peoples and those descended from slaves and indentured labourers.

We also need philosophic/interdisciplinary imaginaries that can offer relational ways of thinking and being – of bringing different disciplinary ideas together while going beyond the disciplined thinking of academic disciplines. And here we are reminded of the anthropologist Gregory Bateson's *koan*: "What is the pattern that connects the crab to the lobster and the orchid to the primrose, and all four of them to me? And me to you?" (1979, p. 8). In today's climate crisis scenario we could appropriate Bateson's *koan* to ask: What is the pattern that connects carbon dioxide, frequencies and intensities of terrestrial and marine heatwaves, of monsoon deluges and droughts, of wildfires and intense tropical storms, of melting Polar ice sheets and mountain glaciers, of rising seas, river floods, and waves surges, and all of them to me? And me to all of them?

Bateson's relational thinking wove:

> anthropology, early network theory, and images into an interdisciplinary practice that was inspired by his ethnographic fieldwork in Bali which ranged across art, dance, trance, drama and music, and his reading of Alfred Russel Wallace's *The Malay Archipelago* (1890 [1869]) where the co-theorist of evolution observes the interdependence of natural systems. (Lundberg et al. 2019, p. 2).

And we note that the very notion of evolution (and its rupture with divine creation) itself arose out of the tropics; simultaneously from two tropical regions, and two theorists. Thus, while Charles Darwin was in the Galapagos Islands in the Ecuadorial Pacific, Alfred Russel Wallace was on the other side of the Ocean in the Indo-Malay Archipelago. Yet Wallace's work has been taken up in quite a different way to Darwin's. While Darwin's notion of evolution has been incorporated into social Darwinian evolutionary hierarchies (tree images), Wallace has been taken up to demonstrate early ideas of ecology (rhizomatic thought). Bringing into relation nascent ideas of ecology and cybernetics through a deep questioning of patterns of thought, Bateson's 'ecology of mind' project helped inspire the contemporary philosophy of rhizomatics.

Rhizomatics conjures up tropicality. It was introduced by the French philosopher Gilles Deleuze and psychotherapist Félix Guattari (1980/1987) as an image of thought based on the rhizome plant – gingers, galangal, turmeric, lotus root, bamboo, sympodial orchids.

> The root system of rhizomes forms horizontal networks in which nodes of the root may spread out in any direction. In turn, nodes hold the potential to multiply, creating ever growing networks. If cut from its root network and replanted, a node will continue to grow – forming a new root network and sprouting forth a plant. This pattern of growth is emblematic of rhizomatic theory, for there is no origin or hierarchy in the rhizome: every node holds the potential to connect and expand, to start anew (Deleuze & Guattari, 1987; Lundberg, 2013). In Deleuze and Guattari's work, the horizontal and pliable network image of rhizomes is juxtaposed to the rigid hierarchical image of the tree with its deep penetrating roots, upright trunk and radial branches – the arboreal image upon which traditional Western philosophy bases notions of evolution, development, progress, and knowledge; the same ideals that strongly underpinned colonialism. (Lundberg, et al. 2019, p. 2)

This is not to suggest that rhizomatic thought is anti-tree. “The tropical banyan tree, with its spreading branches that drop down tendrils to the ground, which sprout roots to form new trunks that then branch out to create an expansive network of a tree, is an especially poignant rhizomatic image” (Lundberg, 2019 pp.2-3; 2008), as are those interstitial rhizomatic plants of the world’s tropical mangroves. Rhizomatics, in short, is non-linear, it invites us to perceive the intertwinings that are the workings of the world.

Rhizomatics, inspired by mangrove imaginary, was further taken up by Martinican theorist and writer Édouard Glissant as a way of thinking his *Poetics of Relations* (1990/1997). As the book’s translator Betty Wong summarises, “Glissant sees imagination as the force that can change mentalities; relation as the process of this change; and poetics as a transformative mode of history” (Wing in Glissant,1997, p.xii). Interstitial mangroves further inspired Glissant’s archipelago consciousness which explores the interrelations of exchange throughout the Caribbean involving plants, peoples, places, languages, cultures (Jerez Columbie, 2021, this issue, pp. 78-79). Although archipelagos are commonly dominated by a vision of islands, we need an archipelago imaginary which allows us to perceive spaces and relations of elements: oceans and atmospheres, El Niño and La Niña events, and weather – spiralling tropical storms (see Arbino, 2021, this issue), and the debilitating stillness of droughts (see Benitez, 2021, this issue). Furthermore we need a tropical archipelago imaginary to understand how far reaching climatic phenomenon are intricately entwined with local-region manifestations (Lundberg, 2021, p. 93).

The future necessitates imaginaries capable of seeing these complex intertwinings of climate, geography, animals, plants, weather – these more-than-human worlds as they are entwined with our human material worlds with their histories of colonialism, slavery and migrations, plants and animals, plantations and extractivist mining, capitalism and oil-based industries, and neo-colonialism. To humanise climate change is not to remove it from nature systems, but to imaginatively understand how the human is intricately bound with, and intimately implicated in, the climate crisis.

We and the planet, together, are at a crucible. We are under a severe test, we need new ways of thinking, and a rupture with old ways. Indeed, as we near the COP26 UNFCCC Climate Change conference to be held in Scotland in November, there has been a worldwide rise in calls for a radical reduction in greenhouse gases, especially CO_2. The call comes in the form of academic articles, activism, film documentaries and literary writings.

In a special issue of the *Scottish Geographical Journal* the theme “Climate Change, COP26 and the Crucible of Crisis” (Warren & Clayton, 2020) brought together papers

from many countries on science, social science, art, humanities and climate activism, including a statement from Grandparents For Future (a branch of the Fridays For Future school activists located in Sweden) that acknowledges young people's eco-anxieties over climate change and speaks in support of the school students' strike – which, in times of global pandemic, continues through social media (Ardelius, et al., 2021).

In Australia – where recent climate change manifestations have included prolonged drought, extreme wildfires and floods – students have also been striking. The feature documentary *Wild Things: A Year on the Frontline of Environmental Activism* (Ingleton, 2020), maps the protests of this new generation of environmental and climate activists. Inspired by Greta Thunberg's Friday strikes, young eco warriors, armed only with their mobile phones, are protesting to save their futures. They employ the non-violent tactics of the grandparents, sitting high in the canopy of rainforest trees, chaining themselves to coal trains, blocking bulldozers – and sending their messages out to the world through social media. The documentary incorporates video phone footage from protesters, intermixed with footage of earlier campaigns in Australia, showing a legacy of environmental awareness and the offer of hope for today's climate action.

In Bali, this year's theme for the Ubud Writers and Readers Festival (UWRF) is 'Mulat Sarira: Self-reflection'. In Balinese-Hindu philosophy this is a deep spiritual principle of reflecting on one's thoughts, values and actions. This act of introspection necessitates that we slow down, pause. And it thus invites syncope, which is fundamental to the emergence of different ways of being and knowing. Catherine Clément speaks of syncope in her philosophy of lack as the missing beat: "It is essential for the beat to change register, and it is syncope, either visible or hidden, that does the work. From that moment something stops, life perhaps, or habit, the daily routine…." (Clément 1994, quoted in Lundberg, 2001, p.540). And it is this rupture that enables movement. Through this gap "the possibilities for new relations and ways of being may arise" (Lundberg, 2001, p. 542). Here in self-reflection we are invited to lose our sense of self in order to experience the intricate relations with the world around us – from which we are never removed.

As part of the lead up to the event in October, the Ubud Writers and Readers Festival has been sharing writer's self-reflections, including a quote from Amitav Ghosh's book *The Great Derangement: Climate Change and the Unthinkable* (2016). But it is to the writer's latest book that we now turn, a book that he will speak about at the Festival. *The Nutmeg's Curse: Parables for a Planet in Crisis* (2021) maps the origins of the climate crisis in colonialism's exploitation of humans and the environment. Ghosh traces the nutmeg back through the history of mercantile colonialism and the seas of the Spice Islands to the Banda group in Maluku (the Maluccas). Nutmeg is endemic

to this one small cluster of volcanic islands in the far eastern Indonesia archipelago. Through this aromatic spice arises stories of the discovery of the New World, of sea journeys, violent conquests, the exploitation of humans and environments, and a Western imaginary that saw tropical peoples and nature as mere resources – the same imaginary which continues into current practices of neo-colonialism.

Yet, in Ghosh's storying these are not distant or far away events; rather, we are brought close to the nutmeg, to the planet as a vital force, to mythologies and cosmologies. *The Nutmeg's Curse* offers a tropical imaginary as it maps the historical and geopolitical origins of the current climate crisis.

Figure 1. ***Mulat Sarira: Self-reflection***

Artist: Teja Astawa, in Kamasan style, Bali. https://www.ubudwritersfestival.com/

Teja Astawa's artwork evokes his reflection on Mulat Sarira: "I used traditional elements to mirror ourselves" (quoted in UWRF, 2021). Kamasan is a traditional Balinese narrative style of painting. The depictions of various landscapes, characters, animals, plants, and elements, tell stories. The story we read in Teja Astawa's painting is one of seas and island archipelagos, of trees (is that a nutmeg tree?) and birds, of suns and stars, of clouds and winds, of waves and fish, of boats and the movements of peoples across vast seas, and of traditions of storytelling.

References

Arbino, D. (2021). "The Gifts of the Hurricane:" Reimagining Post-María Puerto Rico through Comics. *eTropic: electronic journal of atudies in the Tropics*, *20*(2), 156- 179. https://doi.org/10.25120/etropic.20.2.2021.3815

Ardelius, A., Bylund, S-T, Güettler, K., Hammarbäck, L., Keith-Rosander, Nilsson, E.M., Ramirez de Bylund, A., Sundbaum, B. & Söderbäck Güettler, G. (2020) We, grandparents, object to passing a wrecked climate to coming generations! *The Scottish Geographical Journal,* 136 (1-4), 72-74. https://doi.org/10.1080/14702541.2020.1863606

Bateson, G. (1972). *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology***.** University of Chicago Press.

Bateson, G. (1979). *Mind and Nature: A Necessary Unity. (Advances in Systems Theory, Complexity, and the Human Sciences).* E. P. Dutton.

Benitez, C. J. (2021, this issue). On the Weariness of Time: El Niño in the Philippines. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 209-220. https://doi.org/10.25120/etropic.20.2.2021.3819

Beven, J.L. II, Avila, L.A., Blake, E.S., Brown, D.P., Franklin, J.L., Knabb, R.D., Pasch, R.J., Rhome, J.R., & Stewart, S. R. (2008). *Annual Summary: Atlantic Hurricane Season of 2005*. Monthly Weather Review, *136* (3). 1109-1173. http://www.aoml.noaa.gov/general/lib/lib1/nhclib/mwreviews/2005.pdf.

Boswell, J. (2021, this issue). The "Post-Quantal Garden" Annotated. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 240-250. https://doi.org/10.25120/etropic.20.2.2021.3817

Chakrabarty, D. (2009). The Climate of History: Four Theses. *Critical Inquiry, 35* (2) (Winter), 197-222. https://doi.org/10.1086/596640

Chao, S., & Enari, D. (2021, this issue). Decolonising Climate Change: A Call for Beyond-Human Imaginaries and Knowledge Generation. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 32-54. https://doi.org/10.25120/etropic.20.2.2021.3796

Chen, D., Rojas, M., Samset, B.H., Cobb, K., Diongue, A., Niang, A., Edwards, P., Emori, S., Faria, S.H., Hawkins, E., Hope, P., Huybrechts, P., Meinshausen, M., Mustafa, S.K., Plattner, G. K., Tréguier, A.M. (2021, In Press), Framing, Context, and Methods. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., Zhai, P., Pirani, A., Connors, S.L., Péan, C., Berger, S., Caud, N., Chen, Y., Goldfarb, L., Gomis, M.I.,Huang, M., Leitzell, K., Lonnoy, E., Matthews, J.B.R., Maycock, T.K., Waterfield, T., Yelekçi, O., Yu, R., & Zhou, B. (eds.)]. https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Chapter_01.pdf

Clayton, D. (2021). Tropicality and the Choc en Retour of Covid-19 and Climate Change. *eTropic: electronic journal of studies in the Tropics*, *20*(1), 54–93. https://doi.org/10.25120/etropic.20.1.2021.3787

Das, S. (2020). Climate Change, Storytelling and Sustainability: Reading *Green Grass, Running Water* (1993) and *Son of the Thundercloud* (2016). In S. Das (Ed.). *Environment and Culture in the Anthropocene* (pp.70-77). Authorspress.

Das, S., & Routray, D. (2021, this issue). Climate Change and Ecocide in Sierra Leone: Representations in Aminatta Forna's Ancestor Stones and The Memory of Love. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 221-239. https://doi.org/10.25120/etropic.20.2.2021.3812

Deleuze, G. & Guattari, F. (1980/1987). *A Thousand Plateaus*. (Vol. 2 of Capitalism and Schizophrenia) (B. Massumi, Trans.). University of Minnesota Press.

D'Sousa, L. (2021). *Goa: A Time That Was. An exhibition of photography*. (Photographers, I. Maitra, W. X. Waswo & V. P. Kandolkar; Curated by L. D'Sousa). Sunaparanta Goa Centre for the Arts. 8 September – 20 November.

Ghosh, A. (2016). *The Great Derangement: Climate Change and the Unthinkable*. University of Chicago Press. https://doi.org/10.7208/chicago/9780226323176.001.0001

Ghosh, A. (2021). *The Nutmeg's Curse: Parables for a Planet in Crisis*. The University of Chicago Press.

Haraway, D. (2015). Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin. *Environmental Humanities* 6, 159-165. https://doi.org/10.1215/22011919-3615934

Hartnett, R. (2021, this issue). Climate Imperialism: Ecocriticism, Postcolonialism, and Global Climate Change. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 138-155. https://doi.org/10.25120/etropic.20.2.2021.3809

Ingleton, S. (Director) (2020). Wild Things: A Year on the Frontline of Environmental Activism. [Documentary]. 360 Degree Films.https://www.wildthingsdocumentary.com/

IPCC (2021, In Press). Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press.

Jerez Columbié, Y. (2021, this issue). People of the Mangrove: A Lens into Socioecological Interactions in the Ecuadorian Black Pacific. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 74-94. https://doi.org/10.25120/etropic.20.2.2021.3808

Joshi, H. (2016). *Rage of the River: The Untold Story of the Kedarnath Disaster*. Penguin Books.

Kandolkar, V. P. (2021, this issue). Rain in the Basilica: Protecting Goa's Bom Jesus from the Ravages of Climate Change. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 95-113. https://doi.org/10.25120/etropic.20.2.2021.3814

Kandolkar, V. P. (2021) Personal Communication, September, 6.

Kimberlain, T. B., Blake, E.S., & Cangialosi, J.P. (2015). Hurricane Patricia. *National Hurricane Center Tropical Cyclone.* Rep. EP202015. www.nhc.noaa.gov/data/tcr/EP202015_Patricia.pdf.

Lacuna, I. (2014, this issue). Atmosfera Rizaliana: Metonymic Journeys of Storm Tropes in José Rizal's Writing on the Philippines. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 180-208. https://doi.org/10.25120/etropic.20.2.2021.3806

Legendre, M., Lartigue, A., Bertaux, L., Jeudy, S., Bartoli, J., Lescot, M., Alempic, J-M., Ramus, C., Bruley, C., Labadie, K., Shmakova, L., Rivkina, E., Couté, Y., Abergel, C., & Claverie, J-M. (2015). In-depth study of *Mollivirus sibericum* giant virus. *Proceedings of the National Academy of Sciences, 112* (38), E5327-E5335. https://doi.org/10.1073/pnas.1510795112

Lundberg, A. (2001). Being Lost at Sea: Ontology, Epistemology and a Whale Hunt. *Ethnography*, *2*(4), 533-556. https://doi.org/10.1177/14661380122231028

Lundberg, A. (2008). Lundberg, A. (2008). Material poetics of a Malay house. *The Australian Journal of Anthropology*, *19*(1), 1-16. https://doi.org/10.1111/j.1835-9310.2008.tb00102.x

Lundberg, A. (2021). Balinese Dancer wearing a Gas Mask: Climate Change and the Tropical Imaginary. [In Warren, C. & Clayton, D. (Eds). Special Issue: Climate Change, COP26 and the Crucible of Crisis]. *Scottish Geographical Journal RSGJ*. *136* (1-4), 91-100. https://doi.org/10.1080/14702541.2020.1858589

Lundberg, A., Osborne, R., Ancuta, K., & Stasiewicz-Bieńkowska, A. (2019). Tropical Gothic: Literary and Creative Works. *eTropic: electronic journal of studies in the Tropics*, *18*(2), 1-15. https://doi.org/10.25120/etropic.18.2.2019.3701

Marzin, C., Rahmat, R., Bernie, D., Bricheno, L., Buonomo, E., Calvert, D., Cannaby, H., Chan, S., Chattopadhyay, M., Cheong, W-K., Hassim, M.E., Gohar, L., Golding, N., Gordon, C., Gregory, J., Hein, D., Hines, A., Howard, T., Janes, T., …Zhang, S. (2015). *Singapore's Second National Climate Change Study – Phase 1*. Published by Met Office, Exeter, UK; Centre for Climate Research Singapore, Singapore; National Oceanography Centre, Liverpool, UK; CSIRO, Australia; Newcastle University, UK http://ccrs.weather.gov.sg/publications-second-National-Climate-Change-Study-Science-Reports

Meillassoux, Q. (2008). *After Finitude: An Essay on the Necessity of Contingency*. Bloomsbury Academic. https://doi.org/10.5040/9781350252059

Nakai, S. (2021, this issue). Vernacular Knowledge, Natural Disasters, and Climate Change in Monsoon Asia. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 114-137. https://doi.org/10.25120/etropic.20.2.2021.3810

Nayar, P. K. (2017). *Bhopal's Ecological Gothic: Disaster, Precarity, and the Biopolitical Uncanny.* Lexington Books.

Nystrom, R.G., & Zhang, F. (2019). Practical Uncertainties in the Limited Predictability of the Record-Breaking Intensification of Hurricane Patricia (2015). *Monthly Weather Review, 147* (10), 3535-3556. https://doi.org/10.1175/MWR-D-18-0450.1

Oeven, D., & Cabral, M. (2000). *Entrevista com o Morcego* [Animated Short Film]. Etnia Produções e Cinematografia.

Pezza, A.B., & Simmonds, I. (2005). The First South Atlântic Hurricane: Unprecedented Blocking, Low Shear and Climate Change. *Geophysical Research Letters, 32*, (L15712), 1-5. https://doi.org/10.1029/2005GL023390

Phillipis, K. (2018, October 10) People are freaking out over this 'creepy skull' spotted in Hurricane Michael's satellite imagery. *The Washington Post*. https://www.washingtonpost.com/weather/2018/10/10/people-are-freaking-out-over-this-creepy-skull-spotted-hurricane-michaels-satellite-imagery/

Priest, S.(2016) *Communicating Climate Change: The Path Forward*. Palgrave Macmillan. https://doi.org/10.1057/978-1-137-58579-0

Revich, B. A., & Podolnaya, M. A. (2011). Thawing of permafrost may disturb historic cattle burial grounds in East Siberia. *Global health action*, *4*. https://doi.org/10.3402/gha.v4i0.8482

Rogers, R.F., Aberson, S., Bell, M.M., Cecil, D.J., Doyle, J.D., Kimberlain, T.B., Morgerman, J., Shay, L.K., & Velden, C. (2017). Rewriting the Tropical Record Books: The Extraordinary Intensification of Hurricane Patricia (2015). *Bulletin of the American Meteorological Society, 98*, (10), 2091-2112. https://doi.org/10.1175/BAMS-D-16-0039.1

Roos, B. & Hunt, A. (Eds.) (2010). *Postcolonial Green: Environmental Politics and World Narratives.* University of Virginia Press.

Said, E. (1978). *Orientalism*. Random House.

Savage, V.R. (2004), Tropicality Imagined and Experienced. *Singapore Journal of Tropical Geography, 25*, 26-31. https://doi.org/10.1111/j.0129-7619.2004.00170.x

Sekhsaria, P. (2017). *Islands in Flux: The Andaman and Nicobar Story.* Harper Litmus.

Sekhsaria, P. (2014). *The Last Wave: An Island Novel*. Harper Collins.

Shiva, V. (1988). *Staying Alive: Women, Ecology and Survival in India.* Kali for Women.

Sidaway, J.D., Woon, C.Y. & Jacobs, J.M. (*2014). Planetary postcolonialism. Singapore Journal of Tropical Geography, 35*, 4-21. https://doi.org/10.1111/sjtg.12049

Silva Dias, P. L., Silva Dias, M.A.F., Seluchi, M., & Diniz, F.A. (2004). O Ciclone Catarina: Análise Preliminar da Estrutura, Dinâmica e Previsibilidade (in Portuguese). Paper Presented at *XIII Brazilian Meteorological Conference, Braz. Meteorol. Soc.*, Fortaleza, Brazil (29 Aug. to 3 Sept.).

Simon, Z. B. (2021). A Transformação do Tempo Histórico: Temporalidades Processual e Evental. *Revista de Teoria da História, 24* (1), 139-155. https://doi.org/10.5216/rth.v24i1.69676

Slovic, S. (2005). The Story of Climate Change: Science, Narrative and social Action. *The Okinawan Journal of American Studies, 2*, 38-42. http://ir.lib.u-ryukyu.ac.jp/bitstream/20.500.12000/6782/1/KJ00004187949.pdf

Slovic, S., Rangarajan, S. & Sarveswaran, V. (Eds.) (2015). *Ecocriticism of the Global South*. Lexington Books.

Sodikoff, G.M. (2021, this issue). Shrunken Life: Discourses of the Cryptic and the Miniature in Madagascar. *eTropic: electronic journal of studies in the Tropics, 20*(2), 55-73 https://doi.org/10.25120/etropic.20.2.2021.3820

Starosielski, N. (2011). Movements that are Drawn: A History of Environmental Animation from The Lorax to FernGully to Avatar. *The International Communication Gazette,* 73 (1-2), 145-163. https://doi.org/10.1177/1748048510386746

Stewart, S. (1993). *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection.* Duke University Press. https://doi.org/10.1215/9780822378563

Thacker, E. (2011) *In The Dust of This Planet: Horror of Philosophy, Vol. 1*. Zero Books.

Tidman, R., Abela-Ridder, B., & Castañeda, R.R. de. (2021). The Impact of Climate Change on Neglected Tropical Diseases: A Systematic Review. *Transactions of The Royal Society of Tropical Medicine and Hygiene, 115* (2), 147–168. https://doi.org/10.1093/trstmh/traa192

Tsing, A., Deger, J., Saxena, A.K. & Zhou, F. (2021). *Feral Atlas: The More-Than-Human Anthropocene*. Stanford University Press. http://doi.org/10.21627/2020fa

UWRF. (2021). 'Mulat Sarira: Self-reflection', Ubud Writers & Readers Festival, 8 Oct-17 Oct. https://www.ubudwritersfestival.com/

Viegas, D. (Director) (2011). *O Diário da Terra* | *Earth's Diary* [Animated Short Film]. Viegas Estúdio. https://www.youtube.com/watch?v=-YfxYT7Azg0

Vital, A.V. (2018). Lapis Lazuli. Politics and Aqueous Contingency in the Animation Steven Universe. *Series – International Journal of TV Serial Narratives, 4* (1), 51–62. https://doi.org/10.6092/issn.2421-454X/8401

Vital, A.V. (2020). Water, Gender, and Modern Science in the Steven Universe Animation. *Feminist Media Studies, 20* (8), 1144-1158. https://doi.org/10.1080/14680777.2019.1662466

Wallace, A.R. (1869/1890). *The Malay Archipelago: The land of the orang-utan, and the bird of paradise. A narrative of travel, with studies of man and nature.* (Volumes I & II). Macmillan and Co.

Warren, C. & Clayton, D. (2020) Climate change, COP26 and the crucible of crisis: editorial introduction to the special issue, Scottish Geographical Journal, *136* (1-4),1-4, https://doi.org/10.1080/14702541.2020.1874645

Weisman, A. (2007). *The World Without Us.* Picador USA.

Wells, P. (1998). *Understanding Animation.* Routledge.

Yin, C. (2021, this issue). Goodbye on the Seas: Rising Waters, Submerging Lives. *eTropic: electronic journal of studies in the Tropics*, *20*(2), 251-263. https://doi.org/10.25120/etropic.20.2.2021.3818

Zenteno, R. (2016, October 5). Skull image of Hurricane Matthew spooks the Internet. *CNN*. http://edition.cnn.com/2016/10/05/health/hurricane-matthew-skull-trnd/

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Decolonising Climate Change: A Call for Beyond-Human Imaginaries and Knowledge Generation

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Abstract

This article calls for transdisciplinary, experimental, and decolonial imaginations of climate change and Pacific futures in an age of great planetary undoing. Drawing from our personal and academic knowledge of the Pacific from West Papua to Samoa, we highlight the need for radical forms of imagination that are grounded in an ethos of inclusivity, participation, and humility. Such imaginations must account for the perspectives, interests, and storied existences of both human and beyond-human communities of life across their multiple and situated contexts, along with their co-constitutive relations. We invite respectful cross-pollination across Indigenous epistemologies, secular scientific paradigms, and transdisciplinary methodologies in putting such an imagination into practice. In doing so, we seek to destabilise the prevailing hegemony of secular science over other ways of knowing and being in the world. We draw attention to the consequential agency of beyond-human lifeforms in shaping local and global worlds and to the power of experimental, emplaced storytelling in conveying the lively and lethal becoming-withs that animate an unevenly shared and increasingly vulnerable planet. The wisdom of our kindred plants, animals, elements, mountains, forests, oceans, rivers, skies, and ancestors are part of this story. Finally, we reflect on the structural challenges in decolonising climate change and associated forms of knowledge production in light of past and ongoing thefts of sovereignty over lands, bodies, and ecosystems across the tropics.

Keywords: Pacific, Samoa, Papua, Indigeneity, climate change, more-than-human, imagination, storytelling, transdisciplinarity, decolonisation

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The tropics are home to more than two thirds of the world's biodiversity. They house some 78 percent of all plant and animal species, 91 percent of all terrestrial birds, almost all known shallow-water corals, and an estimated 150,000 species yet to be officially documented (Barlow et al., 2018). These figures are all the more astounding given that the tropics cover only approximately 40 percent of the Earth's surface. Within this broad and diverse stretch, some tiny patches of forest have been found to host more plant and tree species than entire continents, providing crucial ecosystem services at global, regional, and local levels (Popkin, 2017).

But the tropics are in grave trouble. Fossil fuel extraction and exploitation, compounded with large-scale agriculture, mass industrial livestock production, and rampant deforestation, have rendered the region particularly vulnerable to global warming and its deleterious socio-environmental effects. Of the 32 countries at "extreme risk" from climate change, the top 10 are all located in the tropics (Law, 2019; Nugent, 2019). Myriad endemic species classified as critically endangered, threatened, or vulnerable by the International Union for the Conservation of Nature have been driven to the brink of extinction.[1] The Golden Lion Tamarin Monkey. The Sumatran Orangutan. The Poison Dart Frog. The Bengal Tiger. The Leatherback Sea Turtle. The Javan Rhinoceros. The list goes on.

As co-authors of this paper, our engagements with climate change in the tropics have followed distinct yet intersecting personal and intellectual trajectories. For one author – Sophie Chao, a female scholar of Chinese and French descent – the visceral violence of climate change surfaced through long-term fieldwork in rural West Papua, where deforestation and monocrop oil palm developments are rupturing the intimate and ancestral kinships of Indigenous communities to their other-than-human kin: plants, animals, soils, water, ecosystems, and more (Chao, 2018a; 2019a; 2020; 2022 forthcoming).[2] For the other author – Dion Enari, a Samoan male scholar – the effects of climate change represent an existential threat (K. M. Teaiwa, 2019). Samoa is disproportionately vulnerable to climate change (Fakhruddin et al., 2015). Enari's (Mother)land is not merely a commodity which his people live and depend upon. Instead, his (Mother)land is the source of his holistic being, strength, and guidance (Enari, cited in Chao, 2021a; Enari, 2021; Fa'aea & Enari, 2021; Enari & Faleolo, 2020). As her offspring, Enari and his people see it as their duty to protect and defend her.

[1] See https://www.iucnredlist.org/.

[2] In including the Indonesian-controlled region of West Papua within "the Pacific", we push against the disciplinary and political framing of West Papua as "South East Asia" or "Indonesia," which itself constitutes an artefact of settler-colonialism. Instead, we approach West Papua first and foremost as an Indigenous, Melanesian, and Pacific place – one that endures despite the dispossessory and discriminatory violence of settler-colonial rule.

It was the coronavirus crisis – itself in many ways a symptom of humans' dysfunctional relationship to wildlife (Quinney, 2020) – that first brought us to think together respectively as curator and contributor of a special issue on COVID-19 in Oceania.[3] In this, our second collaborative work, we draw from our insights and positionalities as Pacific scholars and climate dwellers to call for transdisciplinary, experimental, and decolonial imaginations of environmental crises and tropical futures in an age of great planetary undoing. Weaving together our personal and academic knowledge of the Pacific from West Papua to Samoa, we highlight the need for radical forms of imagination that are grounded in an ethos of inclusivity, participation, and humility. Such imaginations must account for the perspectives, interests, and storied existences of both human and beyond-human communities of life across their multiple and situated contexts, along with their co-constitutive relations.

We invite respectful cross-pollination across Indigenous epistemologies, secular scientific paradigms, and transdisciplinary methodologies in putting such an imagination into practice. In doing so, we seek to destabilise the prevailing hegemony of dominant scientific regimes over other ways of knowing and being in the world. We further draw attention to the consequential agency of beyond-human lifeforms in shaping local and global worlds, and to the power of emplaced storytelling in conveying the lively and lethal becoming-withs that animate an unevenly shared and increasingly vulnerable planet. The wisdom of our kindred plants, animals, elements, mountains, forests, oceans, rivers, skies, and ancestors are part of this story. Finally, we reflect on the structural challenges in decolonising climate change and associated forms of knowledge production in light of past and ongoing thefts of sovereignty over lands, bodies, and ecosystems across the tropics (Lemusuifeauaali'i & Enari, 2021; Matapo & Enari, 2021; Enari & Rangiwai, 2021).

What we offer in this paper is an exploration of, or prolegomenon to, the kinds of collaborative, transdisciplinary, and situated thinking that we believe the planet and climate demand. The principles and questions we articulate are neither prescriptive nor exhaustive. Rather, we intend for them to be taken as spaces of possibility – as ontological, epistemological and methodological openings for (re)imagining and (re)connecting with increasingly vulnerable places, species, and relations (see de la Cadena, 2017; Escobar, 2019; Stengers, 2005). While much of what we offer is directly steeped in Indigenous philosophies, protocols, and practices, we acknowledge the inherent heterogeneity of Indigenous ways of being and thinking, as well as the creativity, resilience, and innovation that lie at the heart of Indigenous survivance and continuance (see Stewart-Harawira, 2018; Tuck, 2009; Vizenor, 1999). In the image

[3]The special issue sought to foreground the largely under-represented knowledges, experiences, and representational modes of Pasifika scholars, students, and communities about and amidst pandemic times (Eickelkamp & Chao, 2020, Enari & Fa'aea, 2020).

of planetary biodiversity, we thus approach multiplicity and difference not as obstacles to collective thought and action, but rather as richly fertile grounds for unearthing multispecies futures at once less violent and more just.

Imagination and Crisis

The imagination and the climate crisis are profoundly entangled. Climate change, according to Indian novelist Amitav Ghosh (2016), is nothing less than "a crisis of culture, and thus of imagination." In a similar vein, American journalist David Wallace-Wells (2019) describes climate change as the tragic result of an "incredible failure of imagination." In taking the imagination as our central object of inquiry, we aim to push against the paralysing politics of despair that can so easily arise in the face of the climate crisis as an omnipresent and seemingly insurmountable "hyper-object" (Morton, 2013). In our view, it is not the failure of imagination itself that is the issue. Rather, the problem lies in the exclusionary scope of voices and beings heeded and represented by current dominant climate imaginaries – imaginaries that remain firmly anchored in, and perpetuate, the logic of human mastery over a "nature" recast as a passive, material substrate, meaningful only to the extent that it is useful to (certain) humans (Plumwood, 1993; Singh, 2018).

The voices obscured by dominant imaginaries include those of non-Western and Indigenous peoples of the tropics and elsewhere, who have always recognised the interdependencies of human and other-than-human beings, yet who bear the brunt of environmental crises in their everyday lives. They also include marginalised voices within marginalised communities – the women, the children, the non-human, and the elemental, present, past, and yet unborn (Chao, 2021b). These violent exclusions call for more capacious imaginaries that are accountable to the situated and connected worlds we inherit and transmit across time, generation, and species (Winter, cited in Chao, 2019b). They demand that we cease failing those whose imaginations are occluded from epistemic and moral purview. They prompt us to consider what ancestors we will become – and how we will be remembered – by imagined communities of life to come.

Following Amira Mittermaier, we deploy the term 'imagination' to refer to the varied and complex ways in which realities are conceptualised, fashioned, and contested (2011, p. 3). Imaginations are shaped by divergent socio-cultural contexts, material-ecological terrains, and ideological and physical infrastructures that link the local to the global through partial and uneven connections. As a battlefield, the imagination expands possibilities of life within existing power dynamics, while challenging the hegemony of entrenched power asymmetries and their constitutive actors and institutions (Benjamin & Glaude, 2018). Imagination entails experimenting with

uncertainty, risk, and ambiguity, that together inflect the form and meaning of life and death amidst the climate crisis.

Imagination can birth unexpected and powerful modes of hope and resistance, that counter prevailing representations of tropical decline and disappearance. Take, for instance, the striking demonstrations of the 350-strong Fiji Team and fifteen other Pacific Island nations on the Pacific-wide Warrior Day of Action. In a powerful synergy of song, dance, and warrior energy, enacted at the heart of the West in Washington DC, the demonstrators marched the streets, chanting their rallying call in unison: "We are not drowning. We are fighting."[4] The imagination, then, is a call to collective action driven by ethical, material, and political prerogatives. It is a perspective on the world *and* the grounds for inhabiting the world otherwise. Recast as such, the imagination becomes a praxis of sovereignty and self-determination – one that calls for imaginative solidarity across place, time, and beings. In the remainder of this article we outline a set of principles towards achieving more capacious, inclusive, and relational ways of imagining climate and climate crisis. Each of these principles speaks to a particular facet of the natural world under threat. Each offers a tentative path for worlding worlds more critically, creatively, and capaciously.

Relational Imagination

Pacific Island ways of being are premised upon an holistic and relational harmony between humans, the environment, and the afterlife (Enari & Matapo, 2020; 2021). The environment itself is composed of diverse inter-species and inter-elemental relations. Each actant within it plays a consequential role in shaping the worlds of others – from subterranean microbes and fungi, to oxygen-producing trees, ground-churning mammalian bioturbators, and pollinating birds and insects. There are no individual or autonomous actors within this world; rather, there are multiple, intra-active companionships bound in a relational ethic of kinship and care (see Arabena, 2010; Hau'ofa, 2008). As Māori scholar Makere Stewart-Harawira (2012) argues, nature's relational ontology produces its sacrality – a sacrality to which we owe respect, reverence, responsibility, and our very selves. This relationality speaks to the vital importance of reciprocity in sustaining more-than-human conditions of liveability. It also invites us to rethink the imagination itself *as* a relation that draws on, yet transcends, individual(istic) priorities, perceptions, and possibilities.

Imagining the climate (crisis) relationally entails considering the human and environmental relations that matter to our existence and to those of others both distant and proximate, alien and familiar. It draws into our conscience and consciousness the

[4] See https://350.org/350-pacific-we-are-not-drowning-we-are-fighting/.

multiplicity of lives that must be sustained in order for our own to be rendered liveable. It calls for us to reflect seriously upon how and whether our existence as human individuals and collectives offers nourishment to non-human beings as companion species and significant others (Chao, 2021c; Haraway, 2008). In tracing the ecologies of matter and meaning that give flesh to human and beyond-human being, we take seriously the question of what makes a life worth living. In doing so, we hone a sense of curiosity for lives lived otherwise and elsewhere. Curiosity in turn paves the way for care – a recognition that care for the other is always also care for the self (see Chao, 2021d; Puig de la Bellacasa, 2017).

Imagining the climate crisis relationally reframes individual, everyday acts through their spatio-temporally distributed impacts upon other planetary dwellers – from what we eat and drink, to what we think is worth doing and knowing. We become aware of the multiple imaginaries, actors, and forces shaping the climate crisis – communities, states, corporations, researchers, activists, markets, technologies, ideologies, and more. At some junctures, situated imaginaries fall into alignment, offering avenues for imaginative alliance and cosmopolitical action (see Stengers, 2005). At others, imaginaries come into friction, highlighting incommensurabilities and incompatibilities across different interests, values, and norms (see Tsing, 2005). In each instance, we may ask: which lives and ecologies are at stake, sacrificed, or prioritised by our imaginations? What do these imaginations do in and for the world? What place is there for my imagination in yours, and yours in mine? In this unevenly connected and ongoingly threatened world, what constitutes our common ground?

Beyond-Human Imagination

Reframing the imagination as relational in turn invites an imagination beyond the human. By this we mean an imagination that takes seriously the possibility of other-than-human entities as both objects of harm and subjects of justice. Indeed, the ravaging effects of climate change on planetary ecosystems makes it clear that it is not only humans who can suffer violence and injustice (Winter & Troy, 2020). The scale of devastation to forests, animals, and water systems prompted by climate change foregrounds the need for conceptions of wellbeing, care, and dignity that consider the interests of all earth beings – not as autonomous, individuated wholes; but rather, as parts and partners in processual, more-than-human becomings (see Celermajer et al., 2020; Chao, 2021f; Haraway, 2016; Moore, 2020).

At the same time, a beyond-human imagination raises thorny questions about the possibility of apprehending or entering the perceptual lifeworld of non-human beings with whom we share the planet. It brings us to consider the potential and limitations of anthropomorphic projection in understanding and representing non-human existence.

It also challenges us to expand what we mean by "beyond human" to include not just other "life" forms, or *bios,* but also elemental bodies such as oceans, rivers, mountains, and soils, that many Indigenous peoples consider to be equally animate and sentient (Argyrou & Hummels, 2019; Bawaka Country et al., 2015; Martuwarra RiverofLife et al., 2020). And it invites us to ask: how do we learn to listen to the beyond-human world? Who can speak with and for the beyond-human world? And what should we do with the stories entrusted to us by the beyond-human world?

Taking these questions seriously is critical in eschewing human exceptionalism and its devastating impacts on the natural world. It demands the cultivation of an intellectual and ethical openness to the possibility of other-than-human sentience, will, and desire, and a repositioning of the "human" as one within a broad spectrum of matter and life in both deep and present time. Beyond-human imagination is therefore also a practice of humility – a recognition that other beings, too, have rich and meaningful lifeworlds, even if we can never fully access or understand them. This is not a humility that belittles the human, nor is it one that excludes the human from the natural world. Rather, it is an inclusive mode of humility that enlarges our conceptual and imaginative worlds by accommodating other Others in their myriad animal, vegetal, and elemental manifestations.

A beyond-human imagination is in turn an invitation to rethink the way we write and represent the natural world (Chao, 2018b). How, for instance, do we communicate the fleshly liveliness of plant and animal beings? How do we write nature in the active voice (Plumwood, 2009) without letting the script over-write/ride the alterity of other-than-human life (see also Perez, 2020)? How do we come to understand beyond-human lives inscribed upon rock, water, feather and bark? In these beyond-human decipherings, how do we weave description with de-cryption? When it comes to storying multispecies worlds, should we describe, or de-scribe?

Storied Imagination

Stories offer a potent medium for (re)imagining the climate relationally and beyond the human. In West Papua, where Chao has been conducting research among Indigenous Marind people, species do not exist as categories but rather as stories. Their lifeways are irreducible to fixed or bounded taxonomies. Rather, species come into being through richly complex and orally transmitted narratives that flesh out their origins, movements, subsistence, and social and emotive lives. Individual plants and animals have stories, as do plant and animal collectives, ecosystems, and even entire territories. Stories multiply as one travels the living landscape, intersecting with one another in a dense meshwork of intertwined experiences, events, and memories. The cassowary's story becomes the river that becomes the canopy that becomes the tree-

kangaroo that becomes the child that becomes the sago palm that becomes the storyteller. Together, humans and other-than-humans partake in one ongoing and constantly transforming multispecies story.

Stories matter in (re)imagining climate because they participate in the worlds that they describe. As multispecies ethnographer Thom van Dooren notes, "fleshier, livelier stories make us care more" (2014, p. 10; see also van Dooren & Rose, 2016). Stories are not just cultural artefacts – they are also political tools that can compel readers and auditors to situate the world, and themselves within it, otherwise. Stories can move, inspire, sadden, shock, or enlighten us. Stories are collectively produced and passed on across generations as intangible heritage about lively tangible worlds. In the words of Solomon Islander and political theorist Tarcisius Kabutaulaka, "stories frame our beliefs, understandings, and relationships with each other and the world around us…our lives are interwoven stories…we live in an ocean of stories" (2020, p. 47). Stories, then, are not "make-believe" in the sense of fictional fantasies disconnected from the worlds they describe. But stories *can* make us believe in, and achieve, better shared worlds. As such, stories constitute powerful instruments for collective action amidst rampant environmental destruction and its rippling effects across species lines.

Storying extinction, loss, and crisis reminds us of our responsibilities towards the more-than-human world – even as words may fail us in describing their force and scale (see Chao, 2021f). Stories, when repeated and passed on, invite us to commemorate the beings whom we bring forth in our utterances, and who are critically vulnerable to planetary unravellings. In repeating the names and stories of organisms pushed to the edge of extinction, we refuse to forget their liveliness, symbiotic existence, and consequential presence. In telling stories with others – our friends, family, readers, and audiences – we also refuse to singularise narratives. Instead, we invite the participation of all who are in one way or another invested in the climate crisis and its more-than-human chains of living and dying. Drawing into stories our peoples, oceans, forests, mountains, animals, and ancestors, we *fa'aola* (bring to life) the urgency of the climate crisis and the responses it demands of us.

Multi-Sensory Imagination

Storying beyond-human worlds involves engaging sensorially with the environment in crisis. Rather than adopting a distanced, disembodied, and putatively omniscient perspective *on* the world, multi-sensory imagination takes as its starting point the literal grounds *in* and *upon* which planetary life arises, transforms, senses, and senesces. It also moves away from framing the imagination as a purely conceptual or ideological praxis, conjured by our (human) minds and detached from our (more-than-human)

surroundings. Instead, a multi-sensory imagination calls for a phenomenological immersion in the material worlds that we are part of – its textures, smells, sounds, sights, and movements (Chao, 2017). It marks a shift away from the abstract and deep into the wet, sticky, and messy textures of multispecies lifeworlds – one that demands, in anthropologist Anna Tsing's (2014) terms, that we learn to "look around" and not just "look ahead."

This art of sensory attunement involves a certain slowing down of thought and movement. As the famous Marind proverb goes, "Stop talking, start listening. Stop thinking, start walking." What Marind are calling for here is a silencing of the self that makes space for the voices of others – the ripple of a river, the shy whistle of a bird, or the gentle sway of a palm frond. This multispecies sensorium is powerfully captured also in the words of Kabi, an Indigenous Gimi man living just across the border from Marind in Papua New Guinea. When asked by environmental anthropologist Paige West how he knows the forest, Kabi responds: "My eyes, my ears, my nose, my mouth, my teeth, my skin, my father, my bones" (West, 2006, p. 237). Like Kabi, we might learn to know and imagine the climate through our bodily flesh and fluids – the air that we breathe, the waters that nourish us, and the soils that hold us.

To imagine the climate sensorially eschews the ocularcentrism so central to Western ways of knowing and representing the world (Howes, 2003; Pandya, 1990). Visual observation matters – but there are other ways of engaging with the environment. Writing of her native Hawaiian epistemologies, for instance, Elder, scholar, and activist Manulani Aluli-Meyer (2001) describes listening as central to paying attention to the rhythms and patterns of the more-than-human world and to becoming actively aware and respectful of its spiritual force and presence. Through sound and other sensory modes, we discover the vulnerability of our own flesh and form, and of the more-than-human beings whom we behold, hear, touch, smell, and taste. We also learn something new and different in the process.

Every sensory receptor matters to every form of matter because it allows us to gain a better understanding of each other. For this reason, a Samoan Chief pondering an important decision will swim in the water and cast his concerns to the ocean. The Chief engages their body and spirit in the ocean, such that the ocean is able to understand their concerns and provide its answer through the sounds it makes and the way it moves. In touch particularly, we learn something central to more-than-human existence – that one cannot touch without being touched (Puig de la Bellacasa, 2009). Touch, like species and climates, is inherently relational and interagentive. It changes the toucher and touched in equal, if different, measure. It is an invitation to let ourselves be touched by crisis and loss in order to fashion more gentle ways of touching each other in multispecies sensoriums to come.

Emplaced Imagination

To imagine is to expand worldly possibilities – to practice a form of speculative nomadism through which new and different futures can be envisioned and enacted. But imaginations are also rooted in landscapes and places that, as Pacific cosmologies teach us, are always at once physical, ecological, historical, cultural, and spiritual (Banivanua Mar, 2012; Chao, 2019c; Leach, 2003). An emplaced imagination recognises the dialogical relationship between global and local realities. It attends to the embeddedness of time, history, and pasts within the semiotic materiality of local landscapes. To practice an emplaced imagination is therefore to situate the climate crisis within spatio-temporal framings that are not universal or linear, but rather culturally shaped and therefore plural and overlapping (Anderson et al., 2018). In doing so, we recognise the embeddedness of time itself within place and its historical transformations. Looking forward into tropical futures becomes a looking back through the very materiality of the changing world. In the words of Tongan and Fijian writer and anthropologist Epeli Hau'ofa, "We cannot read our histories without knowing how to read our landscapes (and seascapes)" (2008, p. 73; see also Winter, 2019).

Emplacing the imagination draws our attention to the relationship between place, belonging, and identity, and how this relationship is forged through the place-making practices of both human and beyond-human dwellers. It literally grounds the imagination in the soils and waters from which more-than-human life is borne, inviting us to think with ecological formations that transcend species-specific analyses. Internalising Hau'ofa's words, we may imagine climate futures through forests, or oceans, or rivers. We may trace through these beyond-human bodies our worldly connections to distant places and peoples. In navigating these landscapes, we learn to imagine not just with our minds and thoughts, but also with our feet, hands, sweat, and breath. We take stock of the places that matter to our sense of self and dignity – collective and individual – and what is at stake in their destruction.

Violent histories of settler-colonial capitalism are inscribed upon tropical landscapes – their nomenclatures, infrastructures, and ecosystems (Banivanua Mar, 2012; McKittrick & Woods, 2007). These toponymic signatures communicate hegemonic imaginaries of extraction, extinction, simplification, homogenisation, and domination over people, species, and place. An emplaced imagination reveals the conjoined logic of racialisation and exploitation that continues to shape lives, deaths, and afterlives across the tropics. It foregrounds the slow, spectacular, and regimented violence wrought by anthropogenic transformations in the shadow places of industrial capitalism (Plumwood, 2008) – the monocrop oil palm plantations, abyssal gold and copper mines, acidified oceans, depleted forests, and eroded soils. In these places, the obliteration of some species accompanies the exploitation of others, who find

themselves reduced from lively historical actors to deadened and deadly unpaid labour, or "Cheap Natures" (Moore, 2015). Erasures and absences matter to an emplaced imagination. They make us ask: who has been uprooted and transplanted to make today's places possible? What are the centres and peripheries of today's landscapes, and to whom are they (in)hospitable? How do these places nourish us, and how do we in turn nourish them?

Reflexive Imagination

Imagining the climate with others, and otherwise, demands that we reflect seriously on our own positionality as scholars, practitioners, and planetary dwellers. In particular, it draws attention to the multiple power fields within which research takes place. These include the power dynamics at play within the heterogeneous communities we learn from, between researchers and their interlocutors and the institutions, values, and status they represent, and also between knowledge systems across different local, disciplinary, and institutional settings. Each of these facets shapes the way in which knowledge is produced, shared, received, and acted upon. Reflexivity is thus at once a political, ethical, and methodological practice. It demands that we continually and critically reflect not just on the questions we ask about climate change, but also *how and with whom* we formulate and answer these questions (Archibald et al., 2019; Coburn et al., 2013; Nabobo-Baba, 2008; Tuhiwai Smith, 2012).

The relationship between ethnography and theory offers one potent space for (re)imagining climate change reflexively. All too often theory is produced in and by the Global North based on realities that supposedly just "happen" in the Global South. In the process, Indigenous peoples' own theories and philosophies of environment and environmental crisis become colonised by Western paradigms, concepts, and idioms. As Banaban and African-American scholar Katerina Teaiwa notes, the incorporation of Pacific ways of knowing and being into pre-existing and dominant epistemic frames is far from a new practice (2006, p. 74). It perpetuates what Māori scholar Makere Stewart-Harawira (2013) calls "knowledge capitalism," or the instrumentalisation of Indigenous epistemologies in the interest of institutional ends that do not account for (let alone serve) the interests of Indigenous peoples themselves.

Imagining climate change reflexively thus demands a shift away from the positioning of Indigenous peoples as "research-subjects" and instead as joint producers of knowledge. This includes not just the communities in the field whom we work with, but also Indigenous scholars and scholarship, that tend to be obscured by dominant canons and associated intellectual genealogies (Gegeo & Watson-Gegeo, 2002; Hau'ofa, 1975; Te Punga Somerville, 2021). Decolonising our texts and theories is

imperative in challenging the White and Western monopoly over knowledge and the imagination and in doing justice to Indigenous intellectual agency. Importantly, such an approach does not entail a complete rejection of all non-Indigenous theory. Rather, as Māori scholar Linda Tuhiwai Smith explains, decolonising research means putting Indigenous peoples' concerns at the centre and approaching research "from Indigenous peoples' perspectives, and for Indigenous peoples' purposes" (2012, p. 89). In doing so, we reimagine epistemology beyond what or how one knows, to what is "worth knowing" in a changing world (Aluli-Meyer, 2001, p. 125; see also Gegeo & Watson-Gegeo, 2001).

When we research and teach climate change, we should therefore ask ourselves: whose voices and knowledge are we drawing from? How is this represented in our citations and acknowledgements? Whose voices are missing from the conversation, and why? What makes us decide to cite one scholar over another? What meanings and categories grow organically out of the research, and which are imposed? What impression of ownership over concepts and ideas is created in the process? What is this knowledge for and whom does this knowledge serve?

Transdisciplinary Imagination

The climate crisis is a multi-faceted problem, therefore it demands transdisciplinary responses.[5] As transdisciplinary scholars ourselves, our research engages with insights, methods, and theories derived from a wide array of fields: anthropology, plant science, history, education, and Indigenous studies, among others. Importantly, we call here for a transdisciplinary practice that is synthetic and transformative, rather than purely additive or complementary. By this we mean an engagement with other fields that invites us to seriously and critically rethink the premises and assumptions underlying the diverse ways we approach, understand, and act upon the world. Such a transdisciplinary practice encourages us to reconsider the questions we believe matter – why, in whose interests, and with what intended or contingent effects. It entails the difficult but necessary labour of translating our ideas beyond familiar audiences to make these ideas intelligible, accessible, and relatable to broader publics. It also makes us reflect on what counts as knowledge, how different knowledges and knowledge production systems sit within prevailing hierarchies of worth, legitimacy, and value, and what can be done to destabilise the assumed power and validity of some knowledge regimes over others.

[5] The term 'transdisciplinary' captures the practice of thinking within, across, and *beyond* disciplinary fields that we deem essential to reimagining climate futures. In this regard, transdisciplinarity differs to some degree from 'interdisciplinarity', which communicates a form of thinking operating across, but not necessarily transcending, the boundaries of existing disciplinary fields, and 'multidisciplinarity', which draws from different disciplines but does not question their respective epistemological premises.

In the context of climate change, transdisciplinarity can help challenge the assumed supremacy of secular science over other ways of knowing. In offering this argument, we are wary of the risks of reductionism inherent in assuming West and non-West epistemic binaries (see Carrier, 1995). We also acknowledge the plurality at play *within* dominant secular scientific paradigms, the situated construction of scientific knowledge, and the politically inflected ways in which this knowledge has been produced, deployed, and critiqued by both Western and Indigenous philosophers and scientists (e.g. Barad, 2007; Haraway, 1989; Latour, 2010; Stengers, 2015; TallBear, 2013). We further depart from the erroneous assumptions that secular scientific and other epistemologies are incompatible (Kimmerer, 2014), that secular science cannot lend itself to local interpretation or Indigenisation (Gegeo & Watson-Gegeo, 2001), that Indigenous epistemologies are static and/or irrational (T. K. Teaiwa, 2006; T. K. Teaiwa & Joannemariebarker, 1994), and that there is no such thing as "Indigenous science" (Poelina, 2020).

What we *do* wish to emphasise is that Indigenous and other non-Western epistemologies have frequently been, and continue to be, rendered secondary to secular science when classified as "Traditional Ecological Knowledge" and "Indigenous Wisdom". We do not dismiss the substance subsumed under these labels (frankly, we could all do with a bit more wisdom) but rather highlight how these labels unwittingly conjure the primacy of secular scientific regimes – even as groundbreaking secular scientific discoveries often reveal in other idioms what Indigenous sciences have always known. That plants communicate with each other. That carefully controlled fires nourish the soil. That killing environments eventually kills people.

A transdisciplinary imagination therefore demands that we decolonise knowledge itself from bounded and hierarchised "disciplines", literal and metaphoric. Discipline, after all, lies at the heart of the imperial-capitalist logic and its extractive ethos. Discipline within this logic positions the "human" as master and the non-human as resource. Discipline, in many ways, negates the possibility of freedom, experimentation, and creativity. The climate crisis itself exemplifies the deadly endpoint of discipline – real or illusory – over the natural world. In doing so, the climate crisis invites an emancipation of knowledge from the disciplinary strictures that determine where knowledge belongs and whether it is valued.

Radical Imagination

As climate change intensifies, the tropics are becoming increasingly vulnerable to extreme droughts, floods, and high-intensity cyclones. Forest and marine biodiversity struggle to adapt to rapidly changing environments, with over half of these species likely to become locally or globally extinct in the near future (Salisbury, 2017). Coral

reefs in particular have, and will continue, to suffer unprecedented mass bleaching episodes as a result of rising sea-surface temperature extremes. These rich ecosystems may disappear entirely by 2050. Meanwhile, Pacific livelihoods, food and water security, and local economies, are jeopardised by growingly unpredictable climate conditions. Climate refugeeism, along with rural impoverishment, are on the rise (Harding & Penny, 2020). Human displacement and dispossession are compounded by the obliteration of locally meaningful stories, cultures, and relations with the beyond-human world, that in turn erode Pacific ways of being, becoming, and belonging.

These radical times call for radical imaginations. Our use of the term "radical" is inspired by the work of Native Studies and Science and Technology Studies scholars Hi'ilei Julia Kawehipuaakahaopulani Hobart and Stephanie Maroney, who call for "radical care" in a time of unprecedented social and environmental crises. Radical care, Hobart and Maroney write, "provides glimmers of hope amidst precarious worlds, even as it remains embedded with systemic inequalities and hegemonic power structures. As a form of strategic audacity, radical care is a refusal *not* to care and an imagining of an otherwise despite dark histories and potentially darker futures" (Hobart & Kneese, 2020, pp. 2–3; see also Simpson, 2007). In the context of climate imaginaries, a radical imagination seeks to counter the crippling force of political apathy and the sense of help/hopelessness accompanying the seemingly insurmountable scales of loss and destruction that surround and haunt us. To imagine radically is to refuse *not* to imagine better futures and to insist on acting and interacting with the natural world in ways that can enable these futures to materialise.

A radical imagination attends in equal measure to experiences of loss and disempowerment as it does to practices of resilience and resistance, as these manifest across grassroots and transnational settings. In doing so, a radical imagination subverts what Anangax scholar Eve Tuck (2009) calls "damage-centered" approaches, or approaches that elide Indigenous forms of survivance by focusing solely or primarily on socio-cultural and ecological violences and endings (see also Vizenor, 1999). Instead, we need to tell the story of climate change through Pacific acts of struggle, solidarity, and self-determination – the fighting, and not (just) the sinking, to echo the 350 Fiji Team's slogan. These modes of resistance take multiple forms – organised and global climate activism, sustained regional cultural and social practices, resilient local foodways, intergenerational knowledge transmission, and more. As emergent and collective expressions of cultural and political creativity, these acts are just as central to the story of climate change as the climate crisis itself.

Radical imaginations are integral to the way we narrate and represent the climate crisis. They invite experimental forms of expression within and beyond the written text

– oral storytelling, poetic recitation, everyday rituals of care, dream-sharing, artistic production, among others. They open space for critically thinking and emotionally *feeling* our way through (and potentially out of) crisis. These feelings call for the crafting of narratives that lie outside the ambit of conventional representational modes but that do better justice to crisis' emotional toll. We might, for instance, decide to write manifestos, laments, prayers, or requiems – texts that don't (just) analyse or explain (away) the world, but that make space to mourn, laugh, praise, celebrate, weep, and scream the world. When it comes to representing the agency of beyond-human beings, we might take the lead of Pacific scholars and activists who insist on recognising places and ecosystems as legitimate producers of knowledge in their citational practices (e.g. Bawaka Country et al., 2015; Martuwarra RiverofLife et al., 2020). In doing so, we inch a little closer to acknowledging and embracing the authority of beyond-humans as co-creators of the worlds we inhabit. We open space for thinking and theorising not just *about* or *for* the natural world, but rather *with* it.

A radical imagination does not shy away from engaging with or addressing the growing uncertainty and precarity of climate presents and horizons to come. Rather, it takes this uncertainty as the very grounds from which to fashion unexpected forms of hope, emergence, and resurgence. Radical hope is radical in that it persists even when the object of hope remains unintelligible, unachievable, or unknowable, and perhaps only fully graspable in retrospect (Lear, 2006). It entails a recognition that better worlds are possible and necessary, but never certain, guaranteed, nor ever entirely determined by human agency. Forging radical hope and inclusive imaginations of climate futures thus demands both courage and humility – a cultivation of active accountability towards the environments we become-with *and* an awareness that climates and futures are always already crafted with and by beyond-human actors.

Towards a Decolonial Imagination

In this article, we have sought to outline a set of guiding practices and principles that we believe can help pave the way for more expansive, relational, and inclusive climate imaginaries. These practices and principles aim to counter the ethnocentrism, individualism, and hierarchism of dominant climate imaginaries that are no longer (indeed never have been) fit for purpose. They grow out of our ongoing collaborations and conversations with Indigenous, Pasifika, and Papuan communities, who find themselves most deeply and directly mired in the fraught predicament of the climate crisis. They invite imaginative solidarities across places and times that, in the image of the climate itself, can serve to unite, rather than divide us. These practices and principles call for a rethinking of our relation to the more-than-human world – one that includes and recognises Pacific cosmologies and philosophies in which being human is always becoming-with beyond-human others. To neglect these more-than-human

becomings is to strip the world of its wonder and enchantment – its ongoing and multiple forms of sympoietic creation, formation, and relation. This ecological and ideological flattening calls for a radical turn (or *tropos,* the etymological root of "tropics") away from utilitarianism and anthropocentrism, and towards multispecies, future flourishings.

Decolonising climate imaginaries demands a radical shift in the order of matter and thought – a radical change in direction and action. This is no small task. As Fijian historian Tracy Banivanua Mar (2016) notes, decolonisation in the Pacific has not been an historic event, but rather, is a fragile, contingent, and ongoing process continuing well into the postcolonial era. In West Papua, decolonisation remains an ongoing object of struggle for Indigenous peoples who continue to be denied the right to self-determination, dignity, and freedom (Chao, 2019). Climate imaginaries, too, are profoundly shaped by violent histories of racial imperialism, colonialism, and capitalism, and their residual afterlives. As Potawatomi scholar Kyle Powys Whyte (2017) reminds us, the climate crisis for Indigenous peoples is less a new phenomenon than a "colonial déja-vu" – a perpetuation of long-standing processes of dispossession, displacement, and disempowerment (see also Davis & Todd, 2017; Stewart-Harawira, 2012).

Grappling with the climate crisis demands that we account for these longer histories of violence that continue to undermine Indigenous imaginative and political sovereignties in the tropics and beyond. These histories of violence materialise in various forms in our everyday life – from the commodities we purchase and consume, to the operational infrastructures of the institutions we work for or within, to the methodologies we deploy in our research. They point not to a lack of imagination, but to the structural factors that render some imaginations more powerful and lethal than others.

Transforming the imagination from deadly battlefield to flourishing future calls for a collective reckoning amidst the ruin and rubble generated by imperial-capitalist projects of scale, desire, and extraction. In this reckoning, no position is ever entirely innocent or pure (Shotwell, 2016) and no entanglement ever entirely reciprocal or just (Giraud, 2019). To imagine the climate otherwise is to stay with the trouble of inter- and intraspecies asymmetries but also to work creatively and collaboratively towards a less violent sharing of suffering across species lines (Haraway, 2008). In this, we may do well to live by the eloquent quote so widely used across the Pacific and pronounced by prominent Matai (chief) and former Head of State of Samoa, His Royal Highness Tui Atua Tupua Tamasese Efi (2003, p. 51):

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I am not an individual; I am an integral part of the cosmos. I share divinity with my ancestors, the land, the seas, and the skies. I am not an individual, because I share a *tofi* [inheritance] with my family, my village, and my nation. I belong to my family and my family belongs to me. I belong to a village and my village belongs to me. I belong to my nation and my nation belongs to me. This is the essence of my sense of belonging.

References

Aluli-Meyer, M. (2001). Our Own Liberation: Reflections on Hawaiian Epistemology. *The Contemporary Pacific*, 13(1), 124–148. https://doi.org/10.1353/cp.2001.0024

Anderson, W., Johnson, M., & Brookes, B. (Eds.). (2018). *Pacific Futures: Past and Present*. University of Hawai'i Press. https://www.jstor.org/stable/j.ctvvn4fj

Arabena, K. (2010). All Knowledge is Indigenous. In V. A. Brown, J. A. Harris, & J. Y. Russell (Eds.), *Tackling Wicked Problems: Through the Transdisciplinary Imagination* (pp. 260–270). Earthscan. https://www.taylorfrancis.com/books/edit/10.4324/9781849776530/tackling-wicked-problems-john-harris-valerie-brown-jacqueline-russell

Archibald, J-A., Lee-Morgan, J., & De Santolo, J. (2019). *Decolonizing Research: Indigenous Storywork as Methodology*. Zed Books.

Argyrou, A., & Hummels, H. (2019). Legal Personality and Economic Livelihood of Whanganui River: A Call for Community Entrepreneurship. *Water International*, 44(6–7), 752–768. https://doi.org/10.1080/02508060.2019.1643525

Banivanua Mar, T. (2012). Settler-Colonial Landscapes and Narratives of Possession. *Arena Journal*, 37–38, 176–198. https://search.informit.org/doi/10.3316/INFORMIT.640442097320602

Banivanua Mar, T. (2016). *Decolonisation and the Pacific: Indigenous Globalisation and the Ends of Empire*. Cambridge University Press. https://doi.org/10.1017/CBO9781139794688

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Duke University Press. https://doi.org/10.1515/9780822388128

Barlow, J., Franca, F., Gardner, T. A., Hicks, C. C., & Lennox, G. D. (2018). The Future of Hyperdiverse Tropical Ecosystems. *Nature*, 559, 517–526. https://doi.org/10.1038/s41586-018-0301-1

Bawaka Country, Wright, S., & Suchet-Pearson, S. (2015). Co-Becoming Bawaka: Towards a Relational Understanding of Place/Space. *Progress in Human Geography*, 40(4), 455–475. https://doi.org/10.1177/0309132515589437

Benjamin, R., & Glaude, E. (2018). *[AAS21 Podcast] Episode #12: Reimagining Science and Technology*. Princeton University, Department of African American Studies. https://aas.princeton.edu/news/aas21-podcast-episode-12-reimagining-science-and-technology

Carrier, J. (1995). *Occidentalism: Images of the West*. Oxford University Press.

Celermajer, D., Chatterjee, S., Cochrane, A., Fishel, S. R., Neimanis, A., O'Brien, A., Reid, S., Srinivasan, K., Schlosberg, D., & Waldow, A. (2020). Justice Through a Multispecies Lens. *Contemporary Political Theory*. 19, 475–512. https://doi.org/10.1057/s41296-020-00386-5

Chao, S. (2017). There are no Straight Lines in Nature: Making Living Maps in West Papua. *Anthropology Now*, 9(1), 16 – 33. https://doi.org/10.1080/19428200.2017.1291014

Chao, S. (2019). *Race, Rights, and Resistance: The West Papua Protests in Context*. TRT World. https://www.trtworld.com/opinion/race-rights-and-resistance-the-west-papuan-protests-in-context-29515

Chao, S. (2020). A Tree of Many Lives: Vegetal Teleontologies in West Papua. *HAU: Journal of Ethnographic Theory*, 10(2), 514–529. https://doi.org/10.1086/709505

Chao, S. (2021a). Morethanhuman Matters: An Interview with Dion Enari. *More Than Human Worlds.* https://www.morethanhumanworlds.com/mthm-dionenari

Chao, S. (2021b). Children of the Palms: Growing Plants and Growing People in a Papuan Plantationocene. *Journal of the Royal Anthropological* Institute. https://doi.org/10.1111/1467-9655.13489

Chao, S. (2021c). Eating and Being Eaten: The Meanings of Hunger among Marind. M*edical Anthropology: Cross-Cultural Studies in Health and Illness.* https://doi.org/10.1080/01459740.2021.1916013

Chao, S. (2021d). *Storying Extinction: A Reflection on Loss, Crisis, and Co-existence*. Sydney Environment Institute. https://sei.sydney.edu.au/reflection/storying-extinction-a-reflection-on-loss-crisis-and-co-existence/

Chao, S. (2021e). The Beetle or the Bug? Multispecies Politics in a West Papuan Oil Palm Plantation. *American Anthropologist*. https://doi.org/10.1112/aman/13592

Chao, S. (2021f). They Grow and Die Lonely and Sad. *Fieldsights.* https://culanth.org/fieldsights/they-grow-and-die-lonely-and-sad

Chao, S. (2022). *In the Shadow of the Palms: More-Than-Human Becomings in West Papua.* Duke University Press. (Forthcoming)

Coburn, E., Moreton-Robinson, A., Sefa Dei, G., & Stewart-Harawira, M. (2013). Unspeakable Things: Indigenous Research and Social Science. *Socio*, 2, 331–348. https://doi.org/10.4000/socio.524

Davis, H., & Todd, Z. (2017). On the Importance of a Date, or Decolonizing the Anthropocene. *ACME: An International Journal for Critical Geographies*, 16(4), 761–780. https://www.acme-journal.org/index.php/acme/article/view/1539

de la Cadena, M. (2017). Matters of Method: Or, Why Method Matters Toward a Not Only Colonial Anthropology. *HAU: Journal of Ethnographic Theory*, 7(2), 1–10. https://doi.org/10.14318/hau7.2.002

Eickelkamp, U., & Chao, S. (2020). Introducing Oceanic Societies in COVID-19. *Oceania*, 90(S1), 3–5. https://doi.org/10.1002/ocea.5257

Enari, D. (2021). *Methodology Marriage: Merging Western and Pacific Research Design.* https://ir.canterbury.ac.nz/bitstream/handle/10092/101590/5%20Methodology.pdf?sequence=5

Enari, D., & Fa'aea, A. M. (2020). E tumau le fa'avae ae fesuia'i faiga: Pasifika Resilience During COVID-19. *Oceania*, 90(S1), 75–80. https://doi.org/10.1002/ocea.5269

Enari, D. & Faleolo, R. (2020). Pasifika well-being during the COVID-19 crisis: Samoans and Tongans in Brisbane. *Journal of Indigenous Social Development,* 110-127 https://journalhosting.ucalgary.ca/index.php/jisd/article/view/70734/54415

Enari, D., & Matapo, J. (2020). The Digital Vā: Pasifika Education Innovation During the Covid-19 Pandemic. *MAI Journal*, 9(4), 7–11. https://doi.org/10.20507/MAIJournal.2020.9.4.2

Enari, D., & Matapo, J. (2021). Negotiating the Relational Vā in the University: A Transnational Pasifika Standpoint During the Covid-19 Pandemic. J*ournal of Global Indigeneity,* 5(1), 1–19. https://www.journalofglobalindigeneity.com/article/19436-navigating-the-digital-va-va-centring-moana-pacific-values-in-online-tertiary-settings-during-covid-19

Enari, D. & Rangiwai, B. (2021). Digital Innovation and Funeral Practices: Māori and Samoan Perspectives During the COVID-19 Pandemic. *Alternative Journal.* (Forthcoming)

Escobar, A. (2019). *Pluriversal Politics: The Real and the Possible*. Duke University Press. https://doi.org/10.1515/9781478012108

Fa'aea, A. M. & Enari, D. (2021). The Pathway to Leadership is Through Service: Exploring the Samoan Tautua Lifecycle. In *Pacific Dynamics: Journal of Interdisciplinary Research*. https://ir.canterbury.ac.nz/bitstream/handle/10092/101592/7%20Tautua-final.pdf?sequence=5&isAllowed=y

Fakhruddin, B. S., Babel, M. S., & Kawasaki, A. (2015). Assessing the Vulnerability of Infrastructure to Climate Change on the Islands of Samoa. *Natural Hazards and Earth System Sciences*, 15, 1343–1356. https://doi.org/10.5194/nhess-15-1343-2015

Gegeo, D. W., & Watson-Gegeo, K. A. (2001). "How We Know": Kwara'ae Rural Villagers Doing Indigenous Epistemology. *The Contemporary Pacific*, 13(1), 55–88. https://doi.org/10.1353/cp. 2001.0004

Gegeo, D. W., & Watson-Gegeo, K. A. (2002). Whose Knowledge? Epistemological Collisions in Solomon Islands Community Development. *The Contemporary Pacific*, 14(2), 377–409. https://doi.org/10.1353/cp.2002.0046

Ghosh, A. (2016). *Amitav Ghosh: Where is the Fiction about Climate Change?* The Guardian. https://www.theguardian.com/books/2016/oct/28/amitav-ghosh-where-is-the-fiction-about-climate-change-

Giraud, E. H. (2019). *What Comes after Entanglement? Activism, Anthropocentrism, and an Ethics of Exclusion*. Duke University Press. https://doi.org/10.1215/9781478007159

Haraway, D. J. (1989). *Primate Visions: Gender, Race, and Nature in the Modern World of Science*. Routledge.

Haraway, D. J. (2008). *When Species Meet*. University of Minnesota Press.

Haraway, D. J. (2016). *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press. https://doi.org/10.1215/9780822373780

Harding, S., & Penny, A. (Eds.). (2020). *State of the Tropics*. James Cook University.

Hau'ofa, E. (1975). Anthropology and Pacific Islanders. *Oceania*, 45(4), 283–289. https://doi.org/10.1002/j.1834-4461.1975.tb01871.x

Hau'ofa, E. (2008). *We Are the Ocean : Selected Works*. University of Hawai'i Press. https://doi.org/10.1515/9780824865542

Hobart, H. J. K., & Kneese, T. (2020). Radical Care: Survival Strategies for Uncertain Times. *Social Text*, 38(1), 1–156. https://doi.org/10.1215/01642472-7971067

Howes, D. (2003). *Sensual Relations: Engaging the Senses in Culture and Social Theory*. The University of Michigan Press. https://doi.org/10.3998/mpub.11852

Kabutaulaka, T. (2020). COVID-19 and Re-Storying Economic Development in Oceania. *Oceania*, 90(S1), 47–52. https://doi.org/10.1002/ocea.5265

Kimmerer, R. W. (2014). *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge, and the Teachings of Plants*. Milkweed Press.

Latour, B. (2010). *On the Modern Cult of the Factish Gods*. Duke University Press.

Law, T. (2019, September 30). The Climate Crisis Is Global, but These 6 Places Face the Most Severe Consequences. *TIME*. https://time.com/5687470/cities-countries-most-affected-by-climate-change

Leach, J. (2003). *Creative Land: Place and Procreation on the Rai Coast of Papua New Guinea*. Berghahn.

Lear, J. (2006). *Radical Hope: Ethics in the Face of Cultural Devastation*. Harvard University Press.

Lemusuifeauaali'i, E. & Enari, D. (2021). DUA TANI: (Re)evolving Identities of Pacific Islanders. *Te Kaharoa*, 17(1). https://doi.org/10.24135/tekaharoa.v17i1.342

Martuwarra RiverofLife, Poelina, A., Bagnall, D., & Lim, M. (2020). Recognizing the Martuwarra's First Law Right to Life as a Living Ancestral Being. *Transnational Environmental Law*, 9(3), 541–568. https://doi.org/10.1017/S2047102520000163

Matapo, J. & Enari, D. (2021). Re-imagining the Dialogic Spaces of Talanoa through Samoan Onto-epistemology. In *Waikato Journal of Education*. (Forthcoming)

McKittrick, K., & Woods, C. (Eds.). (2007). *Black Geographies and the Politics of Place*. South End Press.

Mittermaier, A. (2011). *Dreams That Matter: Egyptian Landscapes of the Imagination*. University of California Press. https://doi.org/10.1525/9780520947856

Moore, J. W. (2015). *Capitalism in the Web of Life: Ecology and the Accumulation of Capital*. Verso.

Moore, S. J. (2020). Worlding with Oysters. In E. Castro-Koshy & G. Le Roux (Eds).

Environmental Artistic Practices and Indigeneity (Special Issue) *eTropic: Electronic Journal of Studies in the Tropics*, 19(1), 96-104. https://doi.org/10.25120/etropic.19.1.2020.3731

Morton, T. (2013). *Hyperobjects: Philosophy and Ecology after the End of the World*. University of Minnesota Press.

Nabobo-Baba, U. (2008). Decolonizing Framings in Pacific Research: Indigenous Fijian Vanua Research Framework as an Organic Response. *AlterNative: An International Journal of Indigenous Peoples*, 4(2), 140–154. https://doi.org/10.1177/117718010800400210

Nugent, C. (2019, July 11). The 10 Countries Most Vulnerable to Climate Change Will Experience Population Booms in the Coming Decades. *TIME*. https://time.com/5621885/climate-change-population-growth

Pandya, V. (1990). Movement and Space: Andamanese Cartography. *American Ethnologist*, 17(4), 775 – 797. https://doi.org/10.1525/ae.1990.17.4.02a00100

Perez, C. S. (2020). Poems. In E. Castro-Koshy & G. Le Roux (Eds). *Environmental Artistic Practices and Indigeneity* (Special Issue) *eTropic: Electronic Journal of Studies in the Tropics*, 19(1), 42-64. https://doi.org/10.25120/etropic.19.1.2020.3676

Plumwood, V. (1993). *Feminism and the Mastery of Nature*. Routledge.

Plumwood, V. (2008). Shadow Places and the Politics of Dwelling. *Australian Humanities Review*, 44, 139–150. http://australianhumanitiesreview.org/2008/03/01/shadow-places-and-the-politics-of-dwelling/

Plumwood, V. (2009). Nature in the Active Voice. *Australian Humanities Review*, 46, 113–129. http://australianhumanitiesreview.org/2009/05/01/nature-in-the-active-voice

Poelina, A. (2020). A Coalition of Hope! A Regional Governance Approach to Indigenous Australian Cultural Wellbeing. In A. Duffy, M. Campbell, & B. Edmondson (Eds.), *Located Research: Regional Places, Transitions, and Challenges* (pp. 153–180). Palgrave. https://doi.org/10.1007/978-981-32-9694-7_10

Popkin, G. (2017). *Explaining Tropical Forests' Astonishing Biodiversity*. Inside Science. https://www.insidescience.org/news/explaining-tropical-forests-astonishing-biodiversity

Puig de la Bellacasa, M. (2009). Touching Technologies, Touching Visions: The Reclaiming of Sensorial Experience and the Politics of Speculative Thinking. *Subjectivity*, 28(1), 297 – 315. https://doi.org/10.1057/sub.2009.17

Puig de la Bellacasa, M. (2017). *Matters of Care: Speculative Ethics in More Than Human Worlds*. University of Minnesota Press. https://www.jstor.org/stable/10.5749/j.ctt1mmfspt

Quinney, M. (2020). *Covid-19 and Nature are Linked. So Should be the Recovery.* World Economic Forum. https://www.weforum.org/agenda/2020/04/covid-19-nature-deforestation-recovery

Salisbury, C. (2017). *Climate Change Driving Widespread Local Extinctions; Tropics Most at Risk*. Mongabay. https://news.mongabay.com/2017/03/climate-change-driving-widespread-local-extinctions-tropics-most-at-risk

Shotwell, A. (2016). *Against Purity*. University of Minnesota Press.

Simpson, A. (2007). On Ethnographic Refusal: Indigeneity, "Voice," and Colonial Citizenship. *Junctures*, 9, 67–80. https://junctures.org/index.php/junctures/article/view/66/60

Singh, J. (2018). *Unthinking Mastery: Dehumanism and Decolonial Entanglements*. Duke University Press. https://doi.org/10.1215/9780822372363

Stengers, I. (2005). The Cosmopolitical Proposal. In B. Latour & P. Weibel (Eds.), *Making Things Public: Atmospheres of Democracy* (pp. 994 – 1003). Massachusetts Institute of Technology Press.

Stengers, I. (2015). *In Catastrophic Times: Resisting the Coming Barbarism* (A. Goffey (trans.). Open Humanities Press.

http://www.environmentandsociety.org/mml/catastrophic-times-resisting-coming-barbarism

Stewart-Harawira, M. (2012). Returning the Sacred: Indigenous Ontologies in Perilous Times. In R. Roberts & L. Williams (Eds.), *Radical Human Ecology: Intercultural and Indigenous Approaches* (pp. 94–109). Taylor & Francis.

Stewart-Harawira, M. (2013). Challenging Knowledge Capitalism: Indigenous Research in the 21st Century. *Socialist Studies*, 9(1), 39–51. https://doi.org/10.18740/S43S3V

Stewart-Harawira, M. (2018). Indigenous Resilience and Pedagogies of Resistance: Responding to the Crisis of our Age. In J. B. Kinder & M. Stewart-Harawira (Eds.), *Resilient Systems, Resilient Communities* (pp. 158–179). University of Alberta. https://doi.org/10.2139/ssrn.3185625

TallBear, K. (2013). *Native American DNA: Tribal Belonging and the False Promise of Genetic Science*. University of Minnesota Press. https://doi.org/10.5749/minnesota/9780816665853.001.0001

Teaiwa, K. M. (2019). No Distant Future: Climate Change as Existential Threat. *Australian Foreign Affairs*, 6, 51–70. https://www.australianforeignaffairs.com/articles/extract/2019/08/no-distant-future

Teaiwa, T. K. (2006). On Analogies: Rethinking the Pacific in a Global Context. *Contemporary Pacific Studies*, 18(1), 71–87. https://doi.org/10.1353/cp.2005.0105

Teaiwa, T. K., & Joannemariebarker. (1994). Native Information. *Inscriptions*, 7, 16–41. https://culturalstudies.ucsc.edu/inscriptions/volume-7/joannemariebarker-teresia-teaiwa

Te Punga Somerville, A. (2021). *Canons Don't Only Belong to Dead White Englishmen. We Have a Māori Canon Too*. The Guardian. https://www.theguardian.com/world/2021/feb/14/canons-dont-only-belong-to-dead-white-englishmen-we-have-a-maori-canon-too

Tsing, A. L. (2005). *Friction: An Ethnography of Global Connection*. Princeton University Press. https://doi.org/10.1515/9781400830596

Tsing, A. L. (2014). More-Than-Human Sociality: A Call for Critical Description. In K. Hastrup (Ed.), *Anthropology and Nature* (pp. 27 – 42). Routledge.

Tuck, E. (2009). Suspending Damage: A Letter to Communities. *Harvard Educational Review*, 79(3), 409–427. https://doi.org/10.17763/haer.79.3.n0016675661t3n15

Tuhiwai Smith, L. (2012). *Decolonizing Methodologies: Research and Indigenous Peoples*. Zed Books. https://nycstandswithstandingrock.files.wordpress.com/2016/10/linda-tuhiwai-smith-decolonizing-methodologies-research-and-indigenous-peoples.pdf

Tui Atua, T. T. T. E. (2003). In Search of Meaning, Nuance, and Metaphor In Social Policy. *Social Policy Journal Of New Zealand Te Puna Whakaaro*, 20, 49–63. https://www.msd.govt.nz/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/spj20/nuance-and-metaphor-in-social-policy-20-pages49-63.html

van Dooren, T. (2014). *Flight Ways: Life and Loss at the Edge of Extinction*. Columbia University Press E-Book. https://doi.org/10.7312/vand16618

van Dooren, T., & Rose, D. B. (2016). Lively Ethography: Storying Animist Worlds. *Environmental Humanities*, 8(1), 77 – 94. https://doi.org/10.1215/22011919-3527731

Vizenor, G. R. (1999). *Manifest Manners: Narratives on PostIndian Survivance*. University of Nebraska Press.

Wallace-Wells, D. (2019). *The Uninhabitable Earth: Life After Warming*. Tim Duggan Books.

West, P. (2006). *Conservation is Our Government Now: The Politics of Ecology in Papua New Guinea*. Duke University Press. https://doi.org/10.1215/9780822388067

Whyte, K. P. (2017). Is It Colonial Déjà Vu? Indigenous Peoples and Climate Injustice. In J. Adamson & M. Davis (Eds.), *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice* (pp. 88–105). Routledge.

https://www.taylorfrancis.com/books/edit/10.4324/9781315642659/humanities-environment-joni-adamson-michael-davis

Winter, C. (2019). Does Time Colonize Intergenerational Environmental Justice Theory? *Environmental Politics,* 29(2), 278 – 296. https://doi.org/10.1080/09644016.2019.1569745

Winter, C., & Troy, J. (2020). *Indigenous Justice in Times of Climate Crisis*. Sydney Environment Institute. https://sei.sydney.edu.au/opinion/indigenous-justice-in-times-of-climate-crisis

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Shrunken Life: Discourses of the Cryptic and the Miniature in Madagascar

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Abstract

As scientists scour remnant habitats and "unmask" cryptic species with DNA barcoding, a boom of species discovery has enchanted the world. In Madagascar, recent discoveries of previously unknown miniature frogs, chameleons, and lemurs often photographed on human fingers or cradled in hands, have captured the public imagination. In this imagery of scale, the giant finger conveys the outsized impact of humanity on Earth, or points to what Susan Stewart (1996, p. 74) calls "a physical world of disorder and disproportion." Although the phenomenon of insular gigantism and dwarfism has shaped scientific discourses of evolution and extinction since the nineteenth century, recent reportage on "new" miniature and cryptic species reflects a sensibility beyond wistful nostalgia for creatures past. Species miniaturism evolves out of habitat loss, and living minifauna encapsulate the contraction of existential time, all the more pronounced by the effects of climate change. Photographs of cryptic minifauna therefore compel us to reflect on the whole of our losses, while they fuel the impulse to restock the "library of life" at micro-scale.

Keywords: extinction, cryptic species, miniature species, climate change, island rule, DNA barcoding, Madagascar

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Against the grain of mass extinction, recent species discoveries in Madagascar have caused excitement in scientific communities. The novel species include frogs, chameleons, and lemurs and are extraordinary for their tiny sizes. Photographs circulating online via digital and social media of minifauna perched on the tips of fingers or cradled in hands instill a sense of wonder, while they also put into relief the impact of humankind on the planet. The recent discoveries are not entirely the result of exploratory missions; they have also relied on advancements in genetic and scanning technologies. As new instruments illuminate structural differences in bodies that had previously been invisible to the human eye, scientists have been able to distinguish specimens once lumped together as singular species.

These two interlinked phenomena, the discovery of miniature species out there in the world and the parsing of cryptic minifauna in the laboratory, have yielded the discovery boom. The sense of wonder and excitement evoked by the images of novel miniature life – whether discovered in leaf litter or through DNA barcoding – is tempered by awareness of anthropogenic climate change and ecological degradation. This article explores how imagery of "cute" minifauna in popular science articles enters contemporary extinction discourse, attending to the ways miniature and gigantic lives have shaped perceptions of historical time, human ecological agency, and moral responsibility in European imaginations. I argue that the contrastive scale – tiny animal on human hand — taps into a European cultural lexicon of miniatures and giants. Moreover, images of minifauna symbolize a downward slide, a relentless downscaling of "Earth's library of life" (Greenfield, 2020). In other words, recent species discoveries suggest that finding novel megafauna within Earth's degraded habitats is now virtually impossible, and what remains are the miniature and microscopic lives that have eluded the scientific gaze thus far. In addition, to replenish the library of life, scientists increasingly rely on technologies more powerful than microscopes to draw increasingly fine taxonomic distinctions.

At first glance, the quest to find novel species in a context of mass extinction and global warming resembles the impulse of White museum curators of the nineteenth century, whose desire to collect indigenous people's material culture arose amidst the rapid demise of indigenous worlds. Cultural extinction was dictated by the colonial theory of social evolutionism – deemed a predictable result of the superior "fitness" of Whites and capitalism (Brantlinger, 2003). The extinction of wildlife species was also something to be mourned, and zoological artefacts of extinct or nearly extinct species became increasingly precious commodities.

In the twenty-first century, the net impacts of modernization have not only created a void of endemic species around the globe, but the effects of deforestation and carbon emissions on the atmosphere are cascading into the future, no matter the types of mitigation we implement today. Climate change is imbricated with species extinction. While human-induced habitat destruction outpaces the effects of climate change on insular species, global warming amplifies the problem – for instance, drought and severe weather events transform habitats, which cause the movement of species populations, which in turn disrupts ecosystems in a constant feedback loop.

Climate change is projected to reduce the carbon stock of tropical forests. Scientists forecast that by 2080 an average forest carbon stock loss of 17% in Madagascar will result from climate change. That is, beyond the loss of carbon stocks due to anthropogenic activity in forests, rising CO_2 concentrations and changes in temperature and precipitation will impact the physiological response of vegetation, resulting in a shrinkage in the size of trees and shifts in the distribution of tree species (Vieilledent et al., 2016). The shrinkage of tree size results in a loss of biomass, further reducing the capacity of forests to store carbon, and again reflecting an ecological downward spiral.

The majority of climate change extinctions will occur in the tropics, where biodiversity and endemism are highest (Raxworthy et al., 2008). Rising temperatures are already exceeding the physiological tolerance of certain species. Changes in temperature and precipitation will continue to cause a reduction of species' ranges, and it will push species into new ranges, thereby impacting interactions amongst species (Cahill et al., 2012, p. 3). Some species populations may thrive in the new assemblages, but others will be outcompeted. In Madagascar, warming is causing the upslope displacement of reptiles and amphibians, a trend that affects tropical montane species in particular (Raxworthy et al., 2008). With regard to the endemic lemurs – found only on this one island – climate variability leaves them vulnerable to the disruption of neuroendrocrine processes, including, for example, reproductive cycles and lactation (Dunham et al., 2011; Wright, 2006). Scientists project increases in the mean temperature on the island of 1.1–2.6°C. Greatest warming is predicted to occur in the drought-prone south, while moderate warming along the coast and in the north, the sites of remnant rain forests, makes them vulnerable to drying (Hannah et al., 2008; Tadross et al., 2008).

Amidst the immensity of these climatic and ecological threats, the event of species discovery is rare and precious enough, but revelations of new miniature species seem almost miraculous. Due to their "aesthetic charisma" (Lorimer, 2015, p. 46), their

association with childhood and folklore, and their emergence within a context of accelerating loss and run-away climate change, the novel minifauna depicted in digital images urge the imagination to retreat into bioabundant worlds. Advancements in science and technology that assist in decoding minifauna suggest the possibility of ecological redemption through the discovery of new lives hiding in the ones we thought we knew.

To explore why visual representations of miniature species (particularly vertebrate ones) fascinate us, I draw inspiration from Susan Stewart's book *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection* (1996). In the Western tradition, she explains, representations of miniatures and giants work as metaphors that mediate human experiences of the world and contribute to formations of self and spacetime. She interprets the affective responses to figures of exaggerated size – whether Lilliputian or Brobdingnagian – as they are depicted in narrative, figurative art, and culture more broadly. I suggest that Westerners have also vested real-life dwarf and giant species with synecdochic significance. Imagery of disproportionate creatures invokes a history of human intrusion into other species' worlds and speaks of a process of anthropogenic transformation of the planet, particularly diminishment.

The process of downscaling the terrain of species discovery harks back to an earlier age of discovery enabled by the popularization of the microscope. Laura Forsberg explains that the widespread use of microscopes by amateur naturalists in the Victorian period "revealed real, living particles in the crevices of nature" and turned many Europeans into natural history enthusiasts (Forsberg, 2015, p. 640). The microscope offered access to invisibilia, a "scientific fairyland." Its influence on the Victorian imagination was reflected in the shrinkage of folkloric representations of fairies, transforming them from two- or three-foot tall beings into microscopic miniatures (Forsberg, 2015, p. 642). Technologies of invisibilia have become more refined, revealing lives lurking in the crevices of DNA.

What is important here is that this imagery of scale simultaneously conveys how humans situate themselves as species in the world. Visual (as well as written) representations of marvelous minifauna indicate an entire environment that lies outside the photo's frame (or the border of the written text). As we view images of whole, miniature animals juxtaposed against human appendages, we glean the context of planetary damage. While the presence of the human finger or hand implicates humanity in the dangerous state of environmental affairs, the tiny creatures offer seeds of hope amidst the ruination.

In what follows, I take Stewart's insights to the ecological realm to trace accounts of European quests to find disproportionate species in Madagascar. The island has long attracted foreign explorers thanks to its unique biogeography, containing numerous exemplars of insular dwarfism and gigantism. These phenomena have inspired fictional narrative and scientific studies in the last few centuries. Historical texts and folklore indicate that Malagasy people have also been intrigued by the concept of miniaturization.

Since the seventeenth century, natural histories of Madagascar reveal that many of the island's fabled species have eluded discovery, consequently whetting the desire to ferret out concrete evidence of their existence. Species of exaggerated scale have, moreover, contributed to the representation of Madagascar as a "world out of time", in the dual sense of the anachronistic attributes of its wildlife, and its imminent ecological collapse (e.g. Lanting, 1990).

Representations of the Island Rule

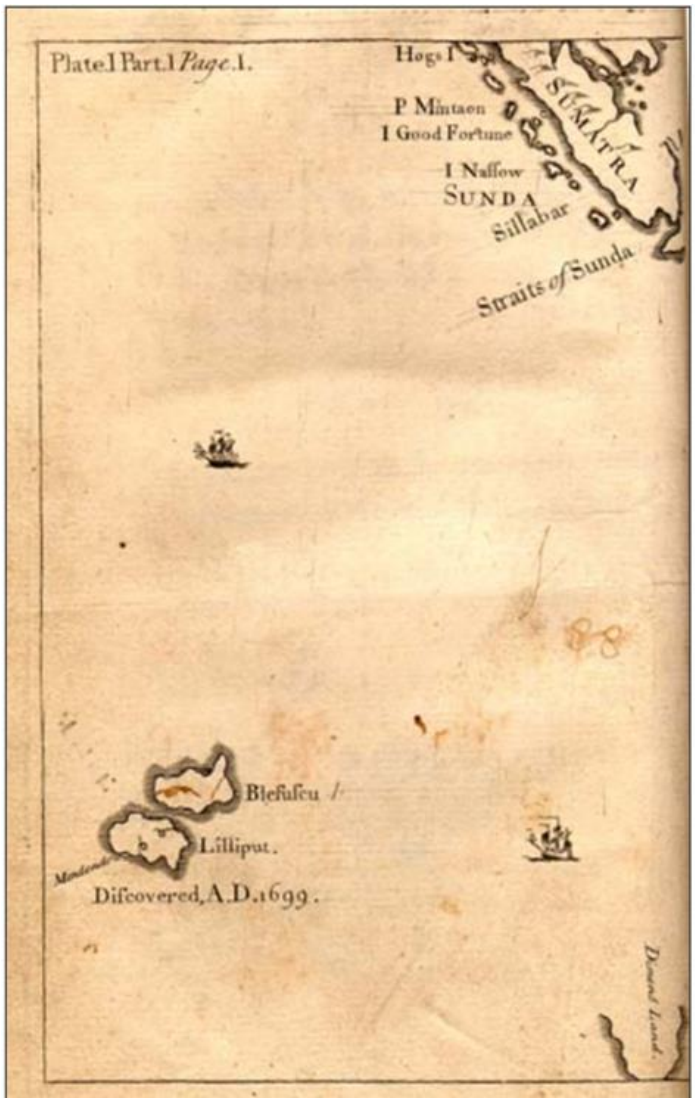
Madagascar has long been a fertile ground for contemplating extinction events due to its high degree of species endemism and endangerment. Islands in general have served the advancement of science by revealing the mechanisms of evolution at smaller scale and, therefore, at a quicker pace. Islands are microcosms of human-ecosystem interactions, illuminating "the sequence of human discovery, landscape modification, and biotic adjustment (or collapse)" (Burney, 1997, p. 438).

Madagascar's biogeography offers a classic example of the "island rule" formulated by J. Bristol Foster in 1963. The concept refers to the unique evolutionary pressures exerted on insular plants and animals. These pressures in Madagascar were enhanced by the oscillation of dryer and wetter periods during the Pleistocene, affecting the dispersion of flora and fauna (Mercier & Wilmé, 2013). The limited terrain and restrictive ecological niches on islands in general result in remarkable growth: small plants take the form of trees, birds and insects lose the ability to fly, and many mainland species evolve as dwarf or giant versions (Lomolino, 2005, p. 1684; Foster, 1964; Carlquist,1974). As a curator of reptiles writes of Madagascar's chameleons: "So bizarre is the appearance of some of them that one might imagine they have developed as evolutionary jokes, beyond all bounds of utility and reasonable variation" (Barnett, 1937, p. 470).

Although scientific study of the island rule only took off in the 1960s, the phenomenon appears to have intrigued European writers as early as the eighteenth century. A

classic literary allusion to the island rule occurs in Jonathan Swift's satire, *Gulliver's Travels*. Published in 1726, the story recounts the adventures of Lemuel Gulliver, whose ship is blown off course north of Madagascar and wrecked on the island of Lilliput, somewhere in the Indian Ocean (see Figure 1 below). Lilliput is inhabited by tiny people. Later in the story, Gulliver alights on the peninsula of Brobdingnag, populated by giants (Transforming the World, n.d.; Swift, 1920 [original 1726]).

Figure 1. Map showing the fictional island of Lilliput relative to Sumatra



Original map, Pt I, *Gulliver's Travels,* 1726. Creator Herman Moll (cartographer). Open domain.

Susan Stewart writes that the Lilliputians, like the earlier figure of Tom Thumb, are always depicted amidst things that establish scale. For example, in *Tom Thumb*, the story of a diminutive boy born to a regular-sized couple, Tom's father's sigh becomes a cyclone, an acorn a cradle. Descriptions of the miniature world foreground context,

and in so doing, slow down the narrative action. When we confront the miniature, "description and depiction" assume the dominant roles. As the reader is immersed in contextual information, space and time are compressed into an instance. The sensory dimensions of the miniature object, its "tactile and olfactory" traits, are reduced to visual depiction, and time essentially freezes. Stewart continues:

> The miniature offers a world clearly limited in space but frozen and thereby both particularized and generalized in time—particularized in that the miniature concentrates upon the single instance and not upon the abstract rule, but generalized in that that instance comes to transcend, to stand for, a spectrum of other instances. (1996, p. 48)

Stewart finds a correspondence between the miniature worlds of fiction and material culture in that the cessation of narrative time through contextualization finds an analogue in engagement with diminutive objects – such as dollhouse interiors. By eclipsing the everyday world, playing with the dollhouse magnifies interiority; reality becomes "anterior and exterior" to the shrunken rooms and furnishings. Furthermore, in the tiny world, time is compressed to scale, and a duration of, say, five minutes in the "real" world may translate to thirty minutes in the tiny one. "Miniature time," she writes, excludes and defers social experience. Its hyper-focus on the visual enables time to transcend "the duration of everyday life in such a way as to create an interior temporality of the subject" (Stewart, 1996, p. 66).

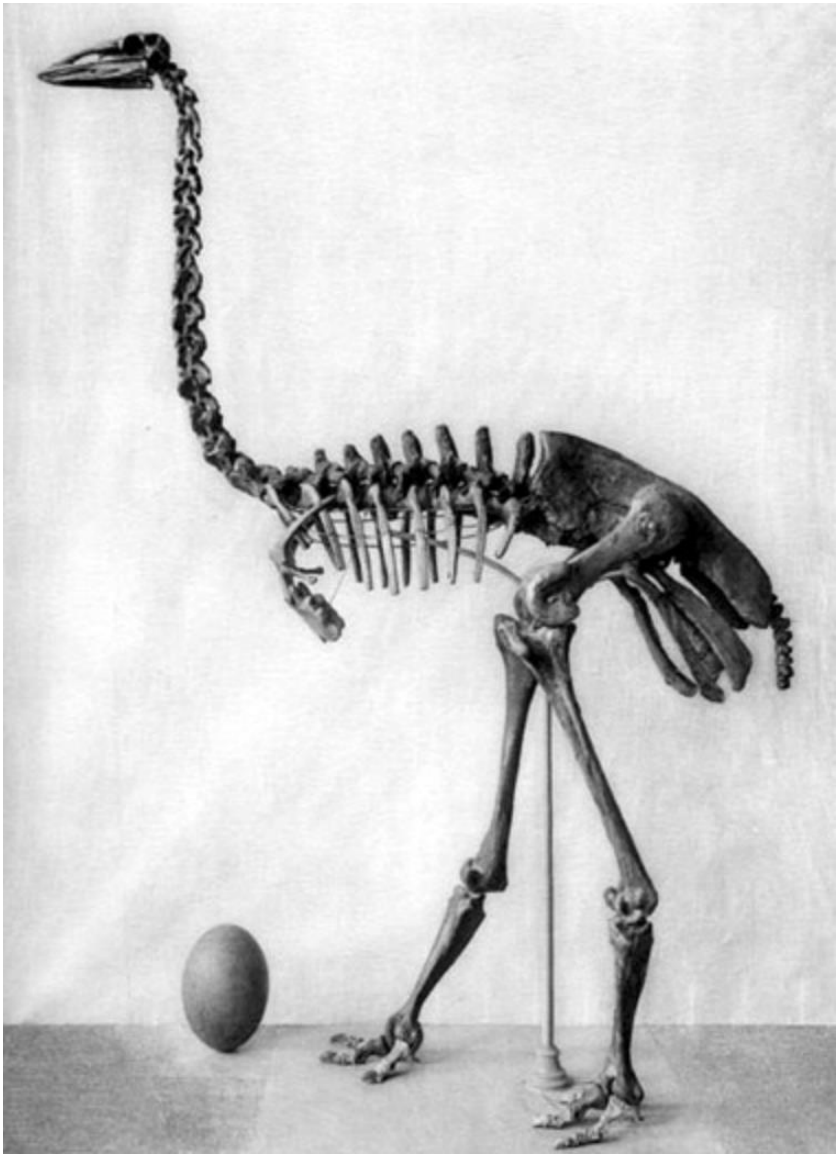
In contrast, fictional giants represent for Stewart the "physical world of disorder and disproportion" (Stewart, 1996, p. 74). In *Gulliver's Travels*, the island of Brobdingnag presents new challenges for Gulliver as the gigantic envelops him. The narrative emphasis is on the giant's movement and its destructive consequences (Stewart, 1996, p. 86).

> Our impulse is to create an environment for the miniature, but such an environment is impossible for the gigantic: instead the gigantic becomes our environment, swallowing us as nature or history swallows us. (Stewart, 1996, p. 89)

It is tempting to imagine the author Jonathan Swift reading earlier accounts of Madagascar as inspiration for Gulliver's Indian Ocean travels. In 1658, Etienne de Flacourt published his *Histoire de la Grande Isle Madagascar*. Flacourt, named Governor of Madagascar by the French East India Company in 1648, is reputed to be one of the few Europeans to have recorded seeing the island's giant elephant bird, *Aepynornis maxiumus*, soon before it was killed off by hunting. The bird features in H.G. Wells' short story, *Aepyornis Island*, published in 1894, in which an English

collector named Butcher travels to Madagascar to find rarities for a buyer in London. He finds several eggs of the long extinct *Aepyornis maximus* (Figure 2). To his shock, one hatches and matures, and Butcher finds himself pitched into a life and death battle with the resurrected giant. It seems an instinctive shot at retribution by a species extirpated by humankind (Wells, 1894; Sodikoff, 2013).

Figure 2. Aepyornis skeleton. *Quaternary of Madagascar* by Monnier, 1913.



Source: Wikipedia public domain

In his *History of the Great Island*, Flacourt explains that Malagasy people wanted him to believe that giant and pygmy people used to roam the island. But after having researched the matter, he learned that these were mere fables (Dubois, 1926, p. 105). The subject of the pygmies prompted speculation among European natural scientists,

not satisfied with Flacourt's conclusion, about whether or not these societies did exist. Among the believers was Philibert Commerson who undertook botanical explorations in Mauritius and Madagascar. After a voyage to Madagascar in 1769, he wrote a letter to his friend, astronomer Lalande, in which he contradicts Flacourt's claim that the pygmies were a mythical race. He claims to have witnessed the people firsthand (Morel, 2012).

The sensational contents of Commerson's letter were translated into English in a 1791 issue of *The Literary Magazine and British Review*. Commerson describes the diminutive people, known as the Quimos (or Kimos or Kimosy), whose smallness pushed them upslope into the high mountains as a means of self-protection from neighboring marauders. He writes that "Flacourt calls these dwarfish people pigmies, and mixes their history with that of a pretended race of giants, who, as the ancient tradition of Madagascar assures us, made formerly very great ravage in the island" (Commerson, 1791, p. 45). While Commerson agrees that the giants were mythical, he insists that the Kimos are real and proceeds to detail their appearance, geographical location (in the southern central highlands), livelihood practices, and social relationships with surrounding groups. Despite an attempt to sound scientific, his descriptions strain credulity:

> The distinguishing characteristics of these small people are, that they are whiter or at least paler in colour, than all the negroes hitherto known; that their arms are so long, that they can stretch their hands below their knees without stooping; and that the women have scarcely any breasts, except when they suckle, and even then, we are assured, the greater part of them are obliged to make use of cow's milk, in order to nourish their young (Commerson, 1791, p. 43).

Commerson was assured that the Kimos women do not menstruate, but rather "at those periods when other women are subject to this evacuation, the skin of their body becomes of a blood-red colour" (1791, p. 46). He later adds that he had "procured a Kimos woman" from a province chief in Mandrary:

> This woman is rather of a tall stature, considering the general measure allowed to the females of her nation, yet her height does not exceed three feet seven inches. She is between thirty and thirty-two years of age; her arms are very long, her hands have a great resemblance to the paws of an ape, and her bosom is as flat as that of the leanest man, without the least appearance of breasts. (Commerson, 1791, p. 46-47).

Subsequently, scholars concluded that Commerson had actually purchased a woman with achondroplasia, or dwarfism.

The early fascination with pygmy humans in Madagascar continued into the nineteenth century, when another account of the Kimos by Andre Coppalle, portrait painter of Malagasy King Radama, asserted their existence based on his conversations with Europeans there. By the nineteenth and early twentieth centuries, numerous European and Malagasy scholars were collecting testimonies of elderly individuals who had witnessed pygmy people, since the so-called Kimos and various branches of this population had ostensibly vanished. Their elusive history blends into that of the Vazimba, a putative indigenous population of relatively small people whose origins have been much debated (Dubois, 1926, pp. 115-119). Tales of small humanoids persist in Madagascar, and in 2000 in the northeast region of Mananara-Nord, I was told of the *kalañoro*, a community of long-haired, fanged dwarfs that once inhabited the forest but died out as the forest disappeared and now exist as a type of spirit. Kalañoro stories are told all over the island, but scholars have never considered them factual. In contrast, generations of scholars aimed to substantiate the Kimos myth through the collection of oral histories. This methodology has also been used to investigate several faunal species presented in Flacourt's book. Presumed to have become extinct after Flacourt published his findings, certain species mysteriously survived in Malagasy oral tradition until the twentieth century.

American paleobiologist David Burney and Malagasy archaeologist Ramilisonina (1998) carried out ethnographic research with elders in a western coastal village in 1995. They collected accounts of an animal called *kilopilopitsofy* ("floppy ears"). One had been sighted as late as 1976, lending oral evidence of the possibility of a sole survivor pygmy hippopotamus at that time. They also collected an eye-witness account of a large lemur species, called *kidoky*, which was spotted around 1952 and compared in size to a seven-year-old child. First-hand witnesses and their testimonies of cryptic extinct megafauna appear to have also vanished.

While it is often assumed that humans rapidly overhunted the island's giant species, as well as the pygmy hippo, a recent discovery challenges this view. In 2020, fossilized bones of the giant sloth lemur were found in a cave alongside a painting on the cave wall depicting this species, believed to have disappeared around 1000 years ago (Davis, 2020). The findings suggest the possibility of a giant species overlapping with humans for a longer stretch of time than previously thought.

The knowledge contained in Malagasy people's accounts of last survivors is both ethnographically valuable for its own sake and has the potential to advance science by fleshing out the timelines and localities of faunal extinctions. Following earlier

ethnographers, historians, and biologists seeking out evidence of wondrous animals and societies, Burney and Ramilisonina successfully unearthed tantalizing clues about dwarf and giant species hidden in clandestine niches and, eventually, human memory.

'Cryptic' Kinds

Tales of strange animals have long compelled researchers in Madagascar to sift evidence from oral tradition and to differentiate cryptozoological from cryptic species. The latter term, germane for actually-existing minifauna, has several meanings.

One entry for "cryptic" in the Oxford English Dictionary, and the meaning of its most common usage, is "something enigmatic or hidden; a secret, a mystery", reminding us of cryptic clues. As we move into Zoology, the word primarily denotes camouflage: "Of markings, coloration, behaviour, etc.: serving for or giving concealment or camouflage; (of an animal) exhibiting such coloration or behaviour." And in Biology, the meaning becomes more technical: "Of a property, form, etc.: present but not manifest or readily detectable; (of species) morphologically similar but unable to hybridize or interbreed; (of a gene) present but not normally expressed. Also: relating to or characterized by such a property, form, etc." (Oxford English Dictionary).

As mentioned above, Europeans' written accounts of unusual species and dwarf and giant societies had lured foreign explorers to Madagascar's shores since the seventeenth century. The accounts were cryptic insofar as they left clues to the probable whereabouts of these elusive societies, but explorers' quests were frustrated by the blur of fact and fable. Ultimately, the Kimos proved to be *cryptozoological*, a mythical society given undue scientific validity for a while, much as a species of wild dog known as the *kelibetratra* ("little big chest") is believed by many people, including a couple of doctors I met, to be the reservoir of canine rabies. Yet the species does not exist.

The zoological and biological meanings of "cryptic" aptly describe the qualities of recently discovered vertebrate dwarf species – for instance, the sizes of miniature frogs, chameleons, and lemurs, as well as their coloration, makes them difficult for the human eye to see. Outwardly indistinguishable dwarf species that are taxonomically separated via technology comprise the third category of "cryptic." Although the mode of discovery marks an historical turning point, the general public viewership has no way to perceive in an image whether a species is wild-caught or lab-unveiled. Increasingly, the two modes of discovery go hand-in-hand. Yet the technology-assisted boom in species discovery shapes contemporary "mass extinction" discourse by counterbalancing the perception of cataclysmic loss. We are pulled inward, celebrating signs of renewal emerging from miniscule contexts.

Earlier iterations of extinction discourse deemed the loss of indigenous lifeways and endemic species a sad but necessary casualty of technological progress. However, by the 1960s, the problem of extinction acquired the status of crisis. Marit Ruge Bjærke writes that

> the new idea of an ongoing mass extinction showed the problem of species extinctions to be even more dramatic than before. The sixth extinction was of a global nature, both when considered in space and in time. (Bjærke, 2011, p. 130)

“Mass extinction” is defined as a phenomenon where extinction rates exceed speciation rates to the point where over seventy-five percent of species die out within two million years or less (a brief interval, geologically-speaking) (Barnosky et al., 2011). Within this desolate context, species discoveries represent hopeful events that offset the immensity of the ecological threat. Representations of newly found miniature species help to minimize the void of life by reducing the scale of our focus. This magnification of the tiny has the potential to slow down the perceived tempo of species loss and to temporarily blot out the anterior reality of habitat loss and global warming.

A few examples of the two intertwined modes of species discovery follow. One mode refers to the discovery of cryptic minifauna that are wild-caught, “out in the world,” a difficult feat given their tininess or camouflage. The other mode refers to species discovered “in the lab,” where Linnean taxonomic methods are ceding way to DNA analysis and electron scanning, particularly useful for microscopic and miniature fauna.

The first example is the discovery of two new species of mouse lemur in 2005 by a team of German and Malagasy scientists. They named one after renowned field biologist Steve Goodman (Figure 3). The lemur's scientific name is *Microcebus lehilahytsara* – "lehilahytsara" is Malagasy for "good man." The discovery was not at the moment of species capture, but in the “unexpected revelation” of the new species through DNA comparison (BBC News, 2015; Mongabay, 2005).

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Figure 3. Goodman's mouse lemur (Microcebus lehilahytsara).

Source: https://www.eurekalert.org/news-releases/741671. Photograph by Robert Zingg.

Second, in March 2019, Mark Scherz, an evolutionary biologist at the University of Potsdam, published a study describing several "astronomically small" species of frog, given the genus name *Mini*. The species were *Mini mum*, *Mini ature*, and *Mini scule* (Donahue, 2019, p. 1). The author of the National Geographic article, Michelle Donahue, draws on metaphors of scale that invoke the drab surroundings of a modern office. The smallest of these micro-frogs, *Mini mum*, is the size of a "standard staple," she writes, and the largest, the length of a "microSD card" (Figure 4). All the cryptic Minis were discovered in leaf litter and grasses of Madagascar's eastern forests, but their unique species identities were not revealed until the scientists analyzed snippets of their DNA and used microtomography (high definition 3-D scanning) to discern structural differences from other species.

Figure 4. *Mini mum gen. et sp. nov. in life and its habitat in Manombo Special Reserve*.

Source: Scherz et al., 2019.

Third, in February 2021, a Malagasy and German expedition team discovered a male and a female *Brookesia nana*, a previously unknown subspecies of chameleon. Two mitochondrial gene fragments were analyzed to compare to other Brookesia species. Most miniature chameleons in Madagascar inhabit very small ranges, predominantly in two locations in the north. Their limited ranges and tiny sizes mean that they are notoriously difficult to find, as well as to differentiate from similar species, which explains why they had largely been overlooked until now. The scientists involved note that the forest habitat at lower elevations had been "completely eradicated" and cattle husbandry and swidden agriculture were eroding the forest at higher altitudes, including the type locality of *B. nana* (Glaw et al., 2021; Meiri et al., 2018).

A reporter likened the size of *Brookesia nana* to a "sunflower seed," making them slightly smaller than *Brookesia micra* (Figure 5) discovered in Madagascar in 2012 (Guardian, 2021). The comparison of chameleon to seed suggests its generative potential, a new life emerging from the depleted soil. The miniature chameleons have also been genetically analysed.

Figure 5. ***Brookesia micra*** **sp. n. from Nosy Hara, northern Madagascar. Juvenile on fingertip.**

Source: Glaw et al., 2012.

Species discoveries that rely on the decryption of DNA and microtomography help reshape phylogenies and systematics. In contrast to the earlier days when discovery involved capturing wild animals and applying Linnean taxonomic method to name them, DNA barcoding resolves human fallibility. A short DNA sequence is read from a genetic sample and recorded in a public database, which allows for its comparison against all available genetic samples.

The technology has effected a change in scientists' ecological perspective from "species-based" to "gene-based." Stefan Caddy-Ratalic and Andrew Lowe explain that this shift more accurately reflects the genetic fluidity of ecosystems. DNA analysis, as well as the use of a scanning transmission electron microscopy (STEM) that yields three-dimensional renderings of small species' structures, offer more "objective" data compared to the taxonomic opinions of individual scientists (Caddy-Retalic & Lowe, 2012; van den Bos et al., 2018). Thanks to these technologies, micro- and mini-fauna are proliferating, despite the erosion, destruction, and warming of their natural habitats. By downscaling the adventure of species-hunting to the atomic level, DNA analysis and microtomography have opened up new exploratory terrains and opportunities for scientists. New technology enables us to see novel life that would otherwise remain inaccessible, much as the "greenhouse effect" appears to us now an unobservable fact "characterised by 'nonlocality'" and apprehended through the "numbers, graphs, or texts by which climate change becomes a defined object" (Kverndokk & Eriksen, 2021, p. 6). Miniature species are contextualized in a forest of genomes. Humanity, as well as the liveliness of the animal, recede from the frame along with the moral self-reflection that such framing demands.

I have suggested that online images of recently discovered miniature species compel us to imagine not only our individual histories but also the evolutionary and ethnological histories of particular terrains. For Westerners, the framing of a miniature animal on a human digit also conveys a history of our species. The clipped or jagged nail, the scruffy or manicured cuticle of the (usually) White finger, encapsulate impactful histories of European enchantment with insular and cryptic wildlife. While the fingers may impart gentleness, the photographs of scale also implicate human handiwork in mass extinction and climate change. They nurture the impulse to take refuge in the slowed-down time and fertile world of the miniature, while out here at human scale, the dregs of our history have become an all-consuming environment.

References

Barnett, B. (1937). Kangaroos and Chameleons. *The Field,* February 27, 470.

Barnosky, A.D., Matzke, N., Tomiya, S., Wogan, G.O.U., Swartz, B., Quental, T.B., Marshall, C., McGuire, J.L., Lindsey, E.L., Maguire, K.C., Mersey, B., & Ferrer, E.A. (2011). Has the Earth's Sixth Mass Extinction Already Arrived? *Nature 471*, 51–57. https://doi.org/10.1038/nature09678

BBC News. (2005). New Lemurs Found in Madagascar. Tuesday, 9 August, http://news.bbc.co.uk/2/hi/science/nature/4135670.stm

Brantlinger, P. (2003). *Dark Vanishings: Discourse on the Extinction of Primitive Races, 1800-1930*. Cornell University Press.

Burney, D. A. (1997). Tropical Islands as Paleoecological Laboratories: Gauging the Consequences of Human Arrival. *Human Ecology 25*(3), 437-457. https://doi.org/10.1023/A:1021823610090

Burney, D. A. & Ramilisonina. (1998). The Kilopilopitsofy, Kidoky, and Bokyboky: Accounts of Strange Animals from Belo-sur-mer, Madagascar, and the Megafaunal 'Extinction Window.' *American Anthropologist, 100*(4), 957-966. https://doi.org/10.1525/aa.1998.100.4.957

Bjærke, M.R. (2021). The sixth extinction: Naming time in a new way. In Kverndokk, K. Bjærke, M.R. & Eriksen, A. (Eds.). *Climate Change Temporalities: Explorations in Vernacular, Popular, and Scientific Discourse* (pp. 125-140). Routledge. https://doi.org/10.4324/9781003037415-12

Caddy-Retalic, S. & Lowe, A. (2012). DNA barcoding: a better way to discover species. *The Conversation*, March 4. https://theconversation.com/dna-barcoding-a-better-way-to-discover-species-4933

Cahill, A.E., Aiello-Lammens, M.E., Fisher-Reid, M.C., Hua, X., Karanewsky, C.J., Ryu, H.Y., Sbeglia, G.C., Spagnola, F., Waldron, J.B., Warsi, O., & Wiens, J.J. (2013). How does climate change cause extinction? *Proceedings of the Royal Society B: Biological Sciences 280*: 20121890. https://doi.org/10.1098/rspb.2012.1890

Carlquist, S. (1974). *Island Biology.* Columbia University Press. https://doi.org/10.5962/bhl.title.63768

Commerson, P. (1791). Account of the Quimos, a race of Pigmies, found in the island of Madagascar. The *Literary Magazine and British Review* 7: 43-47.

Davis, J. (2020). Only known drawing of extinct giant sloth lemur found in cave." *Natural History Museum, Science News*, June 28, https://www.nhm.ac.uk/discover/news/2020/june/only-known-drawing-of-extinct-giant-sloth-lemur-found-in-cave.html

DelPero, M. (2014). The Red Island and the Seven Dwarfs: Body Size Reduction in Cheirogaleidae. *Journal of Biogeography, 41*(10), 1833-1847. https://doi.org/10.1111/jbi.12327

Donahue, M. Z. (2019). New staple-size frog is one of the tiniest ever discovered. *National Geographic*, March 27.

Dubois, R.P.H.M. (1926). Les origines des Malgaches. *Anthropos* 21 (1/2), 72-126. Published by: Nomos Verlagsgesellschaft.

Dunham, A.E., Erhart M.E., & Wright, P.C. (2011). Global climate cycles and cyclones: consequences for rainfall patterns and lemur reproduction in southeastern Madagascar. *Global Change Biology* 17, 219–227. https://doi: 10.1111/j.1365-2486.2010.02205.x

Flacourt, E. de (1661). *Histoire de la Grande Ile Madagascar*. Paris: Nicolas Oudot. Digital publication: https://gallica.bnf.fr/ark:/12148/bpt6k1047463.image.f2.

Forsberg, L. (2015). Nature's Invisibilia: The Victorian microscope and the miniature fairy. *Victorian Studies 57*(4): 638-666. https://doi.org/10.2979/victorianstudies.57.4.03

Foster, J.B. (1964). "Evolution of mammals on islands." *Nature, 202*, 234-235. https://doi.org/10.1038/202234a0

Glaw, F., Köhler, J., Townsend, T.M., Vences, M. (2012). Rivaling the World's Smallest Reptiles: Discovery of miniaturized and microendemic new species of leaf chameleons (*Brookesia*) from Northern Madagascar. *PLoS ONE* 7(2): e31314. https://doi.org/10.1371/journal.pone.0031314

Glaw, F., Köhler, J., Hawlitschek, O., Ratsoavina, F.M., Rakotoarison, AA., Scherz, M. & Vences, M. (2021). Extreme miniaturization of a new amniote vertebrate and insights into the evolution of genital size in chameleons. *Scientific Reports 11,* **(**2522), https://doi.org/10.1038/s41598-020-80955-1

Greenfield, P. (2020). Counting the Species: How DNA barcoding is rewriting the Book of Life. *The Guardian*, October 7. https://www.theguardian.com/environment/2020/oct/07/counting-the-species-how-dna-barcoding-is-rewriting-the-book-of-life-aoe

Guardian, The. (2021). Seed-sized chameleon found in Madagascar may be world's tiniest reptile. February 5. https://www.theguardian.com/environment/2021/feb/05/seed-sized-chameleon-madagascar-world-tiniest-reptile.

Hannah, L., Dave, R., Lowry, P. P., Andelman, S., Andrianarisata, M., Andriamaro, L., Cameron, A., Hijmans, R., Kremen, C., Mackinnon, J., Randrianasolo, H. H., Andriambololonera, S., Razafimpahanana, A., Randriamahazo, H., Randrianarisoa, J., Razafinjatovo, P., Raxworthy, C., Schatz, G. E., Tadross, M., & Wilmé, L. (2008). Climate change adaptation for conservation in Madagascar. *Biology letters*, *4*(5), 590–594. https://doi.org/10.1098/rsbl.2008.0270

Kverndokk, K. & Eriksen, A. (2021.) Climate change temporalities Narratives, genres, and tropes. In Kverndokk, K. Bjærke, M.R. & Eriksen, A. (Eds.). *Climate Change Temporalities: Explorations in Vernacular, Popular, and Scientific Discourse* (pp. 3-14). Routledge https://doi.org/10.4324/9781003037415

Landecker, H. (2016). Antibiotic Resistance and the Biology of History. *Body & Society, 22*(4), 19–52. https://doi.org/10.1177/1357034X14561341

Lanting, F. (1990). *Madagascar: World Out of Time.* Photographs by Frans Lanting. Introduction by Gerald Durrell; Essays by Allison Jolly and John Mack. The University of Michigan. Aperture; First Edition.

Lomolino, M. V. (2005). Body size evolution in insular vertebrates: generality of the island rule. *Journal of Biogeography*, *32*, 1683-1699.

Lomolino, M. V., Vaan der Greer, A. A., Lyras, G. A.; Palombo, M. R., Sax, D.F., & Rozzi, R. (2013). Of mice and mammoths: Generality and antiquity of the island rule. *Journal of Biogeography*, *40*(8), 1427-1439. https://doi.org/10.1111/jbi.12096

Lorimer, Ja. 2015: *Wildlife in the Anthropocene: Conservation After Nature*. University of Minnesota Press. https://doi.org/10.5749/minnesota/9780816681075.001.0001

Meiri, S., Bauer, A.M., Allison, A., Castro-Herrera, F., Chirio, L., Colli, G., Das, I., Doan, T., Glaw, F., Grismer, L.L., Hoogmoed, M., Kraus, F., LeBreton, M., Meirte, D., Nagy, Z.T., Noguiera, C.C., Oliver, P., Pauwels, O.S.G., Pincheira-Donoso, D., Shea, G., Sindaco, R., Tallowin, O.J.S., Torres-Carvajal, O., Trape, J-F., Uetz, P., Wagner, P., Wang, Y., Ziegler, T., & Roll, U. (2018). Extinct, obscure or imaginary: The lizard species with the smallest ranges. *Diversity and Distributions*, *24,* 262–273. https://doi.org/10.1111/ddi.12678

Mercier, J-L, & Wilmé, L. (2013). The Eco-Geo-Clim model: Explaining Madagascar's endemism. *Madagascar Conservation & Development*, *8*(2), 63-68. https://doi.org/10.4314/mcd.v8i2.3

Mongabay. (2005). Two tiny lemur species discovered in Madagascar. August 9. https://news.mongabay.com/2005/08/two-tiny-lemur-species-discovered-in-madagascar/

Morel, J-P. (2012). Philibert Commerson à Madagascar et à Bourbon." Copie sur pierre-poivre.fr, décembre 2012, 16 pp.

Oxford English Dictionary. https://www-oed-com.proxy.libraries.rutgers.edu/view/Entry/45358?redirectedFrom=cryptic#eid

Raxworthy, C.J, Pearson, R.G, Rabibisoa, N., Rakotondrazafy, A.M, Ramanamanjato, J-B., Raselimanana, A.P., Wu, S., Nussbaum, R.A., & Stone, D.A. (2008). Extinction vulnerability of tropical montane endemism from warming and upslope displacement: a preliminary appraisal for the highest massif in Madagascar. *Global Change Biology*, *14* (8), 1703-1720. https://doi.org/10.1111/j.1365-2486.2008.01596.x

Scherz, M.D., Hutter, C.R., Rakotoarison, A., Riemann, J.C., Rödel, M-O, Ndriantsoa, S.H., et al. (2019). Morphological and ecological convergence at the lower size limit for vertebrates highlighted by five new miniaturised microhylid frog species from three different Madagascan genera. *PLoS ONE* 14(3): e0213314. https://doi.org/10.1371/journal.pone.0213314

Sodikoff, G.M. (2013). The Time of Living Dead Species: Extinction Debt and Futurity in Madagascar. In P. Y. Paik & M. Wiesner-Hanks (Eds.) *Debt: Ethics, the Environment, and the Economy* (pp. 140-163). 21st Century Studies Series. Indiana University Press.

Stewart, S. (1993). *On Longing: Narratives of the Miniature, the Gigantic, the Souvenir, the Collection.* Duke University Press. https://doi.org/10.1215/9780822378563

Swift, J. (1920 [1726]). *Gulliver's Travels*. Edited with an Introduction by Ernest Bernbaum. Harcourt, Brace and Company.

Tadross, M., Randriamarolaza, L., Rabefitia, Z. & Zheng, K. Y. (2008). *Climate change in Madagascar; recent past and future*, pp. 18. Washington, DC: World Bank.

Transforming the World. (n.d.). The Island Rule: How Insular Populations Become Dwarfs and Giants. Digital publication. http://whitenies.blogspot.com/2015/10/the-island-rule-how-insular-populations.html. Accessed June 10, 2021.

Van den Bos, K.H.W., Altantzis, T., De Backer, A., Van Aert, S., & Bals, S. (2018). Recent breakthroughs in scanning transmission electron microscopy of small species. *Advances in Physics: X*, (3)1, 815-833. https://doi.org/10.1080/23746149.2018.1480420

Vieilledent, G., Gardi, O., Grinand, C., Burren, C., Andriamanjato, M., Camara, C., Gardner, C.J., Glass, L., Andriambolantsoa, R., Ratsimba, H.R., Gond, V., & Rakotoarijaona, J-R. (2016). Bioclimatic envelope models predict a decrease in tropical forest carbon stocks with climate change in Madagascar. *Journal of Ecology*, 104, 703–715. https://doi.org/10.1111/1365-2745.12548

Wright P.C. (2006). Considering climate change effects in lemur ecology and conservation. In Gould, L. & Sauther, M.L. (Eds.) *Lemurs: Ecology and Adaptation*, pp. 387–404. Springer. https://doi.org/10.1007/978-0-387-34586-4_18

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People of the Mangrove: A Lens into Socioecological Interactions in the Ecuadorian Black Pacific

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Abstract

Adapted to survive in the interface between land and sea, mangroves are highly vulnerable to the impacts of climate change. They are also highly adaptive to the imagination, with the theme of the mangrove being differently signified across texts, languages and communities as a place to find death in the tropics, a nature tourism destination, endangered environment, magical wood, refuge for maroons and revolutionaries, and source of livelihoods. The cultural malleability of mangroves mirrors their natural adaptability. It also echoes the varied and rhizomatic identities and imaginaries of the peoples of the tropical Americas. Relevant cultural texts produced in the region support experimentations with mangroves as a raw material susceptible to being worked in order to explain diverse realities. In order to highlight the relevance and malleability of mangrove ecosystems, this paper explores resignifications of socioecological interactions at the Ecological Mangrove Reserve Cayapas-Mataje in Ecuador through the lens of photographer Felipe Jácome. Jácome's photographic essay *Los Reyes del Manglar* [The Kings of the Mangrove] provides rich material to study the rhizomatic evolution of the theme of the mangrove and its entanglements with people's lives, cultures and histories. I argue that cultural representations of mangroves can go beyond their metaphorical recovery to support environmental justice. This essay is also informed by extant research on the important role of mangrove forests for carbon sequestration and climate change mitigation, which locates these socioecological systems at the centre of people's struggle for climate justice.

Keywords: environmental justice, climate change, mangroves, rhizomes, socioecology, Black Pacific, Ecuador

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Mangroves of the Black Pacific

In the Americas, mangroves stretch from the US, Mexico and the Bermuda Islands in the north, to Peru and Brazil in the south (Spalding et al., 2010). They are present in the Pacific, Atlantic and Caribbean coasts. Even though a comprehensive history of mangroves in the Americas is still pending, an analysis of their fragmented depiction in artistic, historical and scientific texts can contribute to deepening an understanding of their past, present and future roles within both the natural and cultural realms of the region. In mangrove forests, land, freshwater, and the sea converge, which makes these ecosystems simultaneously highly productive, adaptable, and vulnerable to climate change. Climate change is disrupting natural adaptive processes and the acceleration of sea level rise, increased storminess, altered precipitation regimes, and increasing temperature, is impacting mangroves significantly at regional scales (see Ward et al., 2016). Nevertheless, mangrove socioecological systems are not mere victims of global warming, they are also important self-regulating components of the environment and can store three to four times more carbon than land forests (Nyanga, 2020). Carbon sequestration describes the process of capturing carbon dioxide — the most produced greenhouse gas causing climate change — from the atmosphere and storing it. Mangroves' key role in biologic carbon sequestration heightens the importance of their conservation in the context of global climate change and the acceleration of risks for lowlands and people whose vulnerability has been increased by sociohistorical inequalities (IPCC, 2018). Although archaeozoological evidence shows that mangroves were already used by the inhabitants of the Americas for at least 700 hundred years before European colonisation (Wake & Key, 2013), the negative impact of colonial processes of expropriation and slavery on these and other interrelated ecosystems was immense. Post-conquest deforestation prevailed until the late 20th century and, despite increasingly positive attitudes towards conservation from the 1990s onwards, mangroves have continued to decline (Duke et al., 2007; see also Friess et al., 2020). Although global warming may expand the geographic limits of mangroves to temperate regions, sea level rise, extreme weather events, commercial exploitation, and pollution are threatening their existence (Feller et al., 2017). Coastal construction, aquaculture and vegetable carbon production have been amongst the main exploitation practices leading to an estimated loss of 'over a quarter' of the world's original mangrove woods (Duke et al., 2014, p. 1).

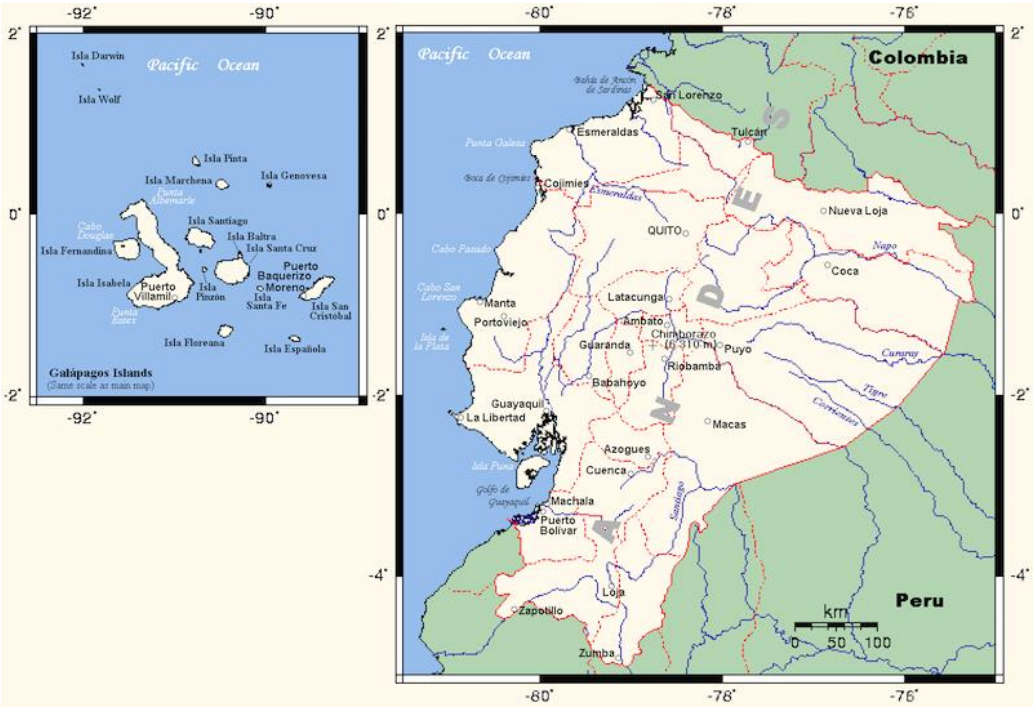
As early as the 16th century, Gonzalo Fernández de Oviedo y Valdés (1526/1851) translated the abundant tropical nature of the Americas into a baroque inventory of commodities in his *Historia general y natural de las Indias* [*General and Natural History of the Indies*]. A chapter entitled *Mangle* (mangrove): "About the so-called mangrove and its fruits and the gains and utilities that can be obtained from it", focuses on the

uses of the "strange" and "admirable" tree (1526/1851, p. 338). For Fernández de Oviedo, mangroves were mainly a source of wood for construction and bark for leather tanning. His description of their fruit as a "brutal food, for savages" (1526/1851, p. 139), highlights its uselessness for European palates and becomes a discourse tool for othering the first inhabitants of the Caribbean, who considered the fruit beneficial and therefore occasionally ate it despite its bitter taste. The fact that this colonial text is the first known written account of human relationships with mangroves in the Americas, is another example of the knowledge loss provoked by colonisation. Fernández de Oviedo's account is written from a colonial lens over a backdrop of violence that led to the almost total extermination of the indigenous cultures of the Antilles. This text's focus on the utility and commercial value of the environment of the Americas is aligned with other colonial depictions of what expeditions 'found' – from Christopher Columbus' 1492 journal onwards (see Columbus & las Casas, 1492/2011). The utilitarian approach of these first chronicles of the interactions of European colonisers and settlers with the flora, fauna and peoples of the Americas, reveals the wider extractive agenda that would continue to dominate and shape ideas of usefulness across the Atlantic. Between the 16th and late 20th century, "for more than 400 years, colonial and republican use of mangrove wood was governed only by profit maximisation, causing widespread deforestation" (López-Angarita et al., 2016, pp. 154–155). Within this continuous sociohistorical framework, shaped by colonisation, slavery, and post-colonial nation-making, the usefulness of mangroves as sources of wood, vegetable coal, and land for agriculture and construction, has eclipsed both their ecological and cultural significance.

The mangroves of the Black Pacific provide significant lessons on the intertwined ecological and cultural impacts of colonisation. Most of the inhabitants of the Cayapas-Mataje mangrove reserve are black Ecuadorians who have been historically marginalised within both nation-making processes and historical accounts. This mangrove reserve is part of the geo-cultural space that Heidi Feldman (2006) has defined as the Black Pacific, which encompasses less visible histories of enslaved Africans forced to continue their voyage beyond the spaces included in Paul Gilroy's *Black Atlantic* (1993). Feldman locates the Black Pacific in Peru and, tentatively, other areas along the east coast of the Americas, including territories in Ecuador, Bolivia, Chile and Colombia, where the history of slavery and the cultural expressions of African descent are often neglected. As she states: "Within the Black Pacific, where ideologies of whitening and *mestizaje* shade the racial imagination (and where larger indigenous populations typically survive), people of African descent are often socially invisible and diasporic identity is sometimes dormant" (Feldman, 2006, pp. 7–8). By approaching the Cayapas-Mataje mangrove as a "racialized landscape" (Leal, 2018, p. 10), this essay brings together decolonial and ecocritical perspectives to look at a socioecological system shaped as much by intertwined racist and extractivist colonial

agendas as by its peoples' resilience. Although originally used to describe the socioecologial realities of the Colombian Black Pacific, a region naturally connected to the Cayapas-Mataje reserve in north Ecuador's Black Pacific (see Figure 1), Claudia Leal's "notion of racialized landscapes can have wide use beyond the Pacific lowlands, for it draws attention to the connections between humanized environments and racialized social groups past and present" (Leal, 2018, p. 228). As highlighted by Leal, most opportunities for black people to have access to land in the Americas arose far from, or on the peripheries, of the plantation world; for this reason, the study of the Pacific lowlands provides insights about an insufficiently investigated post-emancipation black peasantry that achieved a certain degree of autonomy. This new information is valuable also for understanding similar processes in portions of land that, after being deemed useless by colonisers and settlers in the Caribbean, were occupied by racialised communities (see Chwala, 2019). In this light, I propose to look at the territory of the Cayapas-Mataje mangrove in Ecuador as a cultural extension of the Caribbean region — and vice versa — to study how the histories of both the Black Pacific and the Black Atlantic converge. It is from these positionings of simultaneous marginality and empowerment that the subjects of the photographic essay *Los Reyes del Manglar* [The Kings of the Mangrove] — translated into English as *Lord of the Mangrove* — interrogate Felipe Jácome's camera. In the following sections I discuss how, through these images, the photographed subjects reaffirm their position as key actors within the Cayapas-Mataje mangrove ecosystem.

Figure 1. ***Map of Ecuador***



Source: Kelisi Wikipedia, Creative Commons

I propose a thematic critical analysis that engages with regional critical theory and histories to highlight the important role of cultural analyses, literature and visual arts, particularly photography, in addressing environmental justice challenges. Ultimately, my analysis echoes the call to consider the mangrove swamp as one of the "sites of environmental opposition to the plantocracy" (DeLoughrey et al., 2005, p. 3). This is aligned with my preference for either the terms 'Plantationocene' and 'Capitalocene' over 'Anthropocene' to name the current era (Altvater et al., 2016; Haraway, 2016). Unlike the latter, both 'Plantationocene' and 'Capitalocene' acknowledge the role of the plantation system and capitalism in shaping the unequal role of human communities in causing environmental degradation and suffering its consequences. In the same vein, my analysis is aligned with Rob Nixon's (2011) critique of the "slow violence" of narratives that reduce complex environmental issues to simplified accounts that "percolate through science, legislation, policy and civic action [and] can drown out rather than open up possibilities for novel social-ecological engagements" (Lidström et al., 2016, p.1). This article also draws upon research that highlights the potential of the social and human sciences within transdisciplinary perspectives to improve our understanding of socioecological dynamics across temporal and spatial scales (Singh et al., 2013). The following sections are informed by Marisol de la Cadena's (2015) call to rethink difference in ontological terms in order to explore how shared modes of human understanding interpret different yet entangled worlds. Her collaboration with Andean peasants Mariano and Nazario Turpo exemplifies the importance of learning from subaltern people and their environments, an invitation that is also present in Felipe Jácome's photo essay. Furthermore, *Los Reyes del Manglar* [The Kings of the Mangrove] provides rich material to study the rhizomatic and relational evolution of the theme of the mangrove in the Americas.[1]

Structure of an Imaginary of Relations

Caribbean philosopher and writer Édouard Glissant's first-hand interactions with the mangrove of the city of Lamentin in Martinique, informed his invitation to recycle Deleuze and Guattari's (1987) metaphor of the rhizome to understand a "Poetics of Relation, in which each and every identity is extended through a relationship with the Other" (Glissant, 1997, p. 11). As a network spreading through the air, the sea and the land, the mangrove sets the ground for Glissant's archipelagic thinking of both the

[1] Felipe Jácome is an Ecuadorian photographer whose work focuses on issues of human mobility and human rights. In 2010 he won the Young Reporter Competition of the International Committee of the Red Cross (ICRC). Jácome's photos have appeared in publications such as *National Geographic*, *The Washington Post*, *Foreign Policy Magazine*, *The Guardian*, *Vice Magazine* and CNN, and have been exhibited in London, Geneva, Amsterdam, Quito, La Paz and Washington DC. In 2019 Jácome was selected by World Press Photo for the 6x6 Global Talent Award for South America. Jácome's (2019a) photo essay combines portrait and landscape photography and is available online with captions in English.

relations between the islands and the peoples of the Caribbean, and their exchanges with other places, cultures, identities and poetics or imaginaries. In this light, mangroves' rhizomatic roots and branches have become tools to explain the relational nature of the cultures of the Caribbean. The region is the nucleus of the tropical Americas and the cultural, social and ecological context that Antonio Benítez Rojo described as a "meta-archipelagic text, a confluence of marine flowings that connects the Niger with the Mississippi, the China Sea with the Orinoco, the Parthenon with a fried food stand in an alley in Paramaribo" (Benítez Rojo, 1996, p. 16). This poetics of relations in which identities evolve through a relationship with the other is well illustrated by the intricated interdependencies and evolutive processes that have shaped mangrove ecosystems, as well as by the cosmogonies of peoples who are a constitutive part of the socioecological systems of the Americas. Lydia Cabrera's (1954) ethnographic studies and conversations with Afro-Cuban religious leaders in the book *El Monte* [The Forest] collected some of the learnings of Afro-descendant communities, in which a relational poetics between humans and the rest of nature is passed down to the new generations through oral stories, chants, prayers, ceremonies and offerings. In this relationship, the forest is a sacred place and harvesting is done with the permission of the *orishas* (deities of the Yoruba people); trees are the sacred home of gods and a dwelling place for spirits; herbs cure human ailments, clean the house and the body; and fruits and flowers are some of the most common offerings. Diverse Afro-American religious practices across countries and regions in the Americas today share an origin in the (re)creation of a new Afro-American world by slaves and their descendants, who used both memory and nature as their main materials. These processes of cultural change of people who were deprived from their ancestral material culture — as studied by Rómulo Lachatañeré (1939) in Cuba, Manuel Zapata Olivella (1989) in Colombia, and John Antón-Sánchez (2014) in Ecuador — have a common focus on repositioning humans in a new world. This means that Afro-descendants have been relocating themselves within their environment, where the physical and spiritual realms coexist (see Montgomery, 2019). Both the unity and the diversity of Afro-American religious practices, in which plants are central, exemplify the rhizomatic evolution of cultures in the region in binding relationship with their diverse landscapes.

As acknowledged by philosopher Michael Marder in his introduction to the book *Plant-Thinking*, "non-Western and feminist philosophies contain a wealth of venerable traditions much more attuned to the floral world than any author or mainstream current in the history of Western thought" (2013, p. 6). When anthropologist Eduardo Kohn (2013) develops the claim that all living beings, and not only humans, think, and proposes an anthropology beyond the human, he is echoing the beliefs and the knowledge of black and indigenous peoples of the Americas, whose diverse and complex cosmogonies converge in the idea that the human and the divine exist mainly

in their relationship with, and as part of, nature. One of the main contributions of Kohn's work to the task of decolonising academia's relationship with the environment and with subaltern epistemologies, is that it scholarly articulates what its subjects of study know and do. Kohn's translation of subaltern epistemologies into the language of academia to propose a new anthropology beyond the human, is both a successful decolonising endeavour and a symptom of the colonially imposed hierarchies in which ancestral knowledge practices still achieve legitimacy mainly through academic discourse. It would be important then to ask who is "we" when Kohn's says that "we are colonized by certain ways of thinking about relationality" (2013, p. 21). Whereas Kohn focuses on how changing "our" approach to key epistemological and ontological questions can reshape "our understanding of relationality and 'the human'" (2013, p. 72), both Anna Tsing (2015) and Rosi Braidotti (2019) send an invitation to explore diverse ways of being human while rejecting the universalist "we". Anna Tsing (2015) takes Kohn's critique of anthropocentrism a step further in her interrogation of the concept of the notion of the Anthropocene, which neglects the different ways in which humans relate to and are part of the environment: "This 'anthropo-' blocks attention to patchy landscapes, multiple temporalities, and shifting assemblages of humans and nonhumans: the very stuff of collaborative survival" (Tsing, 2015, p. 20, see also Tsing et al., 2020). Thinking critically about the environment entails acknowledging that Eurocentric humanism has blind spots and that the concept of the Anthropocene is both universalist and misleading. This is aligned with Rosi Braidotti's invitation to assess the human as "materially embedded and embodied, differential, affective and relational" (2019, p. 11). Understanding the human as materially embedded requires taking distance from abstract universalisms and looking closer at the material context of subjects and their relations. In the same vein, assessing the human as embodied calls for paying attention to people's lived experiences. Viewing the subject as differential implies acknowledging the value of subaltern epistemologies, which contradict the dominant Anthropocene discourse. It is equally important embracing Braidotti's emphasis on affectivity and relationality as ways of seeing people as part of the complex networks of all that lives and both suffers and resists commodification. Assessing the human as affective and relational connects centrally with the ethics of care that guide the eco-territorial, ecofeminist and intersectional struggles in Latin America (see Gabiola, 2020). For Braidotti, as for many indigenous and Afro-descendant peoples in the Americas, humans are in practice "eco-sophical entities", part of webs of connections, negotiation, and collaboration "within the nature-culture continuum" (Braidotti, 2019, p. 47; see also Latour, 2009). As she notes, "the posthuman predicament, with its upheavals and challenges, gives the opportunity to activate these alternative views of the subject against the dominant vision" (Braidotti, 2019, p. 12). Relatedly, Michael Marder (2013) envisions a method drawn from the plants themselves and a discourse rooted in them. These theories and epistemologies, along with Marder's method, are guides to my reading of Felipe Jácome's rhizomatic

immersion in the Cayapas-Mataje mangrove reserve and the questions to ask of his photo essay.

Could mangroves' interdependencies with other ecosystems and their own internal symbiotic relationships provide useful metaphors to support a poetics of relation that goes beyond humans? Could these and other ecosystems teach diverse human groups to forge more reciprocal socioecological interactions? Studies show that "together, mangroves, corals and seagrasses provide more protection services to both humans and non-humans than any individual habitat or any combination of two habitats" (Guannel, et al., 2016, p. 1). Their entangled existences illustrate a poetics of relation that continues to be negatively impacted by some humans' activity, regardless of ongoing conservation initiatives such as those under the umbrella of global agreements, conventions and programs such as the Convention on Biological Diversity, Convention of the International Trade of Endangered Species (CITES), Convention on Migratory Species, Ramsar Convention, UNESCO Man and Biosphere Program, UNESCO World Heritage Convention, United Nations Framework Convention on Climate Change (UNFCCC), and the Kyoto Protocol. Extant research highlights the imperative of integrating a cultural perspective within existing ecological and economic mangrove management approaches in order to achieve an integrated management of ecosystem services that truly benefits people (see Queiroz et al., 2017). This approach is complemented by recent studies on ecosystems 'disservices', understood as negative interactions between humans and ecosystems, which show how contemporary perceptions and uses of mangroves are influenced by sociohistorical processes that have disconnected people from their environment (Friess, 2016, p. 183).

The cultural uses of mangroves also show the diversity of theoretical perspectives that are mediated by the realities of the tropical Americas across diverse territories, cultures and languages. Intellectuals from the region have been engaging with mangroves not only through critical theory, as highlighted earlier, but also through forms of narrative fiction that reveal how these ecosystems re-signify relationality in the region. For instance, Eric Prieto (2003) has compared and contrasted uses of the trope of the mangrove swamp in the work of francophone writers Maryse Condé and Édouard Glissant. For Glissant (1981), who focused on the swampy area at the mouth of the Lézarde river in his novel *La Lézarde* [*The Lezarde*], the delta marks the point where human intervention aids the river in its descent to the city. Whereas Glissant highlights humankind's place within nature and outlines almost symbiotic human-nature relations, Condé (1995) emphasises the density of the swamp in *Traversée de la Mangrove* [*Crossing the Mangrove*] as a metaphor for the complexity of Caribbean societies – which interrogates the ability of cultural theorists and writers to fully grasp the intricate sociohistorical processes, imaginaries, and identities of the region. As

Prieto notes of Condé: "The lesson she has drawn from the Caribbean environment involves not the deterministic pressures of natural selection, but rather the irrepressible diversity of nature" (Prieto, 2003, p. 149). Condé's thick mangrove swamp traps people and forces them to interrogate their realities and identities: "You don't cross a mangrove. You'd spike yourself on the roots of the mangrove trees. You'd be sucked down and suffocated by the brackish mud" (Condé, 1995, p. 158).

In the Hispanic Caribbean, more specifically in Cuba, a similar swamp ensnares the characters of Antonio Benítez Rojo's (1997) short story '*Desde el manglar*' [From the Mangrove], translated into English as 'A view from the Mangrove'. The awareness of the connections between what Benítez Rojo (1996, p. 16) calls the "rhythms" of a polyrhythmic and polyphonic region is also present in his short story, where spaces and characters from across the circum-Atlantic are both connected and disconnected by a mangrove located in Cuba during the Second War of Independence (1895–1898). As the story develops, the mangrove facilitates the overlapping of memories, possible futures, and the present. The mangrove of Benítez Rojo's short story not only re-signifies the main character's personal journey and social relationships; it is also constantly repurposed as either a place to die or to survive, as inhospitable environment, or refuge providing livelihoods away from the horrors of war. Far from offering a conclusive depiction of this ecosystem, the author shows its symbolic malleability, as well as its ability to forge relations of solidarity and new imaginaries; the "vital alternative communities" provided by apparently harsh environments that became places of resistance in the colonial Americas: mountain ranges, provision grounds, caves, and mangrove swamps (DeLoughrey et al., 2005, p. 3). The relevance and malleability of mangrove ecosystems in the imaginaries of the Americas also allow for the resignifications of contemporary sociological interactions within the Ecological Mangrove Reserve Cayapas-Mataje in Ecuador. Moving from literature, we now peer through the lens of photographer Felipe Jácome.

People of the Mangrove are Watching

The Ecological Mangrove Reserve Cayapas-Mataje harbours a resilient mangrove ecosystem that provides livelihoods for some 6000 people. Whereas fishing and cockle gathering benefit an 85% of households, the 3000 ha of shrimp farming developed from the 1960s onwards employs 0.6% of the population and has led to the destruction of cockle-gathering grounds. A study by Patricia Ocampo-Thomason (2006) shows how local people have been responding to these changes by creating new management strategies, from the creation of mangrove defence groups to the implementation of a stewardship practice they call '*custodias*' [guardians] (Ocampo-Thomason, 2006, p. 140). This form of permit guarantees the allocation of mangrove

areas to the communities for their traditional use and management, including cockle gathering, and forbids extractivist practices such as intensive logging and charcoal production. Macarena Gómez-Barris (2017) has brought together social ecologies and decolonial perspectives to explore *extractivism* in the Americas. The term is used to name extractive capitalism, the economic system based on expropriation and intensive exploitation of environments through colonial and neo-colonial projects. Similarly, Maristella Svampa (2019) has called attention to neo-extractivist practices that focus on new resources, ecosystems or territories, the exploitation of which was considered less profitable in the past. As a result of sustained extractivist and neo-extractivist practices, mangrove gatherers in Ecuador live in poverty, with deficient public infrastructure and services, limited access to education, and informal labor patterns in which women and children play an important role.

And the entwined environment of children in these practices is not lost in Felipe Jácome's photo essay. Whereas the title in Spanish, *Los Reyes del Manglar*, reveals an emphasis on the people's collective management of their land, the use of the singular in the English translation, *Lord of the Mangrove*, as displayed in Jácome's (2019a) website, calls for an analogy with the novel *Lord of the Flies* by Nobel Prize in Literature awardee William Golding (1954). Although both Golding's and Jácome's works focus on the children's management of the environment, the ethos of the novel and of the images differ deeply. Published in 1954, when the British Empire moved between retreating and formulating new ways of imperial reassertion (see Lynn, 2005), *Lord of the Flies* takes its "image of 'savagery' from the classic cultural misrepresentation (Empire-evolved) of white civilisation and black/African barbarity" (Hawlin, 1995, p. 126). A possible reading of the novel reveals that it neglects subaltern forms of civilisation, governance, knowledge and culture, and reproduces the imperial view which justifies conquest through both the principle of *terra nullius* and the racist idea that only the adult white male, the conqueror, educated within Western civilisation, knows how to manage societies and environments. It is important to recall that European colonialism used the doctrine of *terra nullius* [empty land] to justify its abolishment of the rights of stateless and first peoples over their land (see Blaser et al., 2013, p. 156). Contrastingly, Jácome's images show the key role of children and teenagers of African descent in shaping socioecological interactions in the Cayapas-Mataje mangrove, the ecosystem of which they are part. While facing the audience with social and environmental injustice by showing the vulnerability of the subjects, the photographic essay also captures how the resilience of these marginalised youth enables them to become the real kings of their own land:

> After several years coming back to the mangrove and observing the work, I was seeing a world, a kingdom; I started seeing those children as the owners of this world, which is a world apart, an isolated world,

> an unknown world. That is why the photo essay took the name of *The Kings of the Mangrove* (Jácome, 2019b, n.p.).[2]

Rather than trying to draw conclusions regarding the true motivations behind the translation of the title *Los Reyes del Manglar* [The Kings of the Mangrove] as *Lord of the Mangrove*, my analysis focuses on the meanings and resignifications that emerge through the space these different titles open up – whether mere coincidence, neglect of the imperialist tints of *Lord of the Flies*, or the intentional decolonising appropriation and resignification of Golding's text. Whatever the case may be, the use of this English title in the wider context I described earlier, can be read as transatlantic appropriation that turns an imperial cultural product into a communication tool of the subaltern through an act of cultural translation, in the sense described by cultural theorist Julio Ortega (2006).

In what can be read as an act of support to decolonising appropriations, the photos were exhibited in the Cayapas-Mataje mangrove reserve between 27 July and 20 August 2017. Around 400 persons, including *concheros* [shell pickers] who were working in the area, as well as neighbours from the communities of Tambillo, Pampanal de Bolívar, Palma Real and San Lorenzo, saw the exhibition (Jácome, 2018). Printed on six-meter-long canvasses, the images hanged from the mangrove trees, enabling a juxtaposition of self-reflecting realities. Felipe Jácome, who has described photography as a dialogue between the photographer and the subject, conceived the exhibition as "an homage to the trees, the ecosystem and the people who work there" (Jácome, 2019b, n.p.). By exhibiting the pictures inside the mangrove, Jácome transcended the act of approaching Afro-descendants as subjects in a sociohistorical context where black people have been treated as objects and commodities. The photographer goes one step further and facilitates their role as spectators. The dual experience of "observed subject" and of "subject observing" opens the possibility for the photographed individuals to participate in the "animation" of the images through their experience as spectators (Barthes, 1980, p. 10).

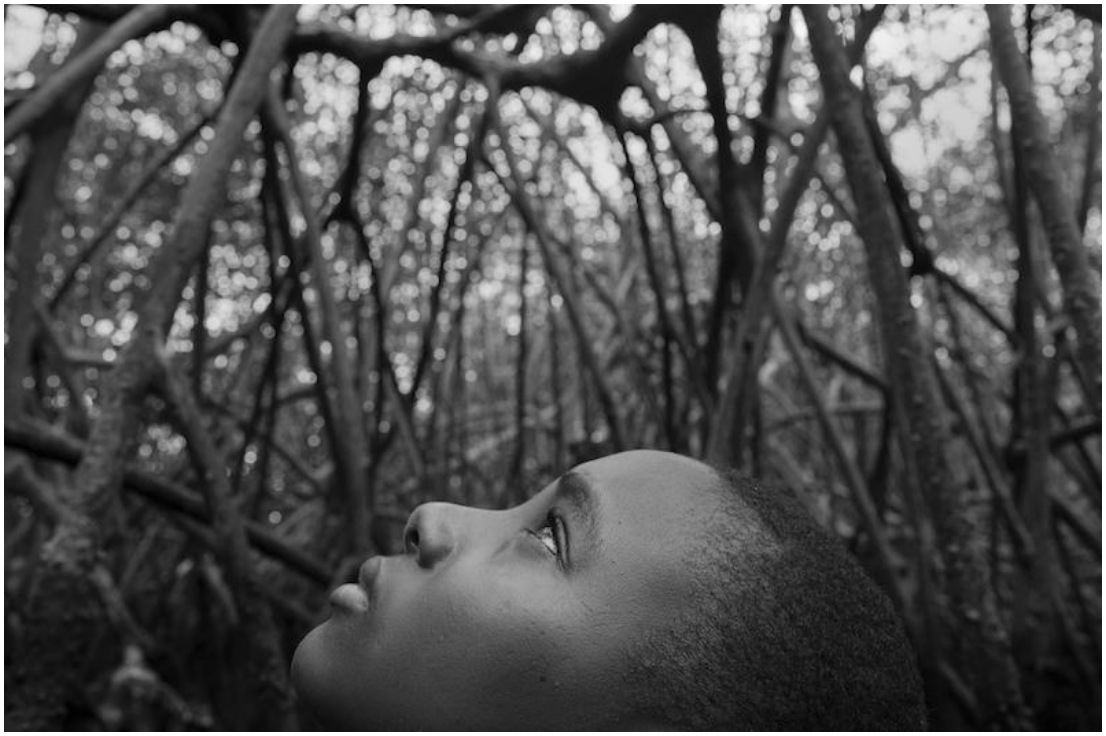
Although an analysis of Jácome's gaze should not neglect the racist implications of the act of photographing the Other in postcolonial contexts (see Bate, 1993), it should also highlight his attempt to make the voice of the subaltern present in the photo essay by bringing the images back to the mangrove and its people. This is also supported by the brief stories that caption the images on the online exhibition, which reveal a work of ethnographic research (Jácome, 2019a). The written descriptions provide relevant information about the personal stories behind the portraits. It is important to bear in mind that portraiture occupies a critical space within the visual landscape of

[2] All translations by the author of this essay unless otherwise stated.

environmental justice; its ability to offer a personalised and affective framework makes it one of the most used genres on photographic websites and exhibitions dealing with environmental injustices (Gabrielson, 2019). However, portrait's long-standing colonial history, the "ambiguities generated by colonial encounters" and the "functions of the portrait within these encounters", should not be ignored (Dell, 2020, p. 192). It is precisely portrait's ambiguity and instability, emphasised by colonial history and postcolonial re-configurations, that makes it susceptible to being re-appropriated by postcolonial subjects. In this light, reflecting on how marginalised subjects participate in, or resist portrayal, could contribute to the ongoing decolonisation of photography (see Dell, 2020).

In Jácome's work low-angle shots highlight the size of the mangrove trees of the Cayapas-Mataje reserve, which are amongst the tallest in the world (Spalding, et al., 2010). One of the photos shows child Cesar Castro in the foreground looking up at the mangrove. He is the only one of eight siblings to pick shells to contribute to the family's income. The zoom on Cesar's face leaves his neck out of the framing and focuses on his features, emphasising the relationship between the child and the mangrove that both surrounds him and reflects on his eyes, in a multiplier photographic effect that accentuates the role of the photographed subject as animator.

Figure 2. ***Child Cesar Castro***



Photograph: Felipe Jácome 2019 https://www.felipejacome.com/lord-of-the-mangrove

Other images capture the agile movements of the children between the mangrove trees of Cayapas-Mataje, but the animation of the photo essay is completed by the stories behind the portraits: Elisa Castillo lives with her aunt and stopped going to school at age 15 to contribute to her household's economy; Soraya Mesa has 9 brothers, 6 of whom pick shells; the kids often come back from picking shells earlier than the adults in order to make it to afternoon school. The photo essay's text explains that although community leaders and local authorities encourage children to stay in school, many drop out of classes to become full-time *concheros*.

Nevertheless, the children's relationship with the landscape is not limited to work activities; the mangrove is also a natural playground where they swim and catch small animals after work hours, which are determined by the tides. By capturing these other scenes, Jácome joins environmental justice advocates who conceptualise the environment as the place where people live, work, and play (see Gabrielson, 2019). The photographic essay also apprehends the children's close relationship with the fauna of the region: child Efraín Montaño uses two black shells to mimic a second pair of eyes or glasses; Gabriel Benítez holds up a poisonous toadfish, a species that lives in the mud and whose sting can cause infection and deformity in the hands of the cockle gatherers. The ecological reserve Cayapas-Mataje hosts a rich fauna, including 173 bird species, some 53 species of mammals, American crocodiles and caimans and diverse types of fish and invertebrates (Spalding et al., 2010).

Although Jácome's photographs focus on the children and the trees of the Cayapas-Mataje reserve, some images also show the relationships of care between women and their sons and daughters: Rosa Quiñones, who has seven children, bathes her son Efraín; in another image, she carries two of her sons to school during the monthly high tide that floods the communities for several days; another photo shows a baby sleeping in the mother's lap while she plays Bingo with a neighbour; a woman dances with a baby at a community bar. The photo essay captures some of the many daily-lived moments when these children and women embody and practice an ethics of care. This *ética del cuidado* [ethics of care] is a core component of the alternative paradigms that guide Latin American environmentalism, including: *Sumak Kawsay* (Quechua language) and *Suma Qamaña* (Aymara language) [partially translatable as Good Living or Living Well]; *derechos de la naturaleza* [rights of nature]; and *bienes comunes* [common goods]. In Latin America and the Caribbean, these principles draw mainly upon knowledge practices of indigenous and Afro-descendant peoples. The common discourse of these perspectives expresses ecological, economic, religious, aesthetic, and wider cultural values that subject economic growth to the conservation of all forms of life, the defence of ecosystems, and the maintenance and regeneration of its life cycles (see Svampa, 2019). In Jácome's photo essay, this ethics of care is embodied as much in the mother's body carrying her children to school through a

flooded community, as in the children's hands, which harvest and provide for their siblings, parents and communities. Without neglecting the ethical implications of child labour, the images show children's agency and sense of responsibility towards others. In a recent publication that draws upon indigenous environmental martyr Berta Cáceres' activism, Irune Gabiola (2020) discusses how decolonising affect offers new approaches that dismantle colonially constructed emotions and feelings, while contesting the dichotomy between rationality and irrationality, mind and body. *Los Reyes del Manglar* contributes to the task of showing the importance of affect in decolonising human relations with all that lives – which is at the core of the principles guiding eco-territorial, ecofeminist and intersectional struggles in Latin America.

The few images including adults show mainly women, and only two men appear, in the background of one photograph, within the entire photo essay. Unlike the photos that portray the children and teenagers with the trees, these images of adults focus on life in the villages, where the lack of infrastructure and services becomes evident. In the reserve, communities are generally small, the smaller the community, the scarcer the facilities and services (Ocampo-Thomason, 2006). The adult population has been forced to negotiate its limited alternatives with the shrimp-farming industry. Patricia Ocampo-Thomason (2006) has studied how, with the expansion of the ponds, locals lost access to certain mangrove areas, wild fisheries started to become scarce, and the population gained more awareness of the negative socioecological impacts of this type of farming. Well-organised grassroots initiatives started in the 1970s linked to Organización Campesina Musine y Esmeraldas OCAME [Peasant Organisation of Musine and Esmeraldas]. The combination of peasant-oriented modes of participation with theology-of-liberation activism led to the creation of Fundación de Defensa Ecológica FUNDECOL [Fundation for Ecological Defence] in 1991. FUNDECOL gave its support to Afro-descendant organisations' claims for inclusion of the northern mangrove ecosystems within the National Protected Areas System and created the Coordinadora Nacional para la Defensa del Ecosistema Manglar C-CONDEM [National Coordinating Committee for the Defence of Mangrove Ecosystem]. Recent developments of this struggle led to the creation of the PAEM [Ancestral Peoples of the Mangrove Ecosystem]. According to Sara Latorre (2013, pp. 67–68), one of the movement's main achievements is that "it has made visible the existence of human populations living within a fragile and threatened ecosystem who wish to continue to live there". A recent study on the impact of shrimp ponds on mangrove blue carbon stocks in Ecuador emphasises the important role that mangrove forests play in mitigating climate change and calls attention to the threats of aquaculture expansion in the region (Merecí-Guamán, et al., 2021, p. 816). Due to both their natural role in carbon sequestration and their cultural meanings as racialised landscapes, the protection of mangrove ecosystems in Ecuador is an important climate justice challenge. A climate justice perspective calls for acknowledging how industrialisation

processes directly linked to colonialism, slavery, and extractivism, have shaped both global warming and inequality (see Jafry, 2018). Supporting climate justice also entails acknowledging the need for "global cognitive justice", by learning from the "epistemologies from the South, a set of…ways of knowing developed by social groups as part of their resistance against the systemic injustices and oppressions caused by capitalism, colonialism and patriarchy" (de Sousa-Santos, 2014, p. x).

People's socioenvironmental struggle in the Cayapas-Mataje reserve is part of the eco-territorial turn in Latin America, which is developing collective frameworks for mobilisation and implementing more reciprocal socioecological interactions and perspectives in support of climate justice. In this context, Felipe Jácome's photos support the task of bringing forth marginalised ecosystems and its people's knowledge practices. His photographic essay is an example of the visual politics of environmental justice in a context where photography had a prominent role as a cultural and political medium to support colonial and racial marginalisation, at least until the first decades of the 20th century (see Hight & Sampson, 2013). Jácome challenges racialised modes of viewing that depict low-income people and people of colour "either as passive victims or as somehow deserving of the degraded environments in which they live" (Gabrielson, 2019, p. 47).

Entwining Territories, Temporalities, and People

The trope or theme of the mangrove has been differently signified across texts, languages, and communities as a place to find death in the tropics, nature tourism destination, endangered environment, magical wood, refuge for maroons and revolutionaries and source of livelihoods. This cultural malleability of mangroves mirrors their natural adaptability and echoes the varied and rhizomatic identities and imaginaries of the peoples entangled in the network of histories, roots, seashores, deltas, archipelagos and mainland of the tropical and subtropical territories of the Americas. The plasticity of these ecosystems opens possibilities for articulating new meanings that locate them at the centre of more reciprocal socioecological interactions. Relevant cultural texts produced from within the region support these experimentations with mangroves as a raw material susceptible to being worked and reworked in order to explain the varied and unstable realities of the Americas.

Although extant research on plant art highlights how creators around the globe are bringing forward plant's agency (Macpherson, 2018; Ryan, 2015), more decolonising efforts are required to acknowledge the experiential knowledge of those communities and individuals whose reciprocal and equitable relations with plants have been neglected by Eurocentric humanism and anthropocentrism. As criticised by curator and author Giovanni Aloi, dominant plant art, art history, and criticism, stills favours

the symbolic and the human, even when they try to outline new eco-agendas: “plants can be featured in art, but only through a symbolic register, that makes them meaningful to human affairs. To gain our attention, they have to ventriloquize the transcendental side of the existential” (Aloi, 2018, p. 69). Plant’s centrality and agency in the cultural practices of Afro-descendant communities in the Americas contrast with the marginalisation of the vegetable world within Western philosophical discourses (see Marder, 2013). In this light, subaltern peoples’ thought, arts, and practices provide valuable empirical information to build a new ‘decolonial ecology’ (see Ferdinand, 2019). Exploring the arts, lived experiences, and knowledges, of peoples in the margins — as those living in racialised landscapes of Latin America and the Caribbean — can contribute to transcend human-plant relationships in which plants are seen as mere objects of either conservation or aesthetic projects. By capturing vulnerable, yet resilient, trees and humans, and telling their stories both on the web and in the mangrove, Jácome’s photo essay proposes a dialogue between photographer, subjects, and plants, which contributes to wider resignifications of the mangrove ecosystems of the Americas as places of resistance and opportunity.

Jácome’s work also invites us to look at the subaltern epistemologies of the people, and particularly the children, of the Cayapas-Mataje reserve, who bring forward the importance of mangrove ecosystems through their own lived experiences. These types of immersion in vulnerable socioecological systems are vital for artistic endeavours aiming to support environmental justice, even more so in contexts where climate change accelerates the epistemic violence of imperialist economies, laws, and cultures which both produce and reproduce social realities in which policymakers ignore subaltern voices (see Spivak, 1988). Looking at the histories and cultural representations of the landscape, the vegetation, the fauna, and the humans that live in and shape mangrove ecosystems can contribute to communicating the ecological and cultural relevance of these socioecological systems, which continue to be neglected by extractivist and neo-extractivist agendas. Similarly, establishing a dialogue between readings of the Caribbean and the Black Pacific, which share similar tropical ecosystems and histories, could contribute to articulating new forms of ‘translocal’ collaboration and solidarity for climate justice (Routledge, 2011, p. 385). The rhizomatic growth of the branches and roots of the mangrove can be understood as a living metaphor of the relations not only between the territories, temporalities and peoples that have differentially shaped and suffered environmental degradation, but also between the communities leading the eco-territorial turn and standing for the rights of nature. Nevertheless, seeing beyond metaphor entails focusing on the life of the mangrove, including the people who work and play in this socioecological system. Their knowledge and values are key to addressing social and environmental justice challenges.

In a global context where conservation initiatives continue to be informed by the dominant Anthropocene discourse's universalist perspective that perceives all humans as the cause of climate change and as a threat to ecosystems, shining a lens on the alternative role of communities as stewards of the environment becomes of vital importance. This is precisely what Felipe Jácome and his photographed subjects do by walking the viewer through the mangrove and showing trees' and people's intertwined daily lives. The shell-pickers' management of their environment in the Cayapas-Mataje reserve contradicts an inefficient and unjust "fortress conservation" approach that, as highlighted by geographer Judith Carney, "ignores an alternative environmental history where traditional user groups have in fact acted as environmental stewards" (Leal et al., 2020, p. 396). By making visible the relations of care between trees and people as a continuum that persists through to the youngest generation, *Los Reyes del Manglar* shows that it is imperative that conservation initiatives are informed by postcolonial and decolonial environmental histories. Most importantly, these images tell us that the faces, the voices, and the gazes reflecting the past, present, and future of the mangrove also need to be protected, seen, and listened to.

References

Aloi, G. (2018). Trees: Upside-Down, Inside-Out, and Moving. In G. Aloi (Ed.), *Why Look at Plants?: The Botanical Emergence in Contemporary Art*, (pp. 69–80). BRILL. https://doi.org/10.1163/9789004375253_007

Altvater, E., Crist, E.C., Haraway, D.J., Hartley, D., Parenti, C., & McBrien, J. (2016). *Anthropocene or Capitalocene?: Nature, History, and the Crisis of Capitalism*. PM Press.

Antón-Sánchez, J. (2014). *Religiosidad afroecuatoriana*. Instituto Nacional de Patrimonio Cultural.

Barthes, R. (1980). *Camera Lucida*. Vintage Books.

Bate, D. (1993). Photography and the colonial vision. *Third Text*, *7*(22), 81–91. https://doi.org/10.1080/09528829308576403

Benítez Rojo, A. (1996). *The Repeating Island: The Caribbean and the Postmodern Perspective*. Duke University Press, 1996. https://doi.org/10.1215/9780822382058

Benítez Rojo, A. (1997). Desde el mangler. *Revista Cuba Encuentro*, spring/summer, 97–109.

Blaser, M., McRae, G., & Feit, H. (2013). *In the Way of Development: Indigenous Peoples, Life Projects and Globalization*. Zed Books Ltd.

Braidotti, R. (2019). *Posthuman Knowledge*. Wiley.

Cabrera, L. (1954). *El monte, igbo finda, ewe orisha, vititinfinda: Notas sobre las religiones, la magia, las supersticiones y el folklore de los negros criollos y del pueblo de Cuba*. Ediciones C. R.

Cadena, M. de la. (2015). *Earth Beings: Ecologies of Practice across Andean Worlds*. Duke University Press.

Chwala, G. L. (2019). Ruins of Empire: Decolonial Queer Ecologies in Cliff's No Telephone to Heaven. *eTropic: Electronic Journal of Studies in the Tropics*, *18*(1), 141-156. https://doi.org/10.25120/etropic.18.1.2019.3690

Columbus, C. & las Casas, B. (1492/2011) *The Log of Christopher Columbus' First Voyage to America in the Year 1492*. Martino Fine Books.

Condé, M. (1995). *Crossing the Mangrove* (Trans. R. Philcox). Anchor Books, 1995.

Deleuze, G. & Guattari, F. (1987). *A Thousand Plateaus: Capitalism and Schizophrenia*. University of Minnesota Press.

Dell, S. (2020). *The Portrait and the Colonial Imaginary*. Leuven University Press.

DeLoughrey, E., Gosson, R., & Handley, G.B. (2005). Introduction. In E. DeLoughrey, R. Gosson, G.B. Handley (Eds.), *Caribbean Literature and the Environment: Between Nature and Culture*, (pp. 1–32). University of Virginia Press.

Duke, N. C., Meynecke, J-O., Dittmann, S., Ellison, A. M., Anger, K., Berger, U., Cannicci, S., Diele, K., Ewel, K. C., Field, C. D., Koedam, N., Lee, S. Y., Marchand, C., Nordhaus, I., & Dahdouh-Guebas, F. (2007). A World Without Mangroves? *Science*, *317*(5834), 41b–42b. https://doi.org/10.1126/science.317.5834.41b

Duke, N., Nagelkerken, I., Agardy, T., Wells, S., & Van Lavieren, H. (2014). *The importance of mangroves to people: A call to action* [Report]. United Nations Environment Programme World Conservation Monitoring Centre (UNEP-WCMC).

Feldman, H. (2006). *Black Rhythms of Peru: Reviving African Musical Heritage in the Black Pacific*. Wesleyan University Press.

Feller, I. C., Friess, D. A., Krauss, K. W., & Lewis, R. R. (2017). The state of the world's mangroves in the 21st century under climate change. *Hydrobiologia*, *803*(1), 1–12. https://doi.org/10.1007/s10750-017-3331-z

Ferdinand, M. (2019). *Une écologie décoloniale: Penser l'écologie depuis le monde caribéen*. Éditions du Seuil. https://doi.org/10.3917/pro.375.0052

Fernández de Oviedo, G. (1526/1851). *Historia General y Natural de Las Indias, Islas y Tierra-Firme Del Mar Océano. Primera Parte*. Vol. 1. Madrid: Imprenta de la Real Academia de la Historia. https://doi.org/10.5962/bhl.title.17775

Friess, D. A. (2016). Ecosystem Services and Disservices of Mangrove Forests: Insights from Historical Colonial Observations. *Forests*, *7*(9), 183. https://doi.org/10.3390/f7090183

Friess, D. A. et al. (2020). Mangroves give cause for conservation optimism, for now. *Current Biology*, *30*(4), R153–R154. https://doi.org/10.1016/j.cub.2019.12.054

Gabiola, I. (2020). *Affect, Ecofeminism, and Intersectional Struggles in Latin America: A Tribute to Berta Cáceres*. Peter Lang Publishing, Incorporated.

Gabrielson, T. (2019). The Visual Politics of Environmental Justice. *Environmental Humanities*, *11*(1), 27–51. https://doi.org/10.1215/22011919-7349396

Gilroy, P. (1993). *The Black Atlantic: Modernity and Double Consciousness*. Verso.

Glissant, É. (1997). *Poetics of Relation*. University of Michigan Press. https://doi.org/10.3998/mpub.10257

Glissant, É. (1981). *La Lézarde: roman*. Editions du Seuil.

Golding, W. (1954). *Lord of the Flies*. Riverhead Books.

Gómez-Barris, M. (2017). *The Extractive Zone: Social Ecologies and Decolonial Perspectives*. Duke University Press. https://doi.org/10.1215/9780822372561

Guannel, G., Arkema, K., Ruggiero, P., & Verutes, G. (2016). The Power of Three: Coral Reefs, Seagrasses and Mangroves Protect Coastal Regions and Increase Their Resilience. *PLOS ONE*, *11*(7), 1–22. https://doi.org/10.1371/journal.pone.0158094

Haraway, D.J. (2016). *Staying with the Trouble: Making Kin in the Chthulucene*. Duke University Press. https://doi.org/10.2307/j.ctv11cw25q

Hawlin, S. (1995). The savages in the forest: Decolonising William Golding. *Critical Survey*, *7*(2), 125–135.

Hight, E.M., & Sampson, G.D. (2013). *Colonialist Photography: Imag(in)ing Race and Place*. Routledge. https://doi.org/10.4324/9781315015262

IPCC (2018). *Global Warming of 1.5°C: An IPCC Special Report on the Impacts of Global Warming.* Intergovernmental Panel for Climate Change.

Jácome, F. (2018). La primera exposición fotográfica en medio de un manglar, contada por el propio autor *Vice*, 2018, n.p. https://www.vice.com/es/article/qvxpbb/la-primera-exposicion-fotografica-en-medio-de-un-manglar-contada-por-el-propio-autor

Jácome, F. (2019a). *Lord of the Mangrove Exhibit*, online exhibition (ongoing). https://www.felipejacome.com/lord-of-the-mangrove

Jácome, F. (2019b). Lord of the Mangrove Exhibit, video commentary. https://www.felipejacome.com/lord-of-the-mangroveexhibit.

Jafry, T. (2020). *Routledge Handbook of Climate Justice*. Taylor & Francis.

Kohn, E. (2013). *How Forests Think: Toward an Anthropology Beyond the Human*. University of California Press. https://doi.org/10.1525/california/9780520276109.001.0001

Lachatañeré, R. (1939). El *Sistema Religioso* de los Lucumís y otras Influencias Africanas en Cuba. *Estudios Afrocubanos*, *iii* (1–4)28–84.

Latorre, S. (2013). The Politics of Identification in a Shrimp Conflict in Ecuador: The Political Subject, “Pueblos Ancestrales del Ecosistema Manglar” [Ancestral Peoples of the Mangrove Ecosystem]. *The Journal of Latin American and Caribbean Anthropology*, *18* (1), 67–89. https://doi.org/10.1111/jlca.12003

Latour, B. (2009). *Politics of Nature: How to Bring the Sciences into Democracy*. Harvard University Press.

Leal, C. (2018). *Landscapes of Freedom: Building a Postemancipation Society in the Rainforests of Western Colombia*. University of Arizona Press. https://doi.org/10.2307/j.ctt1zxsmqx

Leal, C., Ausdal, S. V., Miraglia, M. M., & Silva, S. D. e. (2020). Africa and the Americas in the Columbian Exchange: An Interview with Judith Carney. *Historia Ambiental Latinoamericana y Caribeña (HALAC) Revista de La Solcha*, *10*(3), 380–401. https://doi.org/10.32991/2237-2717.2020v10i3.p380-401

Lidström, S., West, S., Katzschner, T., Pérez-Ramos, M. I., & Twidle, H. (2016). Invasive Narratives and the Inverse of Slow Violence: Alien Species in Science and Society. *Environmental Humanities*, *7* (1), 1–40. https://doi.org/10.1215/22011919-3616317

López-Angarita, J., Roberts, C.M., Tilley, A., Hawkins, J.P., & Cooke, R.G. (2016). Mangroves and people: Lessons from a history of use and abuse in four Latin American countries. *Forest Ecology and Management*, *368*, 151–162. https://doi.org/10.1016/j.foreco.2016.03.020

Lynn, M. (2005). *The British Empire in the 1950s: Retreat or Revival?* Palgrave Macmillan UK.

Macpherson, A. (2018). Art, Trees, and the Enchantment of the Anthropocene: Caroline Wendling's White Wood. *Environmental Humanities*, *10*(1), 241–256. https://doi.org/10.1215/22011919-4385552

Marder, M. (2013). *Plant-Thinking: A Philosophy of Vegetal.* Columbia University Press.

Merecí-Guamán, J., Casanoves, F., Delgado-Rodríguez, D., Ochoa, P., & Cifuentes-Jara, M. (2021). Impact of Shrimp Ponds on Mangrove Blue Carbon Stocks in Ecuador. *Forests*, *12*(7), 816. https://doi.org/10.3390/f12070816

Montgomery, E. J. (2019). Gothic 'Voodoo' in Africa and Haiti. *eTropic: Electronic Journal of Studies in the Tropics*, *18*(1), 11-28. https://doi.org/10.25120/etropic.18.1.2019.3666

Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor*. Harvard University Press. https://doi.org/10.4159/harvard.9780674061194

Nyanga, C. (2020). The Role of Mangroves Forests in Decarbonizing the Atmosphere. In M. Bartoli, M. Frediani & L. Rosi (Eds.), *Carbon-Based Material for Environmental Protection and Remediation*, (pp. 153–164). London: INTECHOPEN. https://doi.org/10.5772/intechopen.92249

Ocampo-Thomason, P. (2006). Mangroves, People and Cockles: Impacts of the Shrimp-Farming Industry on Mangrove Communities in Esmeraldas Province, Ecuador. In P. Ocampo-Thomason*, Environment and Livelihoods in Tropical Coastal Zones: Managing Agriculture-Fishery-Aquaculture Conflicts*, (pp. 140–152). CABI. https://doi.org/10.1079/9781845931070.0140

Ortega, J. (2006). *Transatlantic Translations: Dialogues in Latin American Literature*. Reaktion Books.

Prieto, E. (2003). Landscaping identity in contemporary Caribbean literature. In K. Salhi (Ed.), *Francophone Post-Colonial Cultures: Critical Essays*, (pp. 141–52). Lexington Books.

Queiroz, L. de S., Rossi, S., Calvet-Mir, L., Ruiz-Mallén, I., García-Betorz, S., Salvà-Prat, J., & Meireles, A. J. de A. (2017). Neglected ecosystem services: Highlighting the socio-cultural perception of mangroves in decision-making processes. *Ecosystem Services*, *26*, 137–145. https://doi.org/10.1016/j.ecoser.2017.06.013

Routledge, P. (2011). Translocal Climate Justice Solidarities. In J.S. Dryzek, R.B. Norgaard & D. Schlosberg (Eds.), *The Oxford Handbook of Climate Change and Society*, (pp. 384–398). Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199566600.003.0026

Ryan, J. R. (2015). Plant-Art: The Virtual and the Vegetal in Contemporary Performance and Installation Art. *Resilience: A Journal of the Environmental Humanities*, *2*(3), 40. https://doi.org/10.5250/resilience.2.3.0040

Singh, S. J., Haberl, H., Chertow, M., Mirtl, M., & Schmid, M. (Eds.). (2013). *Long Term Socio-Ecological Research: Studies in Society-Nature Interactions Across Spatial and Temporal Scales*. Springer Netherlands. https://doi.org/10.1007/978-94-007-1177-8

Sousa-Santos, B. de (2014). *Epistemologies of the South: Justice Against Epistemicide*. Routledge.

Spalding, M., Kainuma, M., & Collins, L. (2010). *World Atlas of Mangroves*. Earthscan. https://doi.org/10.4324/9781849776608

Spivak, G.C. (1988). Can the subaltern speak? In C. Nelson & L. Grossberg (Eds.), *Marxism and the Interpretation of Culture*, (pp. 271–313). University of Illinois Press. https://doi.org/10.1007/978-1-349-19059-1_20

Svampa, M. (2019). *Neo-extractivism in Latin America: Socio-environmental Conflicts, the Territorial Turn, and New Political Narratives*. Cambridge University Press. https://doi.org/10.1017/9781108752589

Tsing, A. L. (2015). *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins*. Princeton University Press. https://doi.org/10.2307/j.ctvc77bcc

Tsing, A., Deger, J., Saxena, A. K. & Zhou, F. (2021). *Feral Atlas: The More-Than-Human Anthropocene*. Stanford University Press. http://doi.org/10.21627/2020fa

Wake, T. A., & Kay, M. (2013). Archaeological Investigations Provide Late Holocene Baseline Ecological Data for Bocas del Toro, Panama. *Bulletin of Marine Science*, *89* (4), 1015–1035.

Ward, R. D., Friess, D. A., Day, R. H., & Mackenzie, R. A. (2016). Impacts of climate change on mangrove ecosystems: A region by region overview. *Ecosystem Health and Sustainability*, *2*(4), e01211. https://doi.org/10.1002/ehs2.1211

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Rain in the Basilica: Protecting Goa's Bom Jesus from the Ravages of Climate Change

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Abstract

Over the last century, monsoons in Goa have become more intense, with an increase of over 68% in rainfall (Goa State Biodiversity Board, 2019, p. 42). Such effects of climate change are devastating to architectural heritage, especially those structures built using materials like laterite, a weaker stone, vulnerable to rapid deterioration when it is left exposed. This is the precise problem concerning the Basilica of Bom Jesus, a sixteenth century building that is still in use. The monument which houses the relics of St. Francis Xavier is one of the most important cultural icons of Goa, as evidenced by its ongoing use and also its iconic representation in visual culture. While research may be available regarding the effects of climate change and architecture in the tropics generally, little pertains to the specificities of Indo-Portuguese architecture and especially heritage buildings. My article seeks to make an intervention in this regard, focusing on the effects of climate change with regard to the conservation of Bom Jesus. Considering the adverse effects of climate change on built heritage, architectural conservation in Goa cannot be merely about preserving cosmetic appearances, but rather must involve safeguarding monuments against major structural damage.

Keywords: Goa, Climate Change, Monsoon, Architectural Conservation, Basilica of Bom Jesus, St. Francis Xavier, Tropics, Climate Imaginary

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The Basilica of Bom Jesus, a sixteenth century religious building that is still in use, is located in Goa, a tiny coastal state in South Asia bordered by the Arabian Sea. From the time when the relics of St. Francis Xavier (1506–1552) were entombed in Bom Jesus in 1624 (Fonseca, 1878, p. 286), the building became an important pilgrimage site. Goa was, and continues to be, the centre of the Christian world in Asia because of the relics of the famous Jesuit saint. The feast of the saint, celebrated each year on December 3, draws huge gatherings, as does the exposition of his relics that became a decadal event from the mid-nineteenth century onwards.

Although Xavier died in China, it was Goa – capital of the Portuguese Empire in Asia – that received his mortal remains in 1554,[1] which were believed to be miraculously preserved from blemish (Gupta, 2014, p. 27). St. Francis Xavier is the patron saint of Goa, and Goans "share a strong belief that the state is protected from all calamities due to the presence of the saint's relics" in Old Goa (D'Cruz, 2019). That locals have adopted him as their own is evidenced by the title given to him in Concanim,[2] *Goyencho Saib* translating as "Lord of Goa."

Consecrated in 1605 by the Jesuits, the Basilica of Bom Jesus stood intact for more than four centuries, but then in April 2020, a gaping hole appeared in its roof. This caused damage to the church that year, as unseasonal rains soaked the walls and wood of the structure (Team Herald, 2020, para. 4). The current rector of the Basilica, Fr. Patricio Fernandes, raised the alarm, accusing the Archaeological Survey of India (ASI) – the agency responsible for the protection and maintenance of the monument – of "utter neglect…leading to the deterioration of the Basilica and the Shrine of '*Goyencho Saib*,' St. Francis Xavier" (NT Desk, 2020, para 1). Apart from being the tomb of the saint, Bom Jesus – along with churches and convents of Old Goa – was declared a World Heritage Site in 1986 (UNESCO, 1986). Given its long historical and religious importance, and over twenty years of world heritage significance, the question remains why the ASI has been compromising the safety of the building.

This article sets out to address this question. Focusing on the effects of climate change on Bom Jesus, the article necessarily explores the cultural, historical, colonial, political, architectural, and tropical monsoonal factors affecting the Basilica's current deterioration and its future conservation.

[1] The remains first went to the Portuguese colony of Malacca on Peninsula Malaysia and two years later were sent to Goa where they were stored at St. Paul's College in Old Goa until they found their final resting place in the Basilica.

[2] Although written in many scripts including the Roman (or Romi) script, only Kōṅkaṇī written in the Devanagari script became the official language of Goa in 1987. This official designation undermines the popular use of the language in the Romi script (especially by the Catholic community); even during the late Portuguese period in Goa this version of the language – *Concanim* – was in extensive use, including in local newspapers.

Climate Change and South Asia

Over the last century, monsoons in Goa have become more intense, with an increase of over 68% in rainfall (Goa State Biodiversity Board, 2019, p. 42). Such effects of climate change are devastating to architectural heritage, especially those structures built using weaker materials like laterite, a stone which is vulnerable to deterioration – particularly when it is left exposed (Patil & Kasthurba, 2021, p. 1657). While research is available regarding the effects of climate change on the region of Goa (Evan et al., 2011; Murakami et al., 2017; Prathipati et al., 2019; Shetty, 2021; Wang et al., 2012), little of it pertains to the specificities of the heritage of Goa's Indo-Portuguese architecture. Considering the adverse effects of climate change on built heritage, architectural conservation in Goa cannot be merely about maintaining cosmetic appearances, but rather protecting monuments against major structural damage.

Figure 1. ***Basilica of Bom Jesus***

The Basilica continues to be lashed by increasingly incessant and extremely heavy monsoonal rains, affecting the conservation of the exposed laterite walls of the church. (Author's photograph, August 2021).

Facing the brunt of increasingly severe rainfall and stronger tropical storms every year, the threat to Goa's built heritage serves as yet another example of how climate change has affected monsoonal South Asia. The ruination of Indo-Portuguese architectural heritage, however, is seldom seen as a part of the imagery that informs the climate

change discourse. According to Saffron O'Neill and Nicholas Smith, "[w]hile a diversity of climate change imagery exists, particular types of climate imagery appear to have gained dominance, promoting particular ways of knowing about climate change (and marginalizing others)" (2014, p. 73). O'Neill and Smith thus imply that the usual visual tropes of climate change that dominate global discourse have been biased: images concentrate on impending impacts for temperate latitudes, as evidenced by the recurrent and widely circulated images of melting polar ice sheets; and they are also biased towards large catastrophic events in nature.

Any focus on the Global North fails to account for how ice sheets melting in Greenland and Antarctica will also have devastating effects on the tropics, as "complexities of oceanic systems indicate that sea level rise will not occur evenly around the globe" and "will more strongly impact sea level rise in the Tropics" (Lundberg, 2020, pp. 91-92). In the Asia-Pacific region, seas are predicted to be "further impacted by the atmospheric systems of the Indian Ocean Dipole (IOD) and the El Niño-Southern Oscillation (ENSO)", causing an "increase in frequencies and intensities of oceanic-atmospheric phenomena," especially "cyclones" (Azzali et al. 2020, pp.6-7). That is, although the tropics are doubly affected by climate change – sea level rise in addition to locally produced effects such as stronger tropical storms – the global discourse on climate change continues be dominated by visuals in reference to the potential demise of the Global North.

Furthermore, the emphasis on environmental devastation, as important as it is, tends to veil the potential demise of material culture – including architectural elements that have world heritage value. The rain entering Goa's iconic Basilica in April 2020 is a symptom of a larger issue – it points to climate change outside which has breached the boundaries of the monument. Because monuments like Bom Jesus do not stand independently of their environments, the imagery of climate change is incomplete without considering its effect on architecture.

Colonial Politics and Architecture

Today, a generation of Goans has grown accustomed to seeing the Basilica's exposed laterite walls, but this is not the way the building was designed, nor indeed the way it looked until about 70 years ago (Kandolkar, 2020b, para. 8). It was the former Director of the Department of Monuments in Portugal – architect-restorer, Baltazar da Silva Castro – appointed by the colonial government to Goa, who in the 1950s brought about the dramatic transformation of the external appearance of the Basilica by having the render[3] removed and leaving the underlying laterite stone exposed (dos Santos,

[3] When mortar is used to finish external walls, it is called render; when used indoors, it is called plaster. In this article, the mortar used on the external surface of buildings shall be referred to as render. Mortar is typically

2017). Essentially, the politically motivated restoration – commissioned at a time when decolonial efforts were ramping up in Asia and Africa – was meant to make an old building look even older.

Figure 2. ***Tomb of St. Francis Xavier in Basilica Bom Jesus***

The body of the saint is kept in a silver casket above a marble pedestal. The chapel dedicated to the saint is in the alcove of the church's right-hand side transept. Fr. Patricio mentions that the wall of the chapel was damaged due to the rains entering the Basilica in April 2020. (Photo: Lester Silveira 2020).

During the 1952 exposition of the saint's relics, thousands of people from across the world gathered in Old Goa (Gupta, 2014, p. 204). Through restoring monuments such as Bom Jesus – historical buildings which showed a cross-fertilisation between European elements and regional ones – the twentieth century Portuguese colonial state was projecting that Goa was unlike its neighbouring Indian region. da Silva Castro undertook restoration of monuments in Old Goa, so that architecture could serve as evidence of Portugal's long history in the region. In the process, the removal of the Basilica's render to make it appear older endangered the church, lashed as it is by heavy Goan monsoonal rains annually.

The outer layers of the Basilica that consist of external walls and rooves are subjected to maximum wear and tear because they are exposed to the elements of nature, be it rains, temperature fluctuations, or latent pollution in air. Even walls made of hard stones are not spared. Contrary to common perception, quarried stones used in

described as a mixture of aggregates (like sand), binder (like lime used until the nineteenth century or mostly Portland cement in the twentieth century), and water. Mixing of the binder with water produces a paste, which must coat loose grains of aggregate to yield a cohesive material after hardening (Nogueira et al., 2018, p. 193).

building are not immune to weathering. Rather, the “exposure of stone to aggressive environmental conditions” leads to their rapid deterioration (Smith et al., 2008, p. 441). Therefore, experts recommend that the walls are coated with renders because they operate as a sacrificial layer between stones and the environment (Nogueira et al., 2018, p. 196). Having been stripped of its external protective layer in the 1950s, the exposed laterite stones of the Basilica were also directly exposed to the harsh tropical climatic of Goa.

The 1950s was not the first restoration work undertaken on the Basilica. In fact, in the 1860s, a major restoration of the church involved the complete overhaul of the roof of the building, while three major buttress walls were added to support the northern wall of the church (de Albuquerque, 1890, p. 13). Such timely action of safeguarding the structure, ensured that the monument has enjoyed a long life.

Figure 3. ***1890 Photograph of the Basilica of Bom Jesus***

Original lime-rendered and whitewashed Basilica of Bom Jesus in 1890, photographed by Souza and Paul. The current look of the Basilica is the result of restoration carried out by the Portuguese architect-restorer Baltazar da Silva Castro in the 1950s. Source: Souza & Paul Collection, Central Library, Goa.

In contrast to modifications to the Basilica in the 1860s, the 1950s changes were only surface-level restorations. This was in keeping with former Portuguese Prime Minister, António de Oliveira de Salazar’s nationalistic ideology in which monuments were

medievalised, that is falsely 'restored' to look ancient, in order to proclaim the antiquity of the Portuguese Empire. Dos Santos adds that many such ideologically-motivated restorations were initially undertaken in Salazar-ruled Portugal during the 1940s to reinforce the nationalistic agenda under the dictatorial government of the *Estado Novo* (dos Santos, 2017, p. 247).

Furthermore, due to the decline of Portuguese imperial power in the twentieth century, the state resorted to restoring monuments from the medieval and early modern period to give the impression of the long lineage of the Portuguese 'nation'. India's independence from the British Empire in 1947, meant that the newly-formed country was agitating for the decolonization of Goa. However, the colonial Prime Minister Oliveira de Salazar was unwilling to part with the territory, because he considered that "Goa [was] the transplantation of the West onto Eastern lands, the expression of Portugal in India" (1956, p. 420). And in order to further showcase Goa's Europeanised culture, the colonial state organised the grand exposition of St. Francis Xavier's relics in 1952, which marked the 400 years of the saint's death. In the moment of decoloniality, the 400-year-old relics of St. Francis Xavier and architecture of the sixteenth-century church and convents in Old Goa were used to highlight the cultural difference of Goa from India, and the longevity of the Portuguese empire in Asia. In removing the 'skin' of buildings, such as Bom Jesus in Old Goa, da Silva Castro was able to transform architecture into relics of Portugal's colonial past. Along with the relic of the saint, historical buildings like Bom Jesus could also serve as evidence of the longevity of Portuguese presence in Goa. That these kinds of restoration were earlier undertaken by da Silva Castro in Portugal under Salazar's dictate, indicates an imperial continuity between metropole and colony. What may seem to have been a minor restoration in the centuries-long history of Bom Jesus was the product of particular design underscored by political intent.

It is remarkable that the exposed laterite walls of the Basilica have withstood the onslaught of the Goan monsoon since the 1950s. The same fate was not accorded to the Arch of the Viceroy's – another monument in Old Goa whose render was also removed on the recommendation of restorer da Silva Castro during the same period. This monument crumbled during heavy monsoon rains that followed its 'restoration' in 1953 and the Viceroy's Arch visible today is a reconstructed version of the original. In fact, the colonial administration became aware of the problems of the Basilica without its protective render – and thus its exposure to the elements – and were in the process of rectifying their mistake in the 1960s (dos Santos, 2016).

However, this was the end of Portugal's colonial reign. After Goa was integrated with India in 1961, the ASI took charge of safeguarding the Basilica and other monuments from 1968 onwards (*ASI Goa Circle*, n.d.). Arguably, the building continues to remain without its render because this was its condition when the ASI took over the

responsibility of its protection. The ASI misinterprets the exposed-laterite appearance of the Basilica as belonging to the 'Portuguese' colonial period, even though the monument was rendered and whitewashed for most of its life (see Figure 3). Such simplistic categorisation of buildings based on a political timeline is problematic because the architecture of Bom Jesus did not remain the same even during the colonial period. Maintaining the exposed appearance of the Bom Jesus shows that the ASI fails to grasp the complexity of the architectural and restoration history of the monument, especially its transformation during the dictatorial period of *Estado Novo*.

Monsoons and Stones

Prominent environmentalist and Nobel Prize Laurette Rajendra Kumar Pachauri has warned that the coastal location of Goa makes it highly vulnerable to the effects of climate change (TNN, 2014). For example, the rise in temperatures of oceans, especially over the Arabian Sea, has increased the frequency of tropical storms along the western coast of India. Apart from the frequency, experts predict that climate change is going to intensify tropical pre-monsoon cyclones over the Arabian Sea (Evan et al., 2011, p. 94; Wang et al., 2012, p. E1). Not surprisingly, this year, along with the western coast of India, Goa was lashed by the strongest cyclone to ever hit the region (Yeung & Mitra, 2021). Cyclone Tauktae "was an unusually strong cyclone in the Arabian Sea, resulting in widespread disruption" (Vallangi, 2021). It is not only increased intensity of monsoons but also cyclones that adversely affect heritage sites in Goa. The increased precipitation and recurrence of strong cyclones means the region's monuments such as Bom Jesus are not fully equipped to deal with dramatic climate change.

Over the years, areas around Bom Jesus and other the UNESCO World Heritage Sites in Old Goa are undergoing rapid urbanisation, which in turn is threatening the conservation of these monuments in multiple ways. As Amitav Ghosh notes, "Goa's ecology…is experiencing huge man-made impacts. It has become extremely built-over and greatly urbanised, with massive road building works" (2021, para. 1). It is an irony that Ghosh makes these comments about Goa, because the infrastructure in the state is being developed to accommodate non-Goan elite settlers like him. One example of massive road construction in Goa is the major national highway, which cuts across the historic city of Old Goa. During the 2020 monsoons, this led to heavy flooding of Old Goa, as water flowed from the deforested areas along the newly built highway into the low-lying parts of the city where the Basilica is located (TNN, 2021b). Flooding and improper drainage of rainwater also leads to the rise in the water table around the Basilica. The rising water table is detrimental to heritage structures which are built using porous laterite, as it causes salt ingress from the ground through capillary action (Kasthurba et al., 2006, p. 1327). To make matters worse, the

Basilica's plinth is much lower than the surrounding roads, making the monument vulnerable to flooding (Velho, 2021). In short, climate change and rapid uncontrolled urbanisation in and around Old Goa is threatening the safety of Bom Jesus.

While the increase in the mean annual rainfall by 68% over the last century is detrimental to heritage sites, it is the increased frequency of extreme rainfall events that leads to wear and tear of monuments. As a result of heavy rains, many heritage monuments in Goa have collapsed in the last few years (TNN, 2020). The effects of climate change are detrimental not just to buildings with exposed laterite, but are equally damaging to monuments constructed with stronger, much denser, stones. For example, the World Heritage structures of Angkor Wat in Cambodia, which have exposed sandstone, are also undergoing weathering due to the tropical conditions, including strong sunlight and plenty of rainfall (Liu et al., 2020, p. 11). While intensity of rainfall causes weathering of exposed stones, increased acidity in rainfall, which is triggered by high levels of atmospheric pollution, are even more harmful (Smith et al., 2008, p. 441). The pollution from heavy vehicles plying the six-lane highway and rapid urbanization of areas surrounding the Basilica, means its exposed-laterite stones are adversely affected.

The catastrophe for Bom Jesus is the human-made disaster of climate change combined with another (modern) human-made misadventure of removing the protective render from the laterite stone walls. Common to popular belief in Goa is that laterite stones can withstand harsh environmental conditions. As Smith, Gomez-Heras, & McCabe advise: "The assumption that placing stone in a building immunizes it from the natural processes of weathering is partly the consequence of a lack of public awareness of weathering processes and what controls them" (2008, p. 441).

Hot and humid conditions in the tropics, be it in Goa or Cambodia, lead to quick growth of natural flora, plants and microorganisms on exposed stone surfaces causing rapid deterioration of the material. Protection and preservation of the architecture of the Angkor World Heritage Sites, for example, requires persistent effort, as sandstone has been undergoing "deterioration from the tropical climate and invasion by plants, and colonization by different microflora" (Liu et al., 2020, p. 10). Considering that the porous and weaker laterite stone is even more vulnerable to the increasingly harsh climate of Goa, would it not be better for the ASI to restore the protective sacrificial layer of lime-based render?

Laterite was abundantly available in Goa and was used not only in the Basilica, but elsewhere, and even before Portuguese colonisation. However, the stone needs to be protected to withstand the harsh climate of the region. Goa is a part of Konkan and Malabar coast of India, where monuments with laterite stones are often damaged due to "lashing rain, wetting and drying cycles and thermal changes," which cause loss of

cohesion of minerals, resulting in granular disintegration of laterite stone surfaces (Kasthurba et al., 2006, p. 1325). Laboratory testing conducted by Sutapa Das shows that "[i]n spite of high content of strength-giving iron oxide, Goan laterite is weak in compression and flexure even compared to standard brick" (Das, 2008). Once again, this observation is contrary to the common perception that stone blocks are generally stronger than bricks. Therefore, if ordinary brick buildings require render, then surely the laterite ones should also follow suit because they are more vulnerable. The porosity of the laterite stone is what effects its load-bearing capacity, thus requiring the blocks to be of bigger sizes. In the case of the Basilica, an onsite inspection of the exposed walls revealed that large-sized laterite stones were used to withstand the load of the monumental walls. Which means, replacing damaged stones of the Basilica is more difficult than replacing bricks in a similar setting because the size of the stones are much bigger. Furthermore, replacing too many damaged laterite stones would be a challenge during restoration, as the process could compromise the structural safety of the walls.

Figure 4. ***Closeup of the Basilica of Bom Jesus (August 2021)***

Image showing the deterioration of the laterite walls, including architectural elements like pediments over windows and pilasters. Seen here, the pediment over the right-hand side window is irreversibly damaged due to the lashing of monsoonal rains. (Author's photograph, August 2021).

Das suggests that the lifespan of monuments built with Goan laterite could be best protected by using a water repellent layer over the stone (Das, 2008). However, while transparent water repellent layers such as polymer-based films might help in retaining the look of the exposed laterite stone, they are not a long-term solution for heritage structures. According to studies of the Angkor monuments mentioned earlier, "applications of water repellant and synthetic polymers are not recommended because the stability and integrity of these materials are in questions for long-term effectiveness" (Liu et al., 2020, p. 11). Further, as the surface of laterite is visibly porous with uneven texture, polymers would be ineffective in successfully sealing the stone's surface. Lastly, even if expensive polymer-based repellent could completely seal the exposed surface of the laterite, it would still be ineffective. This is because, laterite absorbs water through capillary action, which means water from the ground could still penetrate the walls and endanger the Basilica. Therefore, lime-based mortar, when done properly is better than even Portland cement, as lime-render allows the surface to breathe, helping the evaporation of the water absorbed by laterite stone through capillary action. With the addition of a lime-based render as a protective layer over the exposed laterite stones of the Basilica, the damage being witnessed now could possibly be reversed by returning the structure to the way it was. Once again, there is no better water-proofing layer than the lime-based mortar, a traditional technique practiced in Goa.

Laterite and 'Mud Packs'

Although the ASI have made efforts to retain the exposed-laterite appearance of the Basilica, its methods have not worked. As the rector notes, the "Basilica can collapse 'at any moment', [it] must be plastered soon" (TNN, 2021a). Currently, the surface of deteriorated laterite stones is temporarily consolidated using a superficial application layer called "mud pack", which was advocated by Archaeologist Nizamuddin Taher during his term in Goa (2020, para. 4). This restoration technique, alternatively known as "laterite pack" involves "filling the cavities on the surface of the [deteriorated] wall with composite mortar i.e., laterite nodules[,] lime mortar and brick-*surkhi"* (Tewari, 2015, p. 268). Essentially, this is a cosmetic mortar mixture meant only to mimic the brown appearance of laterite stone. This technique of reconstruction, however, makes the patched parts stand out from the original stone, an affected difference that is very noticeable upon closer observation. In using a temporary patchwork of mud-mixture on deteriorated laterite blocks the ASI adopts a passive and superficial approach, hoping to arrest only visible signs of ageing in the Basilica.

Problematically, the current use of the laterite pack restoration does not consider how it is going to perform in the increasingly degrading climatic conditions of Goa. Taher does agree that subsequent to the application of the laterite pack, the Basilica could do with the application of a lime-based sacrificial layer (2020, para. 4), however, he

puts the onus of this decision on the Church authorities, essentially absolving the ASI of its responsibility in safeguarding the monument.

Rains and Indigenous Practices

In Goa, walls of a building were additionally protected through other traditional measures. For instance, it is a common practice in Goa to cover the walls of buildings with layers of coconut fronds to keep the rainwater away during monsoons. The ferocity of monsoons in Goa is such that even today, additional efforts are needed to avoid buildings getting damaged from lashing rains. In his essay, "Before the Rains," Tony De Sa recounts the annual work undertaken to protect Goan houses before monsoons in the 1960s and 70s. He writes of how adobe walls of Goan houses were coated with lime plaster, and adds that the walls were additionally protected by,

> woven palm fronds called *mollam.* These *mollam* were in great demand so if they were not available, dried palm fronds would be tied to the latticework of bamboo sticks.… Of course, as the years went by, and cement became available and labour for tying the *zodd* became scarce, people simply plastered the exterior walls with cement and that eliminated the need for a *zodd* (De Sa, 2020).

De Sa reflects on how the knowledge of traditional house-protection has been lost over time due to changes in architectural practices as well as changes in the economy. Not only has the style of houses changed, but additionally people's occupations away from their homes do not allow them the time to do such laborious work. However, even if they did have the time, these efforts would now be insufficient because rainfall has increased, and these methods would not be able to withstand the cyclones.

Unlike traditionally built Goan houses, Bom Jesus does not have any roof overhang or arcaded veranda running along the building to protect the walls from heavy rains. Further, the very monumentality of the Basilica means a large surface area of exposed walls are pounded by unforgiving rains. Furthermore, no additional measures are undertaken to protect the exposed walls during the monsoons. The ASI – whose headquarters are in Delhi, a place which does not receive the same amount and intensity of rainfall as Goa – needs to tap into traditional knowledge of conservation from local Goans if it is to sincerely hope to protect these monuments for future generations. Fr. Fernandes mentions that the personnel at the Goa ASI office have shown much concern for the deteriorating conditions of the Basilica's laterite, but they are awaiting permission from Delhi to even start the process for taking action (Fernandes, 2020, para. 6). This top-down approach of the ASI to the conservation of the Basilica signals a missed opportunity regarding existing indigenous knowledge of how to deal with monsoons in Goa. It likewise indicates the inherent coloniality of the

centre versus the periphery, characteristic of all things between India and Goa. This contemporary coloniality reflects the European colonial practice when architect-restorer da Silva Castro, was sent from the Portuguese metropole to Goa – and had the render of the Basilica removed.

Aesthetics and Conservation

The former archaeologist who worked with the ASI Goa for two terms, Taher states, there is a problem in communication between the two major stakeholders of the Basilica, meaning "the owner of the property – Church Authorities – and the custodian of the property – Archaeological Survey of India" (Taher, 2020, para. 13). To make matters worse, the stakeholders address the structure differently. As Taher notes, one refers to the structure as a 'Church,' whereas the other considers it simply a 'Monument'; "[t]o one, it is of immense spiritual value and to the other it is a World Heritage property" (2020, para. 13). Given Goan Catholics are today a minority community in India, does religious bias influence the position of the ASI regarding the restoration of Bom Jesus? The monument is, above all, a marker of the Catholic heritage of Goa, and it tells an inconvenient history of the region from the perspective of the dominant right-wing Brahmanical Hindu ideology of present-day India.

It would also seem that the World Heritage classification of Bom Jesus may serve the needs of the tourism industry at the expense of the needs of the Goan Catholic community to whom the monument belongs. According to Santhi Kavuri-Bauer, there are many problems which expose contradictions in listing monuments as World Heritage. She writes,

> As monuments selected as the finest examples of the diversity of human achievement come to be ordered by a standardized set of global values and touristic practices, the surrounding culture is reduced to spectacle, and handicraft production and festivals become mere historical reenactments. Local economies are forced to assimilate to a service industry and to provide labor and resources to keep the hotels, bars, restaurants, and visitor centers running (Kavuri-Bauer, 2011, p. 157).

Even though Kavuri-Bauer's remarks are in reference to Mughal monuments of India, and the Muslim community in particular, her critique is equally applicable to Indo-Portuguese Catholic religious monuments of Goa – not least because both communities are religious minorities in India. Lucia Allias notes, "The use of "world" signaled the advent of environmental thought, where heritage is not made of punctual goods to be shared between nations but rather a territorial resource shared among them" (Allais, 2018, p. 28). As monuments become resources in service of the nation,

the stakes and claims of locals, especially those religious monuments belonging to a minority community like the Catholics of Goa, are overlooked.

For the government and tourism corporations, the popularity of a brown-looking exposed laterite Bom Jesus holds sway. This is the famous image that the state projected to market Goa as a destination for tourism (Kandolkar, 2020a, p. 1). To the state, the inclusion of Bom Jesus as a part of World Heritage, means the monument simply serves as one more site on Goa's tourism circuit. Not surprisingly, holidaymakers from the rest of India look upon churches and congregations in Goa through a touristic gaze, as if the place and its people were part of a museum (Kandolkar, 2019, para. 4). In fact, as R. Benedito Ferrão (2021, p. 136) notes, the tropical setting and Lusophone culture of Goa "sets the former Portuguese colony as a pleasure periphery to India where, seemingly, anything goes," because Goa's economy has become overly beholden to tourism.

The inability of the two main stakeholders to find common ground is making the question of onus and responsibility for, and roles of, maintaining the church fraught. Yet in practical terms the current approach of the ASI, to treat even living monuments as rigid relics of history, is not dissimilar to that of the Church. In 2016, the former rector of the Basilica, Fr. Savio Baretto, echoing the position of the Goan Archdiocese, opposed the restoration of Bom Jesus just because "[m]ost … Goans have been born to the sight of a red bricked [laterite] church. Having it plastered will hurt the sentiments of the people of Goa more than anything" (The Goan Network, 2016, para. 4). For the former rector, the 'sight' of the brown Basilica is critical, otherwise it is not the same building that most people of the present generation are accustomed to. However, since the incidence of rain in the Basilica in April 2020, the current rector, Fr. Patricio, has taken the opposite stand. He has appealed to both the Archdiocese and the ASI for the restoration of the Basilica's render, as he has personally witnessed rapid deterioration of the building over the past few years (2020, para. 5).

In ideological terms the ASI and the Church may have different motivations – the former freezes the appearance of the Basilica to showcase it as a "ruin," a vestige of a bygone era for tourism purposes, and the latter maintains the status quo to avoid hurting 'the sentiments of the people of Goa' – but in practical terms their approach is the same. Both approaches to the conservation of the Basilica are based on a misrecognition of the correct architectural history and enviro-heritage practices in Goa. The neglect that ensues to the building has repercussions for the future of Goan Catholics, even as Goa has experienced the heaviest rainfall in decades this year (Janwalkar, 2021).

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Living Relics

As common lore holds, St. Francis Xavier is believed to have protected the state from raging storms emanating from the Arabian Sea. However, tropical storms are becoming stronger and even as Goans continue to seek the saint's protection, the effects of climate change, along with increased precipitation, has endangered the very building which houses the saint's relics. The calamity of rain in the Basilica in April 2020 was met with public outrage, ensuring the Bom Jesus' safety for the time being. However, those responsible for the care of the monument will now have to do more, factoring in all the effects of climate change on the Basilica, which continues to remain without its protective lime-based render.

In the times of climate change, the ASI needs to have a transparent and scientifically-informed dialogue with the Church and all local stakeholders, gaining their trust and participation in conserving this important symbol of Goa and its unique identity. Meanwhile, the state of Goa will have to protect the ecological context in which it is located. In the case of the Basilica, this involves the entire riverine ecosystem of River Mandovi, which goes all the way to the great Western Ghats mountain range. Recently, the state has embarked on developments in this region, which involves the cutting of 50 thousands trees in the rich bio-diverse rainforest of the Western Ghats, itself a UNESCO listed World Heritage Site (Halarnkar, 2020, para. 3). Essentially, conservation of built heritage and ecological heritage should not be seen as being different from one another. Merely focussing on protecting heritage buildings as relics and ignoring the environment would also spell disaster, despite taking all precautions to conserve the physical form and aesthetics of monuments, including the Basilica.

The Basilica is a part of a living cultural heritage, which means that the state also has to ensure the local community that continues to use the church is given adequate protection. After all, Goans are as much part of the intangible heritage of the land, just as the Indo-Portuguese buildings are evidence of Goa's history. It has to be understood that living monuments are not a standalone object of history but are entangled within the cultural and ecological contexts in which they are situated. In the face of climate change and its effect on the tropical Global South, I would like to extend Achille Mbembe's idea of planetary entanglement (2017). With culturally unique places like Goa, the built and ecological heritage have to be imagined together with its people, creating a system of regional entanglement. Thinking regionally would in turn help in dealing with the challenges of climate change on a planetary level. Harming any one of the elements – monument, ecology, local people – would mean inviting disasters at a global level, as has happened with climate change.

References

Allais, L. (2018). *Designs of Destruction: The Making of Monuments in the Twentieth Century*. The University of Chicago Press. https://doi.org/10.7208/chicago/9780226522616.001.0001

Azzali, S., Law. L., & Lundberg, A. (2020). Sustainable Tropical Urbanism: Insights from Cities of the Monsoonal Asia-Pacific. *eTropic: electronic journal of studies in the tropics 19* (2), 1-24. https://doi.org/10.25120/etropic.19.2.2020.3777

Das, S. (2008). Decay Diagnosis of Goan Laterite Stone Monuments. In A. N. Türkeri (Ed). *Durability of building materials and components 11*. İstanbul Teknik Üniversitesi

de Albuquerque, V. A. C. B. (1890). *Casa Professa e Igreja do Bom Jesus: Onde se Venera o Corpo do Glorioso Apostolo das Indias S. Francisco Xavier: Memoria Historico-Descriptiva, Illustrada com Estampas*. Imprensa Nacional.

D'Cruz, D. (2019, March 12). Goencho Saib-Goa's greatest unifier. *OHeraldo*. https://www.heraldgoa.in/Cafe/Goencho-SaibGoas-greatest-unifier/154280

De Sa, T. (2020, April 2). Before the Rains. *Joao-Roque Literary Journal*. https://www.joaoroqueliteraryjournal.com/nonfiction-1/2020/1/15/before-the-rains-arrived

dos Santos, J. R. (2016). Reinstalling the Old City of Goa as an Eternal Light of Portuguese Spirituality: The Plan for the Reintegration of Old Goa at the End of the Colonial Period. *Architectural Histories*, *4*(1), 1–21. https://doi.org/10.5334/ah.58

dos Santos, J. R. (2017). On the Trail of Baltazar Castro, a Portuguese Restorer in India. *Papers from the International Scientific Thematic Conference EAHN 2015 Belgrade: Entangled Histories, Multiple Geographies*, 244–253.

Evan, A. T., Kossin, J. P., 'Eddy' Chung, C., & Ramanathan, V. (2011). Arabian Sea tropical cyclones intensified by emissions of black carbon and other aerosols. *Nature*, *479*(7371), 94–97. https://doi.org/10.1038/nature10552

Fernandes, P. (2020, November 1). World heritage structure & an archaeological marvel, but in danger of deteriorating. O*Heraldo*. https://www.heraldgoa.in/Review/World-heritage-structure-an-archaeological-marvel-but-in-danger-of-deteriorating/169582

Ferrão, R. B. (2021). Running Naked and Unmasked in Goa: Pleasure in the Pandemic. *eTropic: Electronic Journal of Studies in the Tropics*, *20*(1), 134–156. https://doi.org/10.25120/etropic.20.1.2021.3789

Fonseca, J. N. da. (1878). *An Historical and Archaeological Sketch of the City of Goa*. Thacker & Co, Limited.

Ghosh, A. (2021, May 23). Cyclone Tauktae knocked over a great tree of life in my Goa home—We must build better resilience for climate change. *The Times of India* (S. M. Das, Interviewer) [Interview]. https://timesofindia.indiatimes.com/cyclone-tauktae-knocked-over-a-great-tree-of-life-in-my-goa-home-we-must-build-better-resilience-for-climate-change/articleshow/82838593.cms

Goa State Biodiversity Board. (2019). *State Action Plan on Climate Change for the State of Goa: For Period of 2020-2030*. https://gsbb.goa.gov.in/wp-content/uploads/2020/12/Draft-Goa%20SAPCC-for-public-inputs.pdf

Gupta, P. (2014). *The Relic State: St Francis Xavier and the Politics of Ritual in Portuguese India*. Manchester University Press : distributed in the United States exclusively by Palgrave Macmillan. https://doi.org/10.7228/manchester/9780719090615.001.0001

Halarnkar, S. (2020, March 12). India accelerates its age of ecological annihilation. *Scroll.in*. https://scroll.in/article/979892/india-accelerates-its-age-of-ecological-annihilation

Janwalkar, M. (2021, July 24). Incessant rain triggers Goa's worst floods in decades; property worth crores damaged. *The Indian Express*.

https://indianexpress.com/article/cities/goa/goa-cm-pramod-sawant-visits-flood-affected-areas-as-rescue-work-progresses-7418628/

Kandolkar, V. (2019). Reclaiming Goan Identity Through the Feast of Saint Francis Xavier. *Economic and Political Weekly*, *54*(48). https://www.epw.in/engage/article/reclaiming-goan-identity-through-feast-saint

Kandolkar, V. (2020a). *Architecture and the Structure of Goan Identity in the "Postcolonial" Period*. Manipal Academy of Higher Education.

Kandolkar, V. (2020b). Restoring Basilica of Bom Jesus, and the Role of Archaeological Survey of India. *Economic and Political Weekly*, *55*(36). https://www.epw.in/engage/article/restoring-basilica-bom-jesus-and-archaeological-survey-india

Kasthurba, A. K., Santhanam, M., & Mathews, M. S. (2006). Weathering Forms and Properties of Laterite Building Stones Used in Historic Monuments of Western India. In P. B. Lourenço, P. Roca, C. Modena, & S. Agrawal (Eds.), *Structural analysis of historical constructions 2. 2.* Macmillan.

Kavuri-Bauer, S. (2011). *Monumental matters: The power, subjectivity, and space of India's Mughal architecture*. Duke University Press. https://doi.org/10.1215/9780822393764

Liu, X., Koestler, R. J., Warscheid, T., Katayama, Y., & Gu, J.-D. (2020). Microbial deterioration and sustainable conservation of stone monuments and buildings. *Nature Sustainability*, *3*(12), 991–1004. https://doi.org/10.1038/s41893-020-00602-5

Lundberg, A. (2020). Balinese dancer wearing a gas mask: Climate change and the tropical imaginary. *Scottish Geographical Journal*, *136*(1–4), 91–100. https://doi.org/10.1080/14702541.2020.1858589

Mbembe, A. (2017, August 4). *Time on the Move*. https://www.ici-berlin.org/events/achille-mbembe/

Murakami, H., Vecchi, G. A., & Underwood, S. (2017). Increasing frequency of extremely severe cyclonic storms over the Arabian Sea. *Nature Climate Change*, *7*(12), 885–889. https://doi.org/10.1038/s41558-017-0008-6

Nogueira, R., Ferreira Pinto, A. P., & Gomes, A. (2018). Design and behavior of traditional lime-based plasters and renders. Review and critical appraisal of strengths and weaknesses. *Cement and Concrete Composites*, *89*, 192–204. https://doi.org/10.1016/j.cemconcomp.2018.03.005

NT Desk. (2020, April 23). Urgent efforts are needed to ensure the Basilica is protected for future generation: Fr. Patricio. *The Navhind Times*. https://www.navhindtimes.in/urgent-efforts-needed-to-ensure-basilica-is-protected-for-future-generations-fr-patricio/

O'Neill, S. J., & Smith, N. (2014). Climate change and visual imagery. *WIREs Climate Change*, *5*(1), 73–87. https://doi.org/10.1002/wcc.249

Patil, S. M., & Kasthurba, A. K. (2021). Weathering of stone monuments: Damage assessment of basalt and laterite. *Materials Today: Proceedings*, *43*, 1647–1658. https://doi.org/10.1016/j.matpr.2020.10.022

Prathipati, V. K., C. V., N., & Konatham, P. (2019). Inconsistency in the frequency of rainfall events in the Indian summer monsoon season. *International Journal of Climatology*, *39*(13), 4907–4923. https://doi.org/10.1002/joc.6113

Salazar, O. (1956, April). Goa and the Indian Union—The Portuguese View. *Foreign Affairs*, *34*(3), 418–431. https://doi.org/10.2307/20031174

Shetty, D. (2021, July 13). *In Goa, The Water Runs Black*. Pulitzer Center. https://pulitzercenter.org/stories/goa-water-runs-black

Smith, B. J., Gomez-Heras, M., & McCabe, S. (2008). Understanding the decay of stone-built cultural heritage. *Progress in Physical Geography: Earth and Environment*, *32*(4), 439–461. https://doi.org/10.1177/0309133308098119

Taher, N. (2020, May 10). Preserving a World Heritage Monument. *Herald*. https://www.heraldgoa.in/Review/Preserving-a-World-Heritage-Monument/160394

Team Herald. (2020, April 24). ASI has neglected conservation of the Basilica at Old Goa: Rector. *Herald*. https://www.heraldgoa.in/Goa/ASI-has-neglected-conservation-of-the-Basilica-at-Old-Goa-Rector/159763

Tewari, R. (Ed.). (2015). Indian Archaeology 2008-2009: A Review. In *Archaeological Survey of India*. Archaeological Survey of India.

The Goan Network. (2016, October 2). Plastering Basilica; Church says Oh God, Please Don't. *The Goan*. http://englishnews.thegoan.net/story.php?id=11003

TNN. (2014, October 10). Goa "very vulnerable to climate-change impacts": Pachauri. *Times of India*. https://timesofindia.indiatimes.com/city/goa/Goa-very-vulnerable-to-climate-change-impacts-Pachauri/articleshow/44872403.cms

TNN. (2020, July 20). Goa: Portuguese-era building collapses in Panaji, three rescued from structure. *The Times of India*. https://timesofindia.indiatimes.com/city/goa/portuguese-era-building-collapses-in-panaji-three-rescued-from-structure/articleshow/77057129.cms

TNN. (2021a, January 25). Basilica can collapse 'at any moment', must be plastered soon: Rector. *The Times of India*. https://timesofindia.indiatimes.com/city/goa/basilica-can-collapse-at-any-moment-must-be-plastered-soon-rector/articleshow/80439361.cms

TNN. (2021b, June 5). Heritage lovers raise flooding alert, call for expediting Basilica work on priority. *Times of India*. https://timesofindia.indiatimes.com/city/goa/heritage-lovers-raise-flooding-alert-call-for-expediting-basilica-work-on-priority/articleshow/82417744.cms

UNESCO World Heritage Committee (Tenth Session). (1986). *Convention Concerning the Protection of the World Cultural and Natural Heritage*. United Nations Educational Scientific and Cultural Organization.

Vallangi, N. (2021, May 27). Rapid heating of Indian Ocean worsening cyclones, say scientists. *The Guardian*. https://www.theguardian.com/environment/2021/may/27/rapid-heating-of-indian-ocean-worsening-cyclones-say-scientists

Velho, F. (2021, April 19). *Local Identity, Global Heritage: Conserving the Basilica of Bom Jesus*.

Wang, B., Xu, S., & Wu, L. (2012). Intensified Arabian Sea tropical storms. *Nature*, *489*(7416), E1–E2. https://doi.org/10.1038/nature11470

Yeung, J., & Mitra, E. (2021, May 18). India lashed by strongest cyclone to ever hit west coast as it reels from Covid disaster. *CNN*. https://edition.cnn.com/2021/05/18/india/india-cyclone-tauktae-covid-monsoon-intl-hnk/index.html

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Vernacular Knowledge, Natural Disasters, and Climate Change in Monsoon Asia

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Abstract

In Monsoon Asia, home to more than half of the world's population, extreme climatic events are expected to become more frequent and intense due to climate change. Modern disaster management to date has focused on assessing the risks of natural hazards based on historical data, responding to disasters through prevention and mitigation techniques, and information campaigns, instead of vernacular knowledge cultivated in the local environment. This has led the public to a dangerous complacency about the power of technology over nature, and neglecting the possibility of "unforeseen" events. Climate change has not only made it more difficult to assess the risks of natural hazards, but has also diminished local resilience to them. However, since the adoption of the Hyogo Framework for Action in 2005, Monsoon Asia has begun multi-sectoral efforts to build local resilience to natural hazards by integrating vernacular knowledge into modern disaster management. Whereas in the past, experts and government agencies regarded the public as mere recipients of their services, they have now become acutely aware of the need to build partnerships with local communities to compensate for current technological limitations in disaster management, and to imaginatively prepare for the increasing risks of climatic contingencies. To achieve these goals, vernacular knowledge can be a useful resource, and a number of efforts have been initiated in the region to preserve such knowledge in imaginative forms to pass it on to future generations.

Keywords: vernacular knowledge, Monsoon Asia, natural disaster management, climate change, extreme climate, natural hazards

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Introduction: Enter Monsoon Asia

Monsoon Asia is a cradle of ancient civilisations and is still home to 52.9% of the world's population (Kyuma, 2009, p.1). The reversal of the direction of monsoon winds between the wet and dry seasons has led to the formation of a diverse cultural and ecological environment in this region. Concomitantly, the region has been exposed to a constant risk of natural hazards. In recent years, large-scale disasters have occurred in the region that have exceeded the estimations of scientists, raising concerns about the effects of climate change. Low-lying cities and coastal towns, especially those with high concentrations of population and major industries, are expected to be more vulnerable to natural hazards, such as rising sea levels, droughts, tropical storms, and floods (Shrestha, 2014; Asian Development Bank, 2015) [see Figure 1]. It has become increasingly clear that modern science and technology alone will not be able to cope with the impacts of climate change.

Figure 1. ***North Okkalapa, Yangon, damaged by Cyclone Nargis, early May 2008.***

Cyclone Nargis was the deadliest natural disaster in Myanmar's history, with 84,500 confirmed dead and 53,800 missing (Association of Southeast Asian Nations et al., 2008, p. 1). The Ayeyarwady Delta, a densely populated area known as the rice bowl of Myanmar, was devastated by this unseasonal cyclone, which caused devastating storm surge damage. (Photo: Thien Thien Win, 2008).

Despite the increasing risk of extreme weather events, people are still struggling to come to terms with the multifaceted phenomenon of climate change. At the same time, rapid progress in modern disaster management has given people a false sense of security about their safety, and the effectiveness of modern disaster management.

In this respect, it is important to remember that just less than a century ago, the peoples of Monsoon Asia still protected their lives and property from natural hazards without relying on modern science and technology. They had effectively and imaginatively sublimated their experiences of natural disasters into vernacular knowledge with reference to local culture through collective memories, beliefs, artefacts, and customs (Sasamoto, 1994). Such knowledge, while not readily compatible with scientific discourse, is by no means at odds with it. With ingenuity, vernacular knowledge can be a valuable medium for people to understand and cope with such multifaceted phenomena as climate change.

This article aims to explore the utilization of vernacular knowledge to help Monsoon Asian societies recognize the growing risk of extreme events, and prepare for climate change contingencies. The article commences by addressing the structural problems of modern disaster management, and why *unforeseen* events continue to occur despite concerted efforts by government agencies and scientists. This is followed with examples of vernacular knowledge of natural disasters in the region, and how they have been integrated into modern disaster prevention and mitigation initiatives through imaginative preservation activities and education. The article is furthermore supplemented with photographs and annotations to help assemble the fragmented images of natural disasters and local initiatives into a more coherent social imaginary of climate change, challenges, and local responses.

Although Monsoon Asia is a vast region spanning countries in South, Southeast, and East Asia, this article will focus on case studies from Japan, Thailand and Indonesia, along with supplementary examples from Myanmar, Vietnam, and Papua New Guinea. These countries, which have all experienced devastating natural disasters over the past two decades, aptly illustrate a renewed interest in vernacular knowledge to improve local resilience to natural disasters. To identify common problems in modern disaster management, this article will also examine incidents of earthquakes and tsunamis that have struck the region, and furthermore present recent research on the potential impacts of climate change on earthquakes and tsunamis.

Vernacular Knowledge of Natural Disasters in Monsoon Asia

Monsoons have shaped the climate of South Asia, Southeast Asia, and parts of East Asia. In South and Southeast Asia, moist, northward winds blow from the oceans in summer, bringing a rainy season, while southward winds blow from the Tibetan Plateau in winter, bringing a dry season. This unique climate has had a profound impact on the topography of the region, and the lives of its inhabitants. Vast alluvial lowlands were formed in the middle and lower reaches of major rivers flowing out from the Himalayas and Tibetan plateau, and rice paddies have developed as an adaptive

agriculture to the heavy rainfall and flood plains during the rainy season. As a result, the region produces 87.5% of the world's rice (Kyuma, 2009, pp. 2-3). However, the intensity of the monsoon has changed drastically over the last few decades, which is believed to be linked with climate change.

Monsoon Asia

The term Monsoon Asia was introduced by western and Japanese geographers and ethnographers, such as Jules Sion and George Cœdès, in the 1920s after the introduction of meteorology and the colonization of Asia. Later, it evolved to refer not only to a geographical and climatic region, but also to the cultural continuity among Asian countries.

The concept of Monsoon Asia took a different turn in Japan, which was at one time under the threat of colonisation by Western powers, and later became a coloniser itself. This is well illustrated in the concept of *fūdo*, or "climate and culture," proposed by Tetsurō Watsuji. Though a critique of Heidegger's temporality-oriented existentialism, Watsuji developed the idea of *monsoon type* civilization based on a common orientation towards the natural environment among inhabitants of Asian countries, including Japan. In his *Fūdo: Ningengakuteki kōsatsu* (*A Climate: A Philosophical Study*) (1935/1962), he claimed that the monsoon was both a source of fertility, and a cause of destruction, and that the people of Asia had been developing an amiable attitude towards nature (pp. 19-20). He also believed that the characteristics of the monsoon type led to the formation of an ineffective political and economic system in the region, and eventual colonization. In the interwar period, Watsuji's ideas were used to justify the expansion of militarist Japan into Asia under the banner of Pan-Asianism (Iizuka 1942, quoted in Okada 1985, p. 391). Although the concept of *fūdo* came under heavy scrutiny after the war for its reductionist tendency and association with wartime colonialism, the interest in the intricate relationship between Asian cultures and the environment continued in Tadao Umesao's ecological theory of civilisation (1957) and Heita Kawakatsu's maritime history of civilisation (1997).

Outside of Japanese academic circles, the concept of Monsoon Asia, despite being criticised in the post-war period and shunned in the 1980s, has recently experienced a resurgence in the fields of geography and climatology due to the intensification of anthropogenic climate change. The drastic increase in vulnerability to climate change has been recognised as a regional concern, and in the humanities, the concept has re-emerged as an imaginative way to conceptualise and share local and geographical knowledge of the impacts of climate change (Amrith, 2018, p. 173).

Climatologists predict that global warming of the atmosphere and oceans will increase the frequency and intensity of oceanic-atmospheric phenomena (Oppenheimer et al., 2019). Around tropical and subtropical regions, including Monsoon Asia, there will be significant changes in weather patterns, sea level rise is expected to be higher than the global average, and the intensity of tropical storms is expected to increase. In Monsoon Asia, droughts and floods will occur more frequently due to the effects of the Indian Ocean Dipole and the El Niño-Southern Oscillation (Azzali et al. 2021, p.6; IPCC, 2021).

Recent studies also indicate a possible link between climate change and crustal increase in the Monsoon Asian region. It is postulated that the strength of the Asian monsoon is correlated with the uplift of the Himalayas and Tibetan Plateau, the evolution of gateways, and the retreat of shallow sea in Central Asia (see Clift, Tada & Zheng, 2010). Some researchers postulate that as glaciers recede and erosion rates increase in the Himalayas and Tibetan plateau, the resulting changes in stress on faults will increase earthquakes (Usman, 2016; Mishra, 2021).

Vernacular Knowledge

The term Monsoon Asia also refers to the civilisations and vernacular knowledge that have been cultivated within the region's unique habitats. In disaster-prone areas, it has been passed on as a valuable medium for the inhabitants to preserve cultural memories of past disasters and survival skills to future generations (Sasamoto, 1994, p. 69).

Vernacular knowledge can be in either tangible forms (e.g., farming tools, monuments, architecture, costumes, and visual art) or intangible forms (e.g., proverbs, beliefs, performing arts, customs, and place names) although the two often overlap. The tangible forms include reinforced natural levees in the lowlands of the Red River basin in Vietnam (Okae, 2019) [see Figure 2] and *wajū*, circular embankments on the flood plains that protected fields and settlements in Japan (Itō, 2010) [see Figure 3]. These levees and embankments have protected communities from floods and storm surges for centuries. Intangible forms include the legend of the Yonok kingdom, which is still remembered by the people in the Wiangnonglom Wetlands in Upper Northern Thailand, a region prone to a variety of natural disasters (Nakai, 2017). According to a local chronicle (Praya Prachakitkorachak, 2014, p.197), this city-state is believed to have flourished until around 460 CE (Nithi, 1970, cited in Ongsakul, 2005, p. 19). After the people ate a giant albino eel, the kingdom and the people disappeared into the depths of the water, except for one widow who did not eat the eel [see Figure 4]. A similar myth of an eel kept by a widow which causes the land to be engulfed by (sea) water was recorded in the village of Lamalera in eastern Indonesia – a region known

for natural disasters, especially earthquakes and tsunamis (see Lundberg, 2003, pp. 78-79).

The term vernacular knowledge is sometimes used interchangeably with folklore or indigenous knowledge. Both of the latter terms, however, imply that the knowledge is passed on orally within a relatively small traditional community. However, as many researchers have observed, nowadays it can be transmitted outside the boundary of the traditional community through media (Rahman et al., 2017; Sato et al., 2017). Therefore, in this study, the term vernacular was chosen to highlight this change in knowledge dispersal in the modern era.

Vernacular knowledge also helps the local community to comprehend complex and sometimes abstract phenomena – such as climate change. Anita Lundberg (2021) examines how environmental and climate crises faced by local communities in Bali have been represented in graffiti wall art. She points out that the popular representation of Bali as a tropical island paradise is subverted by the symbolic image of a traditional dancer wearing a gas mask. The dancer is positioned in various art scenes, including posing with fish filled with plastic, and poised within a landscape of coal-fired power plants – signifying a major contributor to global warming.

Figure 2. ***Traditional levee and farmer tending paddy, Vietnam's Red River Delta.***

The Red River Delta, formed at the mouth of the river and its tributaries, is the most densely populated region in Vietnam (21.1 million people), and the second largest rice-producing region (15.2% of the total rice producing area) (Okae, 2019, pp. 3, 9). Autonomous local organizations have developed to manage infrastructure and water resources in this delta (Haruyama, 2000, p. 921; Luong, 2017). It is not a coincident that Hoa Lư in Ninh Bình province, pictured here, was home to the first Vietnamese kingdom of Đại Cồ Việt at the end of the 10th century. (Photo: Nakai, 2012).

Figure 3. ***Aerial view of Wajū in Kisosaki Town, Mie Prefecture***

In the centre of the image is a river island bounded by the Genroku wajū. Reproduced with permission from the Geospatial Information Authority of Japan, 1945, from https://mapps.gsi.go.jp/maplibSearch.do?specificationId=743869.

Figure 4. ***Temple mural illustrating the destruction of the legendary kingdom of Yonok*****.**

The legend of the Yonok kingdom has given rise to a variety of tangible heritage, including the murals in the ceremonial hall of Wat Phrathat Doi Kaew temple in Chiang Mai's Mae Chan district, Thailand. (Photo: Nakai, 2017).

In modern societies vernacular knowledge is celebrated as valuable heritage, but is often wrongly associated with illiterate societies, and dismissed as outdated and irrational (Dundes, 2007, p. 56) [see Figure 5]. According to the secular and individualistic values of modern society, people are encouraged to make decisions based on expert knowledge of specialists, rather than relying on traditional institutions of family, religion, or community – or on the accumulated wisdom and customs of the local community (Giddens, 1991, p.198). In the field of natural disaster management, a top-down transfer of information and technologies to recipients is promoted while vernacular knowledge is dismissed (Mawere, 2015, pp. 19-20). This hinders the smooth integration of vernacular knowledge into modern natural disaster management.

Figure 5. ***Statues of Jizō deities facing the epicentre of the 2011 earthquake*****.**

Thirteen hours after the Great East Japan Earthquake, a 6.7 magnitude earthquake struck northern Nagano Prefecture. Despite heavy damage to infrastructure, no direct fatalities were reported (Saito, 2012). The people of Nishi-Otaki village, only 10 km from the epicentre, found that Jizō statues in their village were facing the direction of the epicentre. They rumoured that the Jizō were protecting them. This rumour can be easily dismissed as unscientific, but it is an attempt to preserve and pass on to future generations the memory of the forgotten earthquake. (Photo: Nakai, 2016).

However, Monsoon Asian societies have begun to realise the importance of local resilience to natural hazards. In 2005, the Hyogo Framework for Action (2005-2015) was adopted at the second United Nations World Conference on Disaster Reduction, marking a critical shift in the earlier disaster management that focused on post-disaster relief and recovery. This action plan stipulates the use of knowledge management and education to improve resilience of local communities to natural hazards. Specifically, Article 3 refers to the promotion of local participation as an integral part of sustainable disaster management (International Strategy for Disaster Reduction, 2009, p. 9). To

achieve this goal, a number of innovative initiatives have been undertaken in Monsoon Asia (e.g., Fire and Disaster Management Agency of Japan, 2008; Department of Disaster Prevention and Mitigation of Thailand, 2015, pp. 16-20).

Unforeseen Disasters in the Age of Climate Change

There is growing concern among meteorologists that climate change will make extreme weather events and associated disasters more frequent and intense in the future. In Monsoon Asia, recent years have seen what government agencies, scientists and other experts call “unforeseen” phenomena continue to occur despite many decades of natural disaster prevention and mitigation efforts. This alarming trend cannot be attributed to climate change alone; it also stems from the longstanding structural problems of modern disaster management.

Policymakers and government agencies prioritise disaster management according to urgency and feasibility. Natural disasters with long return periods are not considered urgent issues, even if their impact is high. The limitations of modern disaster management are observable in sediment management in the Kiso Valley, located in the upper reaches of the Kiso River which winds through the mountainous region of central Japan. Covered on both sides by steep mountain ranges, this V-shaped valley has suffered numerous sediment disasters, and technical measures such as the construction of sediment dams, riverbank reinforcement, and reforestation, have been implemented for over 100 years (Sasamoto, 1994). While national sediment management policies in Japan are designed to cope with the amount of sediment generated by a 5-to-10-year rainfall at the national level, sediment management in the Kiso Valley is designed to withstand sediment from a 30-year rainfall (Tajimi Erosion Control and National Highway Office, Chūbu Regional Development Bureau, Ministry of Land, Infrastructure and Transport, 2012, p.5). Nevertheless, despite such longstanding efforts, there is always the possibility of events that exceed the scope of modern disaster management plans, as was the case with the fatal debris flow in the valley town of Nagiso, triggered by a torrential rainfall of approximately 90 mm in one hour on July 9, 2014 (Japan Erosion Control Association, 2014).

In the future, the differences in precipitation between wet and dry areas and between wet and dry seasons are expected to become greater in many parts of the world. In Japan, annual precipitation has been fluctuating since the 1970s, and by the end of the 21st century, the occurrence of short duration heavy rainfall is expected to increase by 10% to 25% in all regions and seasons, while the number of days without precipitation is also expected to increase (Ministry of the Environment Ministry of Education of Japan et al., 2018, pp. 37-38). The frequent occurrence of extreme

weather associated with climate change calls for a revision of existing disaster management.

As in other parts of Monsoon Asia, Thailand's disaster management system lacks systematic collection and management of meteorological data, especially at the regional level (United Nations Development Programme, 2016, p. 63). The great flood of 2011 in the Chao Phraya and Mekong river basins claimed more than 680 lives and caused 1.43 trillion baht (US$46.5 billion) in damages (World Bank, 2012, p. 2). The Thai prime minister called the disaster an "unpredictable" catastrophe ("'Pu' survives!," 2017) [see Figures 6 & 7]. According to the Thailand Meteorological Department (n.d.), the country's first meteorological observatory was established in Bangkok in 1923, initially to collect precipitation and temperature information for the Irrigation Department and the Navy. The government gradually expanded the coverage to provincial areas (e.g., Songkhla in 1936, Chiang Mai in 1942, Lopburi, Chachoengsao, and Ubon Rachathai in 1951, Phuket in 1985, and Khonkaen in 1992). Although Thailand became a member of the World Meteorological Organization, and began to collect data in a more systematic manner in 1949, long-term meteorological data is still limited both in terms of duration and areas covered, making accurate data analysis and forecasting difficult.

Figure 6 & 7. ***The 2011 Flood in Bangkok, Thailand.***

The October 2011 Flood near the Thailand government complex buildings in Bangkok (left) and an emergency vehicle carrying goods and people (right) (Photo: Nakai, 2011)

When a devastating tsunami hit the Andaman Sea coast of Thailand on December 26, 2004, one geologist described it as an "unexpected disaster" (Jankaew, 2014). It has long been known that powerful earthquakes occur regularly at the plate boundary off the west coast of Sumatra. It is also known that there are oral traditions of giant waves along the coasts of the Indian Ocean and the Andaman Sea, but it was only after the 2004 tsunami that Thai scientists and administrators finally took the risk of tsunamis seriously. A post-tsunami geological survey revealed that powerful tsunamis struck the Andaman Sea coast in south-western Thailand at intervals of about 550 years (Prendergast et al., 2004).

Even a country like Japan, which has devoted more resources to collecting data on, and preparing for natural disasters than many other countries, still has limited natural disaster management capacity. Shortly after a massive earthquake struck the north-eastern region on March 11, 2011, massive tsunamis hit the Tokyo Electric Power Company (TEPCO)'s Fukushima nuclear power plant, causing a meltdown as the plant lost power. The TEPCO's accident report (2011, p.10) claimed that although adequate precautions had been taken, the tsunamis were much stronger than they had initially expected. Prior to the accident, a group of researchers had raised concerns about the inadequacy of existing safety measures against powerful tsunamis based on their simulation of a tsunami associated with the 869 historical earthquake (Satake et al., 2008; Shimazaki, 2011, p.1004). However, the TEPCO, and its technical advisor, the Japan Society of Civil Engineers, dismissed this warning, citing insufficient data on past earthquakes in the vicinity of the power plant (cited in Shimazaki, 2011, p.1004). Thus, due to the structural limitations of modern disaster management, unpredictable events are created.

Self-responsibility in Modern Disaster Management

In addition to infrastructural and technical support, disaster management also uses information campaigns to lead the public to recognise the risk of natural disasters, and to voluntarily take actions to protect themselves. Such intervention, known as the cognitive adjustment approach allocates self-protection as the responsibility of the individual, and to blame those who fail to comply (Gaillard & Texier, 2010, p. 82). However, it must be noted that vulnerability to natural disasters is not necessarily due to negligence or lack of rationality, but can be due to structural problems in society (Gaillard & Texier, 2008). For example, it is known that socially and economically deprived migrants have no choice but to live in places with a higher risk of natural hazards [see Figure 8].

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Figure 8. ***A submerged slum in Latphrao district, Bangkok.***

Given the rapid growth of the world's population and increasing rural-urban migration, especially in less developed countries, competition for life chances – from jobs to housing – has intensified. The urban poor, albeit aware of their vulnerability to natural hazards, are too deprived to take appropriate action. (Photo: Nakai, 2011)

Shōji Sasamoto (1994, p.130) points out that most disaster-related research is led by scientists, whose primary goal is to elucidate the mechanisms of natural disasters, ignoring the social and cultural aspects. As social beings, humans cannot always avoid the risks of natural hazards even if they are aware of them. After the Meiji Sanriku Tsunami (1896) struck the Pacific coast of north-eastern Japan, many of the victims refused to accept the government's relocation plan. Fumio Yamashita (2008, p. 148), a local historian who himself was from a family of fishermen in the north-eastern region, explained that most of the victims of the 1933 tsunami were fishermen and their families chose to live near the ocean again because of the accessibility to the sea and competition among fishermen [see Figure 9].

The reaction of the Japanese fishermen mirrors that of settlers in the seaside town of Aitape, Papua New Guinea, which was hit by a tsunami in 1998. A post-tsunami survey found that as memories of the disaster quickly faded, the settlers tended to return to the affected area because of the advantages of living along the coast (Davies, 2002, p. 41). Given the complexity of vulnerability to natural hazards, those involved in disaster management need to take this social dimension into greater consideration.

Figure 9. ***Hibarino Beach, Ishinomaki City, 13 days after the 2011 tsunami.***

Ishinomaki, a port town in Miyagi Prefecture, had been repeatedly hit by tsunamis, but many of the survivors had returned to the bay area. The 2011 tsunami again caused extensive damage, with 3,553 people killed, 418 missing, and 56,708 buildings damaged (Fire and Disaster Management Agency of Japan, 2021, March 9, p. 1). (Photo: Konno, 2011).

Complacency about Modern Disaster Management

A number of studies have pointed out that advances in the technological management of natural hazards have led people to underestimate the risks of natural disasters. In this regard, Nobuo Shutō, a Japanese civil engineer (2006, p.188), pointed out the anti-tsunami infrastructure introduced along the north-eastern coastline of Japan after the 1960 Chilean tsunami ironically hindered the subsequent progress of anti-tsunami measures:

> The reality in Japan today is that houses line up to the very edge of seawalls, most residents do not evacuate after a strong earthquake, and most of the participants in disaster drills are Chilean tsunami survivors. Even in Taro [a tsunami-prone district in Iwate prefecture], where people are keen on tsunami prevention, the number of participants in evacuation drills is decreasing. We are apparently safer now than we were before the Chilean tsunami, but may be more vulnerable to tsunamis much larger than the Chilean tsunami…. in retrospect, it is undeniable that the "false sense of security" provided by infrastructures has hindered the development of land use planning and disaster prevention systems. [my translation]

Shutō's fears were realised when a tsunami struck on 28 February, 2010. After a powerful earthquake occurred off the coast of south-central Chile, the Japan Meteorological Agency issued a tsunami warning for the entire Pacific coast. However, according to a post-tsunami survey, in Kamaishi City, Iwate Prefecture, less than half of the residents (45.5%) evacuated to a safe place after receiving an evacuation advisory. The remaining 54.5% thought that they were safe, and did not follow the advisory (Kanai & Katada, 2011). Then, only one year later, another tsunami returned to the city — far more powerful this time, it claimed the lives of over 1,200 people.

Such a state of complacency is not limited to Japanese society, but is a general trend in other parts of Monsoon Asia. In this region, the effects of climate change have become more pronounced in recent years, and "unforeseen" events have become more frequent and more intense.

It is true that disaster management strategies are updated and made more robust in the wake of unprecedented events. For example, the 2011 flood in Thailand led to the improvement or introduction of technical and infrastructural measures against flooding, such as retention basins, rainwater drainage pumps, river embankments, and early warning systems, mainly within Greater Bangkok (Otomo, 2013, p. 245). However, people living in Monsoon Asia have become dangerously complacent about their own safety: they abandoned the local wisdom that has long protected them from natural hazards, and have instead come to rely on science and technology introduced by outside experts. As a result, they can no longer imagine the growing risk of natural disasters in the age of climate change.

Vernacular Knowledge in the Age of Climate Change

Given the limitations of science and technology driven disaster management, government agencies and experts in disaster management have come to realise that the top-down transfer of "hard" technologies cannot effectively prevent or mitigate natural disasters. As a result, there have been efforts to integrate "soft" technologies into modern disaster management to increase the resilience of society to natural hazards.

In Japan, for example, shortly after the Great Hanshin-Awaji Earthquake in 1995, the Disaster Countermeasures Basic Act of 1961 was amended to promote the participation of local communities and volunteerism as part of the national strategy (Ministry of Internal Affairs and Communications of Japan, 2008). Considering the lessons learnt after the 2011 Great East Japan Earthquake, the Act was amended once again in 2013 to stipulate that citizens, along with the national and local governments, have a duty to pass on the lessons of past disasters to future

generations. This amendment to the Act, for example, has led to a nationwide recommendation to learn about natural disasters in compulsory education in order to develop disaster resilience among youngsters (Takeda et al., 2017).

Turning to Thailand, which has also been experiencing severe disasters in recent years, natural disasters were, until a decade ago, just one of many security crises for the government, along with war and terrorism. At that time, its disaster management strategy focused on post-disaster assistance, which was overseen by the Civil Defence Department and the National Security Council. However, in the wake of the 2004 Indian Ocean Tsunami, the government enacted the Disaster Prevention and Mitigation Act in 2007, and established the Department of Disaster Prevention and Mitigation (DDPM) to oversee national disaster management planning and inter-agency coordination. Thailand, as a signatory to the Hyogo Framework for Action, has designated the DDPM to oversee the implementation of the framework, including integrating traditional and indigenous knowledge, and cultural heritage, into national disaster management plans (International Strategy for Disaster Reduction, 2009, p. 9). Although still in its early stages, concerted efforts have also begun to be organised to utilise vernacular knowledge for disaster management in Thailand.

Passing on Vernacular Knowledge to Future Generations

In Monsoon Asia, there is growing recognition of the potential for using previously overlooked vernacular knowledge in disaster management, but the preservation of vernacular knowledge and its integration into modern disaster management is not an easy task. Due to the changing social conditions in Monsoon Asia, people are more mobile and less connected within their local communities, making it difficult for local memories and know-how to be passed on to future generations [see Figure 10]. A study of tsunami-prone coastal communities in Papua New Guinea, for example, found that local memories of the tsunami were limited to one generation (Davies, 2002, p. 38). Vernacular knowledge is in danger of disappearing through modernisation, and urgent action is needed to preserve it and pass it on to future generations.

In Japan, a number of initiatives have been implemented to preserve vernacular knowledge about natural disasters as part of its resilience-building programme. A prime example is the Upper Tenryū River Basin initiative, which has been coordinated by the Central Regional Development Bureau (CRDB) of the Ministry of Land, Infrastructure and Transport (MLIT) since the 1980s. The Tenryū River, which flows through three prefectures in central Japan, is known as the “raging river” because of its volatility, causing devastating floods and sediment disasters in June 1961 and September 1983. Subsequently, the CRDB’s Upper Tenryū River Basin Office initiated a range of innovative projects using vernacular knowledge of local hazards.

In order to overcome the challenges in passing on vernacular knowledge due to the loss and deterioration of historical materials on local disasters, and the ageing of the population, the public and private sectors collaborated to launch various projects (Research Unit for Studying How to Pass on Lessons Learned from Natural Disasters in Tenryū River Upper Reaches, 2009, p. 1). The CRDB has been working with local stakeholders, such as schools, researchers, artists, museums, and administrative agencies to engage local communities in preserving vernacular knowledge of the river and natural disasters – disaster-related proverbs, folktales, place names, monuments, natural objects, and indigenous technology for flood control – as part of school education and community resilience-building activities [see Figure 11 & 12].

Figure 10. ***A Moken 'Sea Gypsy' fisherman with a tsunami shelter in background*.**

Hong, a Moken from Phang Nga Province, Thailand, is a survivor of the 2004 Indian Ocean Tsunami. The devastation in Phang Nga province was so severe that the death toll in that province accounted for 78% (4,225 people) of the total casualties in Thailand (Department of Disaster Prevention and Mitigation cited in United Nations Country Team in Thailand, 2005, p.14). The Moken people of the Surin Islands in the northern part of the province are reported to have survived the tsunami by following the advice of the oral tradition of the "seven-storey man-eating wave" (Narumon, 2014). However, the existence of tsunami-related folklore was not known to his community in Takuapa district (Hong, K, personal communication, January 14, 2016). (Photo: Nakai, 2016).

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Figure 11 & 12. ***Passing on vernacular knowledge.***

Tenryū Karuta (*Tenryū karuta playing cards, left*), *and Tales of disasters from Ina City* (right) (Research Unit for Studying How to Pass on Lessons Learned from Natural Disasters in Tenryū River Upper Reaches, 2009).

The Tenryū initiative has developed the following five core activities to pass on local disaster culture within the community: 1. School lessons to children on local disasters and disaster management skills. 2. Field trips to disaster areas in conjunction with activities of a local community centre. 3. Field trips to disaster-related heritage sites, such as old civil engineering structures along the river, memorials to local disasters, and sites associated with disaster-related legends. 4. Periodic lectures on natural disasters in conjunction with local government disaster management events. 5. 'Disaster Prevention Cafes' set up in museums and other public places, where even people who are not usually interested in natural disasters can casually drop by and learn about disaster prevention and mitigation. Other educational materials are also provided in a variety of formats, including the booklet series *Kataritsugu Tenryū* (*Passing on stories of the Tenryū*, 1986—), picture books, websites, *karuta* playing cards, public lectures, performances, and other public events.

In tsunami-prone north-eastern Japan, the proverb *tendenko* ("flee from tsunami alone") has been handed down as a stern reminder of the importance of swift evacuation in case of a tsunami (Yamashita, 2008). Prior to the 2011 tsunami, the proverb, along with the local history of tsunamis, was reiterated during evacuation drills and hazard mapping in schools to stress the importance of timely and voluntary evacuation. Although the 2011 tsunami claimed more than 1,200 lives in the city, only five of the 2,926 students lost their lives thanks to their swift and voluntary evacuation (Katada, 2012, p. 38).

Similarly, the islanders of Simeulue, Aceh, Indonesia, are known to have evacuated during the 2004 Indian Ocean Tsunami following the oral tradition known as *smong*. *Smong* is a group of songs and poems recording in the local language about the 1907

tsunami, which killed 50% to 70% of the islanders. After the earthquake tremor in 2004, the islanders noticed that the tide was receding rapidly. As *smong* taught them, they voluntarily evacuated to higher ground. Despite the island's proximity to the epicentre, only three of over 88,000 islanders were killed (Rahman et al., 2017; Syafwina, 2014, p. 7). This episode prompted researchers and aid organizations to preserve *smong* in both traditional and new media, such as *Nandong,* the traditional recitation of a story as a song or poem, and booklets, with the aim of building community resilience to tsunamis. Furthermore, after a series of natural disasters in 2018, the Indonesian government has officially acknowledged the importance of vernacular knowledge in its disaster management efforts (International Federation of Red Cross & Red Crescent Societies, 2021).

Conclusion – Imaginative Futures

While tremendous progress has been made in the scientific management of natural hazards, it is also true that people in Monsoon Asia have become disengaged from disaster management efforts. Many local communities in the region have become dependent on outside experts or government agencies for protecting their lives and property from natural hazards. This situation hinders the people from taking initiative in natural disaster management, and in realising the growing risk of extreme weather events due to climate change.

Even more alarming is the rejection of the cultural resources that have been cultivated in local communities to protect the people from natural hazards. Unhealthy dependence on outside experts, who do not necessarily understand the particularities of local communities, erodes local resilience to natural hazards, and may in turn lead to the recurrence of unexpected disasters such as those illustrated in this article. As the lessons from recent large-scale disasters indicate, top-down knowledge and technological transfer alone is not sufficient to strengthen local resilience to natural hazards, and even with modern science and technology, it is still difficult to accurately assess the risks of natural hazards, and prepare prevention and mitigation measures against them.

Imaginative integration of vernacular knowledge and modern disaster management, as in the examples from Japan, Thailand, and Indonesia, holds promise for detecting the signs of climate change natural hazards, and coping with the growing risks of natural disasters. In these countries, innovative activities have been undertaken to preserve vernacular knowledge and incorporate it into education and community activities. Thus encouraging active community participation in building disaster resilience.

Nevertheless, research on the interface between vernacular knowledge and modern disaster management is still limited in volume and scope. More research is needed to facilitate the integration of vernacular knowledge into modern disaster management as Monsoon Asia faces an increasingly uncertain future.

References

Amrith, S. S. (2018). *Unruly waters: How mountain rivers and monsoons have shaped south Asia's history.* Basic Books.

Arunotai, N. (2014). Prasopkankhongchaomoken naikanpachaengkaptsunami penyangraibang? [What did the Moken experience during the tsunami?]. In N. Arunotai (Ed.), *Thaksawatanatam chaole roirueangraochaole* [Cultural skills of the sea dwellers: Many stories of the sea dwellers], (pp. 111-113). Parbpim.

Asian Development Bank. (2015). *Southeast Asia and the economics of global climate stabilization.* https://www.adb.org/sites/default/files/publication/178615/sea-economics-global-climate-stabilization.pdf

Association of Southeast Asian Nations, Government of Myanmar, & United Nations Country Team in Myanmar. (2008). *Post-Nargis joint assessment*. https://www.recoveryplatform.org/assets/publication/Post-Nargis_Joint_Assessment.pdf

Azzali, S., Law, L., & Lundberg, A. (2020). Sustainable Tropical Urbanism: Insights from Cities of the Monsoonal Asia-Pacific. *eTropic: electronic journal of studies in the Tropics*, *19*(2), 1–24. https://doi.org/10.25120/etropic.19.2.2020.3777

Basic act on disaster management 1961. (1961). S. 7.2, 8.2.13 (Japan) http://www.bousai.go.jp/taisaku/kihonhou/pdf/h24_01_aratamebun.pdf

Clift, P. D., Tada, R., & Zheng, H. (2010). *Monsoon evolution and tectonics-climate linkage in East Asia: Climate linkage in Asia*. Geological Society of London. https://doi.org/10.1144/SP342.1

Davies, H. (2002). Tsunamis and the coastal communities of Papua New Guinea. In R. Torrence, & J. Grattan (Eds.), *Natural disasters and cultural change*, (pp. 28-42). Routledge.

Department of Disaster Prevention and Mitigation of Thailand. (2015, April). *National progress report on the implementation of the Hyogo framework for action (2013-2015)*. https://www.preventionweb.net/files/41674_THA_NationalHFAprogress_2013-15.pdf

Dundes, A. (2007). Folklore as a mirror of culture. In S. J. Bronne (Ed.), *The meaning of folklore* (pp. 53-66). Utah State University Press.

Fire and Disaster Management Agency of Japan. (2008). *Zenkoku saigai denshō jōhō* [National disaster lore information]. https://www.fdma.go.jp/publication/database/database009.html

Fire and Disaster Management Agency of Japan. (2021, March 9). *Heisei 23-nen* (*2011-nen*) *Tōhokuchihō Taiheiyōjishin* (*Higashi-nihon daishinsai*). [The 2011 off the Pacific coast of Tohoku Earthquake (Great East Japan Earthquake) (161st report)]. https://www.fdma.go.jp/disaster/higashinihon/item/higashinihon001_12_03-01_02.pdf

Gaillard, J.-C., & Texier, P. (2008). Guest editorial. *Disaster prevention and management*, 17(3), 346-349. https://doi.org/10.1108/dpm.2008.07317caa.001

Gaillard, J.-C., & Texier, P. (2010). Religions, natural hazards, and disasters: An introduction. *Religion*, 40(2), 81–84. https://doi.org/10.1016/j.religion.2009.12.001

Haruyama, S. (2000). Environmental change and natural hazard of the farm-land on the Red River Delta, Vietnam. *Journal of the Japanese Society of Irrigation, Drainage and Reclamation Engineering*, 68, 15-20.

IPCC, (2021, In Press). Summary for Policymakers. In *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I.

Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. Cambridge University Press.

International Federation of Red Cross and Red Crescent Societies. (2021, March 17). *Emergency plan of action final report Indonesia: Earthquakes and tsunamis – Sunda Straits Tsunami.* https://reliefweb.int/report/indonesia/indonesia-earthquakes-and-tsunamis-sunda-straits-tsunami-emergency-plan-action-0

International Strategy for Disaster Reduction. (2009). Hyogo framework for action 2005-2015: Building the resilience of nations and communities to disasters: extract from the final report of the World Conference on Disaster Reduction (A/CONF206/6). https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf

Itō, Y. (2010). *Kōzui to ningen: Sono sōkoku no rekishi* [Flood and man: history of the conflicts]. Kokonshoin.

Jankaew, K. (2014, December 25). *Boxing Day Tsunami 10 years later*. Chulalongkorn University Geology. http://www.geo.sc.chula.ac.th/10years_tsunami/?fbclid=IwAR3vLfy89Mz1ozY2IG6YwdfRWSHS9csBWyGjLqO0EJVBuv7W_5csdhmPiLw

Japan Sabo Association. (2014, July 16). *Heisei 26-nen 7-gatsu kokonoka Naganoken Kisogun Nagisomachi Yomikaki de hasseishita dosekiryūsaigai nituite* [Debris flow in Yomikaki, Nagiso Town, Kiso County, Nagano Prefecture, July 9, 2014]. http://www.sabo.or.jp/saigai/20140709.htm

Kanai, M. & Katada, T. (2011). Tsunamishuraiji no juminhinan o yūhatsusuru shakaitaio no kentō: 2010nen Chirijishin tsunami no hinan jittai kara ["Social correspondences to urge residents to evacuate at tsunami arrival–According to the actual situation of residents' response at Chile earthquake tsunami in 2010"]. *Bōsaijōhō* [*Journal of Disaster Information Studies*], 9, 103-113.

Katada, T. (2012). Kodomotachi o mamotta 'shisei no bōsai kyōiku': Ōtsunami kara ikinuita Kamaishishi no jidō/seito no kōdō ni manabu ['Disaster prevention education on attitude' that protected children: Learning from the actions of children and students in Kamaishi City who survived the great tsunami]. *Journal of Disaster Information Studies*, 10, 37-42.

Kawakatsu, H. (1997). *Bunmei no kaiyō shikan* [A maritime history of civilisation]. Chuōkōronshinsha.

Kyuma, K. (2009, October 5). *Nature and agriculture in Monsoon Asia*. [Keynote address] Monsoon Asia Agro-Environmental Research Consortium Symposium 2009, Tsukuba, Japan. http://www.naro.affrc.go.jp/archive/niaes/marco/marco2009/english/program/S-0_Keynote_Kyuma_Kazutake.pdf

Lundberg, A. (2021). Balinese dancer wearing a gas mask: climate change and the tropical imaginary. *Scottish Geographical Journal*, 136, 91-100. https://doi.org/10.1080/14702541.2020.1858589

Lundberg, A. (2003). Voyage of the Ancestors. *Cultural Geographies*, *10*, 64-83. https://doi.org/10.1191/1474474003eu262oa

Luong, H. V. (2017). The reconstruction of heritage in rural Vietnam: An analysis of state and local dynamics. In H.-H., Hsiao, Y.-F., Hui, & P. Peycam. (Eds.), Citizens, civil society, and heritage-making in Asia (pp. 86-113). ISEAS-Yusof Ishak Institute.

Mawere, M. (2015). Indigenous knowledge for disaster risk management in Africa: Some showcases from Zimbabwe. In M. Mawere & S. Awuah-Nyamekye (Eds.), *Between rhetoric and reality: The state and use of indigenous knowledge in Post-Colonial Africa* (pp. 19-38). African Books Collective.

Ministry of the Environment, Ministry of Education, Culture, Sports, Science and Technology, Ministry of Agriculture, Forestry and Fisheries, Ministry of Land, Infrastructure, Transport and Tourism, & Japan Meteorological Agency. (2018). *Kikōhendō no kansoku·yosoku oyobi eikyōhyōka tōgōrepōto 2018: Nihon no kikōhendō to sonoeikyō* [Climate change observation, projection, and impact assessment integrated report 2018: Climate change and its impacts in Japan]. http://www.env.go.jp/earth/tekiou/report2018_full.pdf

Mishra, O. P., Khare, N., Das, S. B., Kumar, V., Singh, J., Vandana, Singh, P., Ghatak, M., Shekhar, S., Tiwari, A., Gera, S. K., Mahto, R., & Gusain, P. (2021). Glacial mass change–induced earthquakes in the Himalayan region of South Asia and its bearing to understand Arctic glaciers dynamics: proxy of climate change. In N. Khare (Ed.), *Understanding present and past Arctic environments* (pp. 433-455). Elsevier. https://doi.org/10.1016/B978-0-12-822869-2.00025-6.

Nakai, S. (2017, July 15). White eel and virtuous widow in lost city: Archiving Northern Thai folklore of natural disasters [paper presentation]. In *Interface between local knowledge and scientific knowledge: Disaster management in Thailand*. Globalized Thailand? Connectivity, conflicts, and conundrums of Thai studies. 13th International Conference on Thai Studies, Chiang Mai, Thailand. (pp. 1045-1075).

Okada, T. (1985). Iizuka Kōji no ajiaron: Sonosenchū sengo [Kōjino Iizuka's Asianism: Its interwar and post-war phases]. *Jimbun Chiri* [Japanese Journal of Human Geography], 37(5), 389-406.

Okae, T. (2019). *Betonamu no nōgyō to nōchiseisaku* [Agriculture and agricultural land systems in Vietnam]. Policy Research Institute of Japan's Ministry of Agriculture, Forestry and fisheries' country report. https://www.maff.go.jp/primaff/kanko/project/attach/pdf/200331_R01cr02_03.pdf

Ongsakul, S. (2005). *History of Lan Na*. Silkworm Books.

Oppenheimer, M., B.C. Glavovic, J. Hinkel, R. van de Wal, A.K. Magnan, A. Abd-Elgawad, R. Cai, M. Cifuentes-Jara, R.M. DeConto, T. Ghosh, J. Hay, F. Isla, B. Marzeion, B. Meyssignac, & Z. Sebesvari. (2019). Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities. In H.-O. Pörtner, D.C. Roberts, V. Masson-Delmotte, P. Zhai, M. Tignor, E. Poloczanska, K. Mintenbeck, A. Alegría, M. Nicolai, A. Okem, J. Petzold, B. Rama, & N.M. Weyer (Eds.), *Intergovernmental Panel on Climate Change* (*IPCC*) *Special report on the ocean and cryosphere in a changing climate*. https://www.ipcc.ch/srocc/chapter/chapter-4-sea-level-rise-and-implications-for-low-lying-islands-coasts-and-communities/

Otomo, N. (2013). Tai niokeru bōsaiseisaku to 'butsureki 2550-nen bōsai oyobi keigenhō' [Disaster prevention policies in Thailand and 'Disaster Prevention and Mitigation Act of B.E. 2550']. *Gaikoku no rippō* [Foreign Legislation], 251, 239-246.

Phraya Prachakitkorachak. (2014). *Phongsawadan Yonok* [*Yonok chronicle*]. Sipanya.

Prendergast, A. L., Cupper, M.L., Jankaew, K., & Sawai, Y. (2012). Indian Ocean Tsunami recurrence from optical dating of tsunami sand sheets in Thailand. *Marine Geology,* 295-298, 20-27. https://doi.org/10.1016/j.margeo.2011.11.012

'Pu' rot! Popocho titok khadi ploy namthuamyai pi-54 chi pen phai thammachat ['Pu' survives! National anti-corruption commission dropped case on 2011 flood, citing natural disaster]. (2017, March 13). *Thai Rath Online*. https://www.thairath.co.th/news/politic/1068935

Rahman, A., Sakurai, A., and Munadi, K. (2017). The analysis of the development of the Smong story on the 1907 and 2004 Indian Ocean tsunamis in strengthening the Simeulue island community's resilience. *International Journal of Disaster Risk Reduction*, 29, 13-23. http://doi.org/10.1016/j.ijdrr.2017.07.015

Saito, Y. (2012). Naganokenhokubu-jishin niokeru Sakaemura no saigaitaiō

nikansuru chōsa [Survey on Sakaemura's disaster response to the Northern Nagano Earthquake]. *Shōbōkagaku to jōhō* [Scientific Approaches for Fire and Information], 108, 41-45. https://www.isad.or.jp/pdf/information_provision/information_provision/no108/41p.pdf

Sasamoto, S. (1994). *Januke, ijin, kodama: rekishisaigai to denshō* [The run-off of snake, others, tree spirits: The folklore of historical disasters]. Tokyo: Iwata-shoin.

Satake, K., Namegaya, Y., & Yamaki, S. (2008). Numerical simulation of the AD 869 Jogan tsunami in Ishinomaki and Sendai plains. *Annual report on active fault and paleoearthquake Researches,* 8, 71-89.

Shimazaki, K. (2011). Yosokusaretanimokakawarazu higaisōteikara hazusareta kyodaitusnami [Great tsunamis that had been predicted but were not included in the damage estimates]. *Kagaku* [Science], 81(10), 1002-1006.

Shrestha, S. (2014). Assessment of water availability under climate change scenarios in Thailand. In S. Shrestha (Ed.), *Climate change impacts and adaptation in water resources and water use sectors* (pp. 9-23). Springer. https://doi.org/10.1007/978-3-319-09746-6_2

Syafwina, S. (2014). Recognizing indigenous knowledge for disaster management: Smong, early warning system from Simeulue Island, Aceh. *Procedia Environmental Sciences,* 20, 573–582. http://doi:10.1016/j.proenv.2014.03.070

Tajimi Sediment Control and National Highway Office. (2012). *Kisogawasuikei chokkatsu sabōjigyō Setsumeishiryō* [Explanatory material of erosion and sediment control projects for the Kiso River system, implemented by the office]. http://www.cbr.mlit.go.jp/tajimi/senmon/jimusho_naiyou/h23_gaiyo.pdf

Takeda, F., Takeuchi, K., & Mizuyama, T. (2017). *A Study on local governments' efforts to hand down lessons learned from disaster in Japan*. GRIPS Discussion Papers 17-02, National Graduate Institute for Policy Studies.

'Tendeko' sanriku no chie, kodomotachi o sukuu ['Tendeko'—Wisdom of Sanriku saves children]. (2011, March 28). *Yomiuri Online*. https://www.yomiuri.co.jp/kyoiku/news/20110328-OYT8T00699.htm

Tenryūgawajōryūiki saigaikyōkunden shōshuhō kentōkai [Research Unit for Studying How to Pass on Lessons Learned from Natural Disasters in Tenryū River Upper Reaches] (2009). *Tenryūgawajōryūiki saigaikyōkundenshō shuhō jissen no tebiki to jirei* (*an*) [A guide and examples of disaster lesson transfer methods in the Upper Tenryū River Basin (Draft)] https://www.cbr.mlit.go.jp/tenjyo/flood/densho/pdf/tebiki.pdf

Thai Meteorological Department. (n.d.). *TMD history.* https://www.tmd.go.th/en/aboutus/history.php

Tokyo Electric Power Company. (2011). *Fukushima nuclear accident analysis report* (Interim report of December 02, 2011). https://www.tepco.co.jp/en/press/corp-com/release/betu11_e/images/111202e14.pdf

Umesao, T. (1957). Bunmei no seitaishikan josetsu [Introduction to an ecological view of civilisation]. *Chūōkōron* 72(1), 32-49.

United Nations Country Team in Thailand. (2005, December 22). *Tsunami Thailand, one year later - National response and the contribution of international partners*. https://reliefweb.int/report/thailand/tsunami-thailand-one-year-later-national-response-and-contribution-international

United Nations Development Programme. (2016). *Thailand: Common country assessment*. https://www.undp.org › docs › cca › TH-CCA-2016

Usman, M. (2016). A study on the enhancing earthquake frequency in northern Pakistan: is the climate change responsible? *Natural Hazards*, 82, 921–931. https://doi.org/10.1007/s11069-016-2226-z

Watsuji, T. (1962*). A climate: A philosophical study* (B. Geoffrey, Trans.). Japanese Government's Printing Bureau. (Original work published 1935).

World Bank. (2012). *Thai flood 2011. Overview rapid assessment for resilient recovery and reconstruction.* http://documents1.worldbank.org/curated/en/677841468335414861/pdf/698220WP0v10P106011020120Box370022B.pdf

Yamashita, F. (2008). *Tsunami tendenko: Kindainihon no tsunamishi* [Tsunami tendenko: Modern history of tsunamis in Japan]. Shinnihon Shuppansha.

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Climate Imperialism: Ecocriticism, Postcolonialism, and Global Climate Change

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Abstract

Global climate change threatens to kill or displace hundreds of thousands of people and will irrevocably change the lifestyles of practically everyone on the planet. However, the effect of imperialism and colonialism on climate change is a topic that has not received adequate scrutiny. Empire has been a significant factor in the rise of fossil fuels. The complicated connections between conservation and empire often make it difficult to reconcile the two disparate fields of ecocriticism and postcolonial studies. This paper will discuss how empire and imperialism have contributed to, and continue to shape, the ever-looming threat of global climate crisis, especially as it manifests in the tropics. Global climate change reinforces disparate economic, social, and racial conditions that were started, fostered, and thrived throughout the long history of colonization, inscribing climate change as a new, slow form of imperialism that is retracing the pathways that colonialism and globalism have already formed. Ultimately, it may only be by considering climate change through a postcolonial lens and utilizing indigenous resistance that the damage of this new form of climate imperialism can be undone.

Keywords: climate change, imperialism, colonialism, ecocriticism, postcolonialism, indigenous resistance, Tropics, empire

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Global climate change has been called the single greatest threat to human civilization. It threatens to kill or displace millions or even billions of people and will irrevocably change the lives of practically every human being on the planet. This topic has deservedly received much critical attention. The effects of imperialism and colonialism on climate change, however, is a topic that has not received adequate scrutiny. As Amitav Ghosh (2016) states: "[i]n accounts of the Anthropocene, and of the present climate crisis, capitalism is very often the pivot on which the narrative turns…. However, I believe that this narrative often overlooks an aspect of the Anthropocene that is of equal importance: empire and imperialism" (p. 87). This lack of attention is not restricted to just environmental critics, as Rob Nixon (2011) points out in *Slow Violence and the Environmentalism of the Poor,* "postcolonial literary critics had, in turn, shown scant interest in environmental concerns" (p. 236). Dating back to the rise of coal during the Industrial Revolution, empire has been a significant factor in the rise of fossil fuels. This is no less true today as, for example, petro-imperialism remains a contributing factor in American foreign policy from Venezuela in Latin America to the Middle East. These complicated connections between conservation and empire also make it difficult to reconcile the disparate fields of ecocriticism and postcolonial studies. This paper will build on the work of Amitav Ghosh, Rob Nixon, Naomi Klein, Dipesh Chakrabarty, and Elizabeth DeLoughrey and George B. Handley to discuss how empire and imperialism have contributed to and continue to shape the ever-looming threat of climate crisis. Global climate change reinforces disparate economic, social, and racial conditions that developed, fostered, and thrived throughout the long history of colonization, inscribing climate change as a new, slow form of imperialism that is retracing the pathways that colonialism and globalism have already formed. Ultimately, it may only be by considering climate change through a postcolonial lens and utilizing indigenous resistance that the damage of this new form of climate imperialism can be halted.

There has already been significant work done to bridge the fields of ecocriticism and postcolonialism. In the introduction to their edited collected, DeLoughrey and Handley (2011) argue for a "sustained dialogue…between postcolonial and ecocritical studies" (p. 24) and go on to highlight several reasons why these fields have been kept disparate and the necessity for bringing them together. They contend that: "an ecological frame is vital to understanding how geography has been and still is radically altered by colonialism"; that postcolonialists are adept at "disentangling the hierarchies" formed through colonial binarism; furthermore that postcolonial studies prioritizes sustainability and "the health of the physical world"; and that "the field of postcolonial studies has long been engaged with questions of agency and representation of the nonspeaking or subaltern subject" (DeLoughrey & Handley, 2011, pp. 24-25). Chakrabarty (2012) expands upon these arguments to

claim that postcolonialism complicates the configuration of the Anthropocene "of humans as constitutively one — a species, a collectivity whose commitment to fossil-fuel based, energy-consuming civilization is now a threat to that civilization itself" to include "the contingency of individual human experience; belonging at once to differently-scaled histories of the planet, of life and species, and of human societies" (p. 2, 14). This is significant because anthropological differences necessitate deconstructing humanity into groups with varying political, economic, and social power, especially given "the uneven impacts of climate change" (Chakrabarty, 2012, p.14). Chakrabarty's argument that within the study of global climate change humanity cannot be subsumed into a monolithic group lays the theoretical framework for this article. Different cultural groups have contributed to ecological destruction to varying degrees and the impact of climate change will indeed be distributed unevenly. However, I am further arguing for the necessity of postcolonial and anti-colonial work within any study of climate change because its impacts will be distributed not just unequally, but in a direct echoing of colonial pathways.

Global climate change is a form of slow violence. Slow violence is "a violence that occurs gradually and out of sight, a violence of delayed destruction that is dispersed across time and space, an attritional violence that is typically not viewed as violence at all" (Nixon, 2011, p. 2). This includes the current climate crisis due to "the thawing cryosphere, toxic drift, biomagnification, deforestation, the radioactive aftermaths of wars, acidifying oceans, and a host of other slowly unfolding environmental catastrophes" which rank among the examples of slow violence (Nixon, 2011, p. 2). What separates slow violence from other forms of violence is that it "is neither spectacular nor instantaneous, but rather incremental and accretive, its calamitous repercussions playing out across a range of temporal scales" (Nixon, 2011, p. 2). It becomes imperative to view climate change in these parameters when you consider the already recognized victims of climate change:

> Obviously, elsewhere in the world there are already victims of climate change. 300,000 deaths according to the U.N. 300,000 people in the Horn of Africa, in Bangladesh, India, Vietnam... But those deaths are due to the exacerbation of already existing problems. Drought, malnutrition, floods. Nothing seemingly 'climatic.' Furthermore, the victims of climate change die slowly, one after another—no drama, no media coverage—scattered over the whole year over the whole planet. If only they had the good sense all to die on the same day, like the victims of the 2004 tsunami. That would catch our attention. Those everyday deaths don't have the same weight as a large death toll on a single day... Little lives. In little boxes. And we don't notice a thing. (Squarzoni, 2014, pp. 250-1)

Squarzoni is describing the deaths of hundreds of thousands of people but is supremely concerned with the fact that these deaths are taking place on a temporal scale that is too long for most of us to adequately grasp. If the deaths were instantaneous, they would become the spectacle that marks traditional forms of violence. However, these first victims of climate change are the victims of a slow violence, which marks them as invisible. Despite the temporal differences between a quick violence, like military conflicts and forms of enslavement typical of colonization, and the slow violence of allowing the causes of global climate change to go largely unchallenged, climate change will nevertheless follow the same route and processes of imperialism.

It is imperative to begin any discussion of global climate change with an examination of the ways in which the tropics will be among the first to suffer from its effects. As a form of slow violence, climate change will disproportionately affect poor and postcolonial nations, most of which are in the tropics. The vast majority of the waves of colonization since the 16th century have happened within the tropics. This imperial period began with the voyages of Christopher Columbus, who stumbled upon the Caribbean in his quest to find an alternate trade route to Asia. The tropics have formed the foundation of colonial possessions since that time, also serving as primary sites for plantations and the forced enslavement of Africans to work on said plantations. That being said, this “environmentalism of the poor” compounds the disaster those of the tropics face because "it is those people lacking resources who are the principal casualties of slow violence. Their unseen poverty is compounded by the invisibility of the slow violence that permeates so many of their lives” (Nixon, 2011, p. 4). This is significant because many postcolonial nations tend to be poorer because they were robbed of resources during the colonial period and because their infrastructures were designed primarily for the benefit of resource extraction, not for sustainability and repair. As Albert Memmi (1991) asserts: “colonization weakens the colonized and that all those weaknesses contribute to one another. Nonindustrialization and the absence of technical development in the country lead to a slow economic collapse of the colonized” (p. 115).

Additionally, Western civilizations are among the leading contributors to carbon emissions on a per capita basis of population. Canada, the United States, Russia, and the European Union are four of the five worst contributors in emissions per capita. In fact, "Canada, the United States, and Russia emit more than double the global average per person" (Ge et al., 2014). Yet, nations within the tropics rank quite low on the list of emissions per capita. Squarzoni (2014) also points this out, saying that in order to reduce global carbon dioxide emissions to "3 gigatons of carbon equivalent a year" a global population of 6 billion people would each have to produce less than "1,000 pounds (500 kg) of carbon equivalent per person per year"

(pp. 188-9). He uses the specific example of Mali, a tropical nation, where "the average person's consumption produced emissions of 22 pounds (10 kg) of carbon equivalent a year" while "[t]he average French person produced 2.7 tons a year" and Americans "produced an average of 6.8 tons per person per year" (Squarzoni, 2014, p. 189). Despite this, the tropics and other postcolonial areas will be the most rapidly affected by global climate change.

While nations of the Western world continue to be among the largest per capita emitters of carbon equivalents, it has become apparent that the countries that will suffer the most immediate effects of climate change are ones that were formerly colonized. As Lundberg (2020) articulates, the "predicted increase of El Niño events which transform weather around the global tropics and subtropics" will lead to "excessive rainfall in some regions and droughts in others" (2). Furthermore, Klein (2014) points out that:

> Four degrees of warming could raise global sea levels by 1 or possibly even 2 meters by 2100 (and would lock in at least a few additional meters of rise over future centuries). This would drown some island nations such as the Maldives and Tuvalu, and inundate many coastal areas from Ecuador and Brazil to the Netherlands to much of California and the northeastern United States, as well as huge swaths of South and Southeast Asia. (p. 13)

Of the many locations Klein lists, it is striking how many are postcolonial nations. Of particular note for this article are the multiple tropical nations. Of the countries listed, only the Netherlands and the United States hold the position of colonizer rather than colonized.[1] Postcolonial nations are still struggling through the consequences and legacies of decolonization (and the current effects of neocolonialism) and others remain territories of the countries that took them by force. These legacies of imperialism and decolonization are being exacerbated and prolonged through climate change. The West will see very few of the immediate effects while postcolonial nations will face death and destruction.

The Caribbean and other island nations will also be transformed by climate crisis. These islands are at risk from not only sea level rise, but—as with the increase in cyclonic activity in the Arabian sea—they are also especially vulnerable to the worldwide increase in hurricane and cyclonic activity. An example of this is the slew of powerful hurricanes that have battered the islands of the Caribbean within the last few years, including Hurricane Maria in September 2017, which caused substantial

[1] The United States, in addition to their external colonization beginning at the end of the nineteenth century, was formed through the settler colonialization of the North American continent.

damage in Puerto Rico, the Dominican Republic, Haiti, and the U.S. Virgin Islands. These countries and territories have had some of the longest exposure to imperialism, dating back to the voyages of Christopher Columbus. Puerto Rico was "[c]laimed for Spain by Christopher Columbus on his second trip to the New World" before being "taken along with Cuba by the U.S. in the 1898 Spanish-American War" (Vick, 2017). These consistent and consecutive colonialisms left the Caribbean—and other postcolonial sites–with poor infrastructure and bereft of resources. An example of how climate change reinscribes colonial structures can be seen through Hurricane Maria.

In September 2017, Hurricane Maria tore through the Caribbean, striking "Puerto Rico on September 20 with 155 mph winds and a central pressure of 917 millibars" ("Hurricane Maria 2017," n.d.). To many, Hurricane Maria and the other uncommonly strong recent hurricanes can be seen as a result of climate change since their ferocity is influenced by the warmer waters in the Atlantic. Although many climate scientists are reluctant to blame individual weather phenomenon directly on climate change, and rightfully so, some have begun to make these claims, including Climate Nexus, who argue the "record-breaking rainfall and flooding driven by Hurricane Maria—as well as Hurricanes Harvey and Irma just weeks before—is consistent with the long-term trend driven by climate change" (Hurricane Maria 2017, n.d.). While the storms themselves may be natural, their intensity and frequency are very likely increased because of global climate change. The massive amount of damage inflicted upon Puerto Rico and major portions of the Caribbean further repeats the traumatic legacies of imperialism. As of the end of 2017, “more than 660,000 power customers across Puerto Rico still lack[ed] electricity more than three months after Hurricane Maria” (Coto, 2017). In 2021, a U.S. Department of Housing and Urban Development special investigation revealed that the Trump administration purposefully delayed “approximately $20 billion in disaster-recovery funds that Congress appropriated to help Puerto Rico” (Office of Special Investigations, 2021, p. 2). While the U.S. mainland quickly returned to relative normality after the storm, Puerto Rico is still suffering underfunding for rebuilding efforts. As with climate change as a whole, the colonizing nation did not feel the adverse effects to nearly the degree of the colonized. This also reiterates the point that in many ways forgetting is a form of privilege, one only accessible to the colonizer. The U.S. can forget about Hurricane Maria. The Caribbean cannot. This divide continues to exacerbate power inequities between nations and their colonial possessions, as well as between former colonizing nations (who have frequently transitioned into neocolonial nations) and postcolonial ones.

Considering the catastrophic damage Hurricane Maria inflicted on Puerto Rico and the Caribbean as a whole, the question could be raised: Has climate change moved

from slow violence to a new mode of violence? Does the massive amount of damage and loss of life show that climate change is now a form of spectacular, rapid violence? Nixon (2011) argues that media has a "bias toward spectacular violence" (p. 4). This spectacular violence, in direct opposition to slow violence, happens quickly, draws a lot of media attention, and is seen on a catastrophic scale. Slow violence is given "unequal attention" because "[i]n an age that venerates instant spectacle, slow violence is deficient in the recognizable special effects that fill movie theaters and boost ratings on TV" (Nixon, 2011, p. 6). Yet this notion of movie theatre visuals describes the initial media and popular responses to Hurricane Maria and Puerto Rico. This could be interpreted as suggesting that Hurricane Maria, and possibly climate change itself, are moving out of the slow phase of violence. However, within just a few months of Hurricane Maria making landfall in Puerto Rico the coverage of the disaster quickly dissipated. Probable effects of climate change can be a spectacle for a short period (during the catastrophic weather events, for example) but cannot be maintained—at least until it is far too late. Just because in rare cases climate change presents as a spectacle, does not mean it sustains spectatorship; and it quickly resumes a pattern of slow violence. Furthermore, as Nixon articulates in an interview with the Harvard University Press (2013), the measure of slowness is one of an overall, global rate. This is particularly important for catastrophes, like Hurricane Maria, where the corporate media presents "increasingly extreme events…in isolation, whereas in the aggregate they could be used to occasion bold, ongoing coverage of the incremental, but profoundly consequential climate changes that are occurring" (Nixon, 2013). Thus, although there are instances of spectacle or accelerations within Nixon's framework of slow violence, it remains difficult to present a global and sustained emphasis on this violence.

Furthermore, the treatment of Puerto Rico by the U.S. government after the initial catastrophe, demonstrates the disposability of postcolonial citizens. The purposeful denial of resources to the country following the disaster and the "markedly slower and less attentive" response to Hurricane Maria in Puerto Rico versus the responses to Hurricanes Harvey and Irma in Texas and Florida respectively, left many Puerto Ricans, and those sympathetic with their plight, with the message "that a population of brown-skinned, Spanish-speaking Americans counts for less" (Vick, 2017). This treatment of people as disposable supports the idea that Hurricane Maria still functions as a form of slow violence. Additionally, the treatment of casualties from Hurricane Maria also shows that climate change and its effects remain a form of slow violence. The official death toll in Puerto Rico listed only 64 casualties. However, these are just the spectacular deaths. The real death toll, calculated over a slower temporal scale, includes those who died from lack of medical attention, complications from injuries, and other deaths brought about from lack of electricity,

food, and clean water, as well as those whose health and lives will be diminished by long-term effects of the storm. The *New York Times* found "that in the 42 days after Hurricane Maria made landfall…1,052 more people than usual died across the island" (Robles et al., 2017). The final death toll for the island was 2,975, “nearly 50 times the previous estimate of 64” (BBC News, 2018). This harkens back to Squarzoni's point about the already existent victims of climate change: "If only they had the good sense all to die on the same day, like the victims of the 2004 tsunami. That would catch our attention. Those everyday deaths don't have the same weight as a large death toll on a single day" (2014, p. 250). Therefore, despite spectacular initial attention, climate change and its catastrophic climatological effects are still very much elements of slow violence.

Besides the risk of sea level rise and increased meteorological storm systems, postcolonial nations also have another increased risk factor: disease. For the most part, poor or developing countries lack the resources to effectively combat new illnesses. Global climate change brings a rise in average global temperatures, and higher temperatures increase the geographic area of vector-borne illnesses, largely due to forced migration of animals (Squarzoni, 2014). These new animals will bring diseases to populations that either do not have access to vaccines or do not have natural immunity due to exposure. When higher global temperatures allow for the increased spread of vector-borne illnesses, "220 to 400 million more people could be exposed to Malaria. Yellow Fever, Dengue Fever, and Lyme Disease could become endemic to the middle latitudes. In developing countries, the health repercussions of warming will be harsher on poorer populations. Once again, climate change exposes the problem of income disparity" (Squarzoni, 2014, p. 253). Although many of these illnesses could become common in imperial and formerly imperial nations as well, it is the poorer nations that will suffer the most in the near and middle-term. Many developing countries also do not have adequate resources—like electricity or running water—let alone money to provide health resources like immunization and mosquito netting. This poverty is not only a direct legacy of extractive colonialism, but furthermore, economic exploitation and globalization continue to haunt these nations and "[t]he economic effect of large multinational companies and the existence of high levels of debt in developing countries have maintained a version of economic colonial power" (Edwards, 2008, p. 161). As Leon Sealy-Huggins (2017) states in his article, *‘1.5°C to Stay Alive’: Climate Change, Imperialism and Justice for the Caribbean*, "wealth expropriated from the Caribbean during the period of early colonialism was expended on processes of industrialization, which has in turn contributed significantly to the climate change-inducing emissions that now threaten Caribbean societies" (p. 2445). Colonization stole wealth and economic prosperity from much of the Caribbean and other tropical countries as it made colonizers rich. Now the effects of this income disparity will create problems of disease as global

temperatures rise. Colonization continues to shape the ways in which nations will suffer from global climate change, re-inscribing imperialism.

As Western nations are struggling to decrease their carbon footprint, many postcolonial nations are still trying to industrialize to reach a better standard of living. Unfortunately, it is the "energy model of the wealthier countries [that] is becoming the future path of the developing countries, which want to catch up with energy-intensive, accelerated growth" (Squarzoni, 2014, p. 364). Most energy experts assert that for these developing nations, "[t]o develop infrastructures for education, health...the existing models of the industrialized countries shouldn't be replicated, because they're very energy intensive and consume a great deal of raw materials" (Squarzoni, 2014, p. 365). However, these sorts of restrictions have been met with resistance from some developing countries. In fact, many "green or environmental discourses were once frequently regarded with skepticism as neocolonial, Western impositions inimical to the resource priorities of the poor in the global South" (Nixon, 2011, p. 4). This skepticism has historical roots. In India, when the native population began to industrialize at a rate that would have made them equal to British industrial advancements, Britain passed laws that prevented India from developing technologically. As the colonial force in India, "the emerging fossil-fuel economies of the West required that people elsewhere be prevented from developing coal-based energy systems of their own, by compulsion if necessary" (Ghosh, 2016, p. 107). It is understandable that nations held back or confined by previous colonial restrictions regarding industrialization would feel apprehensive about Western, developed, countries making decisions on their technological advancement today. Although the concern with which Western countries are trying to prevent increased carbon emissions may be sincere, within the historical context it is not hard to see why developing countries often view the West's interference as neocolonial. Furthermore, Sealy-Huggins (2017) argues that within the Caribbean, the “vulnerability to these impacts [of climate change]…is not reducible to location or the globally uneven distribution of the maladies of climate change" and that the only way to truly "understand these existential threats [is] by recognizing that some Caribbean states are among the most indebted globally, an indebtedness that is itself traceable to relations of colonialism and imperialism" (p. 2445). By refusing to acknowledge the economic disadvantage imperialism created for much of the Global South, imperial and former imperial nations turn a blind eye to their past actions and the inequalities that arose because of them.

These inequalities are exactly why some postcolonial nations are seeking reparations to industrialize and help prevent increased carbon emissions that will hasten global climate change. The effects of colonization and the theft of land, resources, and labor still shape economic situations within the developing world. As

Klein (2014) points out, the idea that the actions of our forefathers should not play a role in modern political or social policy "overlooks the fact that those past actions have a direct bearing on why some countries are rich and others poor" (p. 414). This concept is not new among economists or even environmental justice activists: "In Latin America progressive economists have long argued that Western powers owe an 'ecological debt' for centuries of colonial land grabs and resource extraction, while Africa and Caribbean governments have, at various points…called for reparations to be paid for transatlantic slavery" (Klein, 2014, p. 414). These economic reparations are necessary if the West expects the Global South to industrialize without further contributing to the damage caused by carbon emissions. Sealy-Huggins (2017) argues that "the expropriation of wealth and resources used to enrich colonial and imperial societies in general" requires economic reparations "as redress for the global inequalities resulting from this appropriation of wealth" (p. 2452). Developing countries are "squeezed between the impacts of global warming, made worse by persistent poverty, and by their need to alleviate that poverty, which, in the current economic system, can be done most cheaply and easily by burning a great deal more carbon, dramatically worsening the climate crisis" (Klein, 2014, p. 416). Since so much of the poverty in these regions is the result of the long history of imperialism, which enriched the colonizing countries and aided in their rise to economic prosperity, it is only fair that these rich imperial nations pay back the developing world for the resources and economic prosperity stolen from them.

Even if reparations are paid to aid developing nations, the world has now reached a threshold of carbon emissions that makes significant climatological changes impossible to avoid. Since the rapidly approaching effects of climate change by Western countries will have a much worse and more immediate effect on postcolonial regions, climate change should be seen as an extension of the colonial history already tied to coal and fossil fuels. The rise of fossil-fuels is steeped in imperial history, so much so that Klein (2014) comments on "[t]he braided historical threads of colonialism, coal, and capitalism" (p. 176). Coal, the first major fossil fuel, grew into a massive industry in the West in part due to the slave trade: "when the British Parliament ruled to abolish slavery in its colonies in 1833, it pledged to compensate British slave owners for the loss of their human property—a backward form of reparations for the perpetrators of slavery, not its victims" (Klein, 2014, pp. 415-6). Many of these payouts, which amounted to £20 million,

> went directly into the coal-powered infrastructure of the now roaring Industrial Revolution—from factories to railways to steamships. These, in turn, were the tools that took colonialism to a markedly more rapacious stage, with the scars still felt to this day. (Klein, 2014, p. 416)

Klein is careful to distinguish that coal and a society based on fossil-fuels did not cause colonization or create inequality in the world. What can be argued, however, is that as “coal helped Western nations to deliberately appropriate other people’s lives and lands” it allowed “these same nations the means to inadvertently appropriate their descendants’ sky as well, gobbling up most of our shared atmosphere’s capacity to safely absorb carbon” (Klein, 2014, p. 416). Klein is making a direct comparison here between imperialism and climate change. Both directly reduced the quality of lives of future generations due to greed and selfishness. Sealy-Huggins (2017) says this more directly, claiming that, within the Caribbean, "the political and social relations of climate change…are significantly patterned by contemporary forms of imperialism, as well as by the historical legacies of imperialism and colonialism", and that "neoliberal modes of development via climate finance instruments shows that these are poised to exacerbate imperialism’s legacy of exploitation" (p. 2453). Neoliberalism threatens to exacerbate or re-inscribe the effects of imperialism on the Caribbean, and other former colonized countries, particularly through economic means. Climate finance instruments are a means for financial corporations to leverage the adverse effects of climate change. Western economic markets will once again profit off postcolonial nations as they insure their profits despite global climate change.

A large portion of the work being done to forestall or minimize the damage of climate change is contained within the biological and environmental sciences. Ultimately, that climate change re-inscribes imperialism should be anticipated because of the link between conservation and colonization. The protection of America's wildlife and natural landscapes through the formation of the national parks is widely regarded as the beginning of the conservation movement. The creation of the national parks also coincided with the removal of indigenous Americans from those 'preserved lands' and their displacement onto reservations. As Mark David Spence illustrates in his book, *Dispossessing the Wilderness: Indian Removal and the making of the National Parks*, the foundation of the national park system was based on the ideology that presented the "wilderness as an uninhabited Eden that should be set aside for the benefit and pleasure of vacationing Americans" (1999, p. 4). This configuration of the national lands as uninhabited had one major flaw: the native peoples who "continued to hunt and light purposeful fires in such places" (Spence, 1999, p. 4). In order to fulfill the preservationist view, "the establishment of the first national parks necessarily entailed the exclusion or removal of native peoples" since "uninhabited wilderness had to be created before it could be preserved" (Spence, 1999, p. 4). Three of the major national parks—Yosemite, Yellowstone, and Glacier—had "policies of Indian removal" despite the fact that "each supported a native population at the time of its establishment" (Spence, 1999, p. 5). This treatment of the

indigenous North American population is in line with settler colonial ideology. More insidious, however, is how this settler colonial project would begin global conservation efforts. The United States became a leader in conservation and preservationist efforts, and the national parks "as the grand symbols of American wilderness, the uninhabited landscapes preserved in these parks have served as models for preservationist efforts, and native dispossession, the world over" (Spence, 1999, p. 5). This further illustrates the ways in which modern understandings of environmentalism, preservation, and conservation have been shaped by colonialism—settler colonialism in this specific case.

With the dubious imperial beginnings of conservation and environmentalism, it is not surprising that ecocriticism also has problematic roots. Nixon (2011) scrutinized the lack of international writers within ecocritical literature and found that the current slew of ecocritical work "tended to canonize the same self-selecting genealogy of American authors" (p. 235). He says that this made him realize "that literary environmentalism was developing, de facto, as an offshoot of American studies" (Nixon, 2011, p. 234). Missing, Nixon realized, were the voices of postcolonial literary scholars. He points to the example of Ken Saro-Wiwa, an "Ogoni author who was being held prisoner without trial for his environmental and human rights activism in Nigeria" (Nixon, 2011, p. 234). Even following his death, which Nixon (2011) claims makes him "Africa's most visible environmental martyr," Saro-Wiwa's writings were "unlikely to find a home in the kind of environmental literary lineage" that had formed in the American vein (p. 234). This is because "the environmental justice movement" has become a "branch of American environmentalism" (Nixon, 2011, p. 235). Nixon (2011) laments that this high potential "for connecting outward internationally to issues of slow violence, the environmentalism of the poor, and imperial socioenvironmental degradation" continues to remain marginalized (p. 235). By maintaining an American centrality in environmentalism, one based in racism and exclusion of indigenous people, it is almost impossible for environmentalism to resist its imperialistic underpinnings.

The American focus of environmentalism is not the only complication to the potential postcolonial turn for global climate studies. The claim that colonialism is inextricably tied to climate change is not uncontested. In fact, Ghosh (2016) makes the surprising claim “that imperialism actually delayed the onset of the climate crisis by retarding the expansion of Asian and African economies” (pp. 109-10). He says that it is highly likely that "if the twentieth-century empires had been dismantled earlier, then the landmark figure of 350 parts per million of carbon dioxide in the atmosphere would have been crossed long before it actually was" (Ghosh, 2016, p. 110). Therefore, instead of placing the blame on the West for adopting and maintaining "some of the key technologies of the carbon economy…the world's leading colonial power *may*

actually have retarded the onset of the climate crisis" [emphasis in original] (Ghosh, 2016, p. 110). This controversial claim seems to reinscribe the ideology that colonization was necessary or even beneficial. Furthermore, this romanticization of the pre-colonial past is not accurate across all settings. Take, for example, Easter Island. Despite its pre-industrial, pre-colonial state, Easter suffered the devastating effects of overharvesting, overfishing, and deforestation. The native population of Easter decimated their food sources until "[o]f the 25 or more formerly breeding sea birds, overharvesting and rat predation brought the result that 24 no longer breed on Easter itself" and "[e]ven the shellfish were overexploited" (Diamond, 2005, p. 106). In order to make boats for fishing, make firewood, and clear land for gardens, the population of Easter also began a process of "[d]eforestation [that] must have begun sometime after human arrival by A.D. 900, and must have been completed by 1722" (Diamond, 2005, p. 106-7). Diamond (2005) argues that this level of natural destruction ranks itself as "the most extreme example of forest destruction in the Pacific, and among the most extreme in the world" (p. 107). Of course, it is naïve to believe that postcolonial nations, left to develop on their own, would have industrialized in a manner matching the natural exploitation and destruction of Easter Island. Furthermore, Ghosh's claim minimizes the damage Western imperial economies have done. Ghosh assumes that if postcolonial nations had not had their industrialization restricted or altered by colonial forces then the carbon footprint of postcolonial nations would be greater than what the West caused during its imperialist actions in these areas. This is unlikely due to the nature of franchise colonialism, which demands the mass exploitation and consumption of natural resources to enrich the colonizer.

Additionally, Ghosh's claim ignores the possibility that the Global South, if never colonized by Western societies, would have developed practices that were as openly hostile to the environmental world as capitalism and consumerism. As Ghosh (2016) himself points out, "Imperialism was not, however, the only obstacle in Asia's path to industrialization: this model of economy met with powerful indigenous resistances of many kinds" (p. 111). In India, this indigenous resistance included prominent figures, like Mahatma Gandhi, who, understood "that the universalist premise of industrial civilization was a hoax; that a consumerist mode of existence, if adopted by a sufficient number of people would quickly become unsustainable and would lead, literally, to the devouring of the planet" (Ghosh, 2016, pp. 111-2). It is possible that imperialism did delay the onset of these countries' contributions to the climate crisis. However, if they had never been colonized, their own industrialization process may have contributed to the crisis to a much smaller degree due to potential innovation and greener alternatives they were not allowed to develop independently. This is supported by the rapid development of sustainable technology in Singapore. The formerly colonized country is leading Southeast Asia—and even many western

nation—in sustainable innovation. Additionally, early this year, "the city-state's government launched a whole-of-nation sustainable development agenda: Green Plan 2030" (Mulia, 2021). This example is why many scholars and activists are pushing to decolonize the conversation and practices surrounding the fight against global climate change.

The push to decolonize the climate crisis largely coincides with a resurgence in indigenous knowledge. Some of the earliest environmental activism in recent memory has been against deforestation in the Amazon rainforest, which has historically been—and continues to be—led by indigenous activists from South America. These tropical indigenous activists have lain the groundwork for more modern indigenous resistance. Kyle Powys Whyte (2017), a citizen of the Potawatomi nation, states that "[i]ndigenous peoples are emerging as among the most audible voices in the global climate justice movement" (p. 88). Whyte highlights the indigenous presence at both the 2015 United Nations Climate Change Conference of the Parties (COP) in Paris and the Rio+20 Earth Summit in 2012 where representatives intended "to discuss and express their concerns about sustainable development and climate change" (2017,p. 94). Perhaps the most well-documented example of indigenous environmental resistance to policies that would harm the environment and exacerbate global climate change was the international fight against the Keystone XL pipeline. Keystone XL, a "2,735-kilometre pipeline project by Calgary-based TransCanada" was projected to "carry roughly 800,000 barrels of oil a day from Alberta to refineries along the Texas Gulf Coast" (Fontaine, 2017). Environmental and indigenous resistance to the pipeline delayed its construction initially, and these groups vowed to continue fighting the construction when it was greenlit by the Trump administration in 2017. The Keystone XL pipeline's construction permit was rescinded by President Biden during his first day in office and activists are hopeful that this move will prevent future plans of reviving the project (Davenport, 2021). As with the similar Dakota Access pipeline (DAPL), indigenous groups led the fight against these destructive policies and were successful in preventing further environmental damage. These examples support the idea that indigenous industrialization would not have followed the same (or a more destructive) path as capitalist, consumerist development. Indigenous resistance to environmental damage also reinforces "how colonialism and capitalist economics facilitate the role of rich, industrialised countries and transnational corporations in bringing about risky climate change impacts" (Whyte, 2017, p. 94), reinscribing imperial devastation. The rise of indigenous resistance to the global climate crisis and the fact that climate change and imperialism are inextricably linked demonstrate that the only way to provide a stable, lasting solution is through anti-colonial climate studies.

This ecocritical-postcolonial union is already emerging within the critical and creative writings of those from postcolonial nations. Daniel Arbino (2019) argues for a need to incorporate ecocritical, particularly ecogothic, frameworks into the analysis of Caribbean literature due to repeated environmental exploitation dating back to 1492 and continuing to this day. Hannah Regis (2020) builds on DeLoughrey and Handley's *Postcolonial Ecologies* to emphasize the "historical links between corporate capital systems, industrial toxics, deforestation, climate change and modern progress" (p. 154). She highlights the work of Olive Senior, a Jamaican poet, who "aims to contribute new understandings on Caribbean environmental and territorial justice" by "reviving indigenous folkways via the creative and mythic imagination" (Regis, 2020, p. 164). Similarly, Gregory Luke Chwala (2019) traces the "decolonial queer ecologies" reflected in the work of Michelle Cliff that serve to further decolonial efforts and redefine nature in a postcolonial space (p. 143). Furthermore, Craig Santos Perez (2020), a Chamoru poet from Guam, uses his poetry to highlight issues of climate change, capitalist exploitation, and militarization from an indigenous perspective. That these scholars and writers are rising up from tropical nations that have faced the longest and most intense colonialism is not a coincidence. This demonstrates the necessity to integrate postcolonial and ecocritical studies. Additionally, these works also demonstrate that this emerging ecocritical-postcolonial union can (and should) be led by indigenous scholars.

Despite the Global South's growing industrialization, Northern and Western civilizations remain among the world's top contributors of carbon emissions on a per capita basis of population. Environmentalism and conservation have a long and sordid past, particularly when it comes to postcolonial nations and ideologies. The formation of America's national parks was steeped in ideologies that reinforced purity and virgin landscapes, to the detriment of the indigenous populations that lived on these lands over thousands of years. Likewise, ecocriticism began and remains to this day American-centric. This sordid past, combined with the positioning of global climate change as a form of slow violence that will follow the pathways of imperialism and rewrite much of that period's destruction, places ecocriticism and postcolonial studies in a somewhat uncomfortable partnership. By acknowledging this—and using a postcolonial lens to view the impending threat of climate change—postcolonial literary thought might be an integral way to shift the focus within ecocritical work and make a larger impact within the humanities regarding climate change. Of course, even this might not be enough. Klein (2014) points out that signs indicate that climate change, "rather than sparking solutions that have a real chance of preventing catastrophic warming and protecting us from inevitable disasters" will instead "once again be seized upon to hand over yet more resources to the 1 percent" (p. 8). To try and prevent the world's elite from taking economic, social, and political advantage of those most vulnerable to the effects of climate change, an anti-colonial climate

studies viewpoint becomes imperative. That is the only hope for avoiding the missteps of the past and preventing the worst of the catastrophic future that is looming on the horizon.

References

Arbino, D. (2019). "The ugliness of my surroundings": Tip Marugg's Ecogothic Poetics of Isolation. *eTropic*: *electronic journal of studies in the Tropics 18*(1), 125-140. https://doi.org/10.25120/etropic.18.1.2019.3668.

BBC News. (2018, Aug. 29). Puerto Rico increases Hurricane Maria death toll to 2,975. https://www.bbc.com/news/world-us-canada-45338080.

Chakrabarty, D. (2012). Postcolonial studies and the challenge of climate change. *New Literary History*, 43(1), 1–18. https://doi.org/10.1353/nlh.2012.0007

Chwala, G. L. (2019). Ruins of Empire: Decolonial Queer Ecologies in Cliff's *No Telephone to Heaven*. *eTropic*: *electronic journal of studies in the Tropics* 18(1), 141-156. https://doi.org/10.25120/etropic.18.1.2019.3690.

Coto, D. (2017, Dec. 29). Anger grows as half of Puerto Rico remains without power months after hurricane. *Time*. http://time.com/5082225/hurricane-maria-puerto-rico-no-power/.

Davenport, C. (2021, June 19). The Keystone XL pipeline project has been terminated. *The New York Times*. https://www.nytimes.com/2021/06/09/business/keystone-xl-pipeline-canceled.html.

DeLoughrey, E. & Handley, G.B. (2011). Introduction: Toward an aesthetics of the earth. In DeLoughrey, E. & Handley, G.B. (Eds.) *Postcolonial Ecologies: Literatures of the Environment* (pp. 3-39). Oxford UP. https://doi.org/10.1093/acprof:osobl/9780195394429.003.0001

Diamond, J. (2005). *Collapse: How societies choose to fail or succeed.* Viking.

Edwards, J. D. (2008). *Postcolonial literature*. Palgrave Macmillan.

Fontaine, T. (2017, May 27). 'A perilous pipeline': Indigenous groups line up against Keystone XL. *CBC*. https://www.cbc.ca/news/indigenous/indigenous-groups-keystonexl-2017-approval-1.4042381.

Ge, M., Friedrich J., & Damassa T. (2014, Nov. 25). 6 Graphs explain the world's top 10 emitters. *World Resources Institute*. https://wri.org/blog/2014/11/6-graphs-explain-world%E2%80%99s-top-10-emitters.

Ghosh, A. (2016). *The great derangement: Climate change and the unthinkable*, U of Chicago P. https://doi.org/10.7208/chicago/9780226323176.001.0001

Harvard University Press. (2013, Nov. 14). When slow violence sprints [Interview with R. Nixon]. https://harvardpress.typepad.com/hup_publicity/2013/11/when-slow-violence-sprints-rob-nixon.html

Hurricane Maria 2017. *Climate Signals*, Climate Nexus. http://www.climatesignals.org/headlines/events/hurricane-maria-2017.

Klein, N. (2014). *This changes everything: Capitalism vs. the climate.* Simon & Schuster.

Memmi, A. (1991). *The Colonizer and the Colonized*. Beacon.

Mulia, K. (2021, Feb. 19). With new national plan, Singapore leads region's sustainable green tech innovations. *KrAsia*, https://kr-asia.com/with-new-national-plan-singapore-leads-regions-sustainable-green-tech-innovations.

Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Harvard UP. https://doi.org/10.4159/harvard.9780674061194

Nunez, C. (2017, March 28). China poised for leadership on climate change after U.S. reversal. *National Geographic*. https://news.nationalgeographic.com/2017/03/china-takes-leadership-climate-change-trump-clean-power-plan-paris-agreement/.

Office of Special Investigations, Office of Inspector General, U.S. Department of Housing and Urban Development, (2021). *Review of HUD's Disbursement of Grant Funds Appropriated for Disaster Recovery and Mitigation Activities in Puerto Rico* (Report No. 2019SU008945I). Author.

Perez, C. S. (2020). Poems. *eTropic*: *electronic journal of studies in the Tropics* 19(1), 42-64. https://doi.org/10.25120/etropic.19.1.2020.3676.

Regis, H. (2020). Subjection and Resistance: Landscapes, Gardens, Myths and Vestigial Presences in Olive Senior's *Gardening in the Tropics*. *eTropic*: *electronic journal of studies in the Tropics* 19(1), 151-166. https://doi.org/10.25120/etropic.19.1.2020.3682.

Robles, F., Davis K., Fink S., & Almukhtar S. (2017, Dec. 9). Official toll in Puerto Rico: 64. Actual deaths may be 1,052. *New York Times*. https://www.nytimes.com/interactive/2017/12/08/us/puerto-rico-hurricane-maria-death-toll.html?_r=0.

Sealy-Huggins, L. (2017). "1.5°C to stay alive": climate change, imperialism and justice for the Caribbean." *Third World Quarterly*, 38(11), 2444-2463, https://doi.org/10.1080/01436597.2017.1368013

Spence, M. D. (1999). *Dispossessing the wilderness: Indian removal and the making of the national parks*. Oxford UP.

Squarzoni, P. (2014). *Climate Changed: A Personal Journey through the Science*. Harry N. Abrams.

Vick, K. (2017, Oct. 3). A land they no longer recognize: Desperation and resilience in hurricane-battered Puerto Rico. *Time*, http://time.com/a-land-they-no-longer-recognize/.

Whyte, K. P. (2017). Is it colonial déjà vu?: Indigenous peoples and climate injustice. In J. Adamson & M. Davis (Eds.), *Humanities for the Environment: Integrating Knowledge, Forging New Constellations of Practice* (pp. 88–105). Routledge.

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"The Gifts of the Hurricane:" Reimagining Post-María Puerto Rico through Comics

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Abstract

Although the media framed Hurricanes Irma and María and their aftermath as a tragedy, and indeed it was, a small literary canon has emerged that explores the storms as an opportunity to rethink Puerto Rico's future. The aftermath of the hurricanes impacted cultural production two-fold; by forcing writers to engage with climate change, while also rethinking the colonial relationship that Puerto Rico has with the United States. Looking specifically at selections from English- and Spanish-language comic anthologies *Ricanstruction* (2018), *Puerto Rico Strong* (2018) and *Nublado: Escombros de María* (2018) as well as single-author graphic novels like *María* and *Temporada* (2019), I explore how authors used Hurricane María as a catalyst to reimagine and recreate a more autonomous future for the island through decolonial imaginaries, a notion laid out by Emma Pérez. Despite their different approaches to Puerto Rico's future, the comics' commonality lies in counter-narratives that espouse community values, indigeneity, innovation, and reclamation of nature as a means to confront hardship. Together they produce alternative modalities for transcending the vulnerabilities of debilitating disasters brought on by climate change. They offer a return to pre-colonial values combined with new technologies to empower the island to break from the United States and withstand future storms.

Keywords: Decoloniality, Decolonial Imaginary, Puerto Rico, Comics, Graphic Novels, Hurricane María, Tropical Storms, Climate Change

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eTropic 20.2 (2021) Special Issue: Tropical Imaginaries and Climate Crisis

Opening: Tropical Storms and Decolonial Imaginary

Led by Hurricane Irma and Hurricane María, the 2017 hurricane season will be remembered for the havoc it wreaked, particularly on Puerto Rico. We may never know the true measure of their devastation, but Florido (2019) suggests that conservative estimates place the fatalities associated with the two hurricanes at 3,191 deaths, and estimates in Puerto Rico point to 4,645 for María alone. What is more, damage to buildings, power grids, and potable water sources left the island with long-term challenges. Although the news media framed the storms and their repercussion as a tragedy, and indeed it was, a small canon of cultural production has emerged that explores the storms as an opportunity to rethink the island's future. The aftermath of the hurricanes impacted cultural production two-fold; by forcing writers and artists to engage with rising ocean levels and increasingly intense storms, while also rethinking the colonial relationship that Puerto Rico has with the United States. The two topics may seem separate, but the mishandling of recovery efforts reinforced the colonial relationship that Puerto Rico has with the United States, thereby spearheading cultural production grounded in decolonial imaginaries. By a decolonial imaginary, I refer to "a rupturing space, the alternative to that which is between the colonial and postcolonial, that interstitial space where differential politics and social dilemmas are negotiated," as put forth by Emma Pérez (1999, p. 6). This is particularly useful for Puerto Rican cultural production as it navigates the ambiguous spaces of being American, Caribbean, and Latin American at once. Looking specifically at selections from English- and Spanish-language comic anthologies *Ricanstruction* (2018), *Puerto Rico Strong* (2018) and *Nublado: Escombros de María* (2018) as well as single-author graphic novels like *María* and *Temporada* (2019)), I explore how authors used Hurricane María as a catalyst to reimagine and recreate a more autonomous political and ecological future for the island. The Puerto Rican comics studied here are decolonial in their perspectives because they make a "conscious effort to retool, to shift meanings and read against the grain" (Pérez, 1999, p. xvii). Despite their different approaches to this ruptured space, their commonality lies in counter-narratives that espouse community values, indigeneity, innovation, and reclamation of nature as a means to confront hardship without relying on some authoritative entity – because they produce alternative modalities for transcending the vulnerabilities of debilitating disasters. They offer a return to pre-colonial values combined with new technologies to empower Puerto Rico to break from the United States and withstand future storms.

The need to envision a future that breaks from the island's current paradigm as an Associated State that is economically and politically dependent on the United States is all the more important since scientists point to an increase in the intensity of natural disasters like hurricanes as a result of global climate change. Wuebbles et. al. (2017) found that "both theory and numerical modeling simulations (in general) indicate an increase in Tropical Cyclone intensity in a warmer world, and the models generally show an increase in the number of very intense Tropical Cyclones" (p. 258). The number of intense hurricanes will grow alongside rising ocean levels, leaving Puerto Rico exposed to further destruction and extensive land inundation because climate change affects the tropics more severely than other regions of the world. At the same time, the United States has demonstrated an inability to successfully manage hurricane cleanup. Thus, although they seem like separate issues, Puerto Rico's ecological vulnerability is inextricably linked to its relationship with the United States – because the latter not only oversees the former's recovery, but is also a major contributor to the processes causing climate change due to widespread industrialization and excessive carbon emissions. Therefore, comic authors that reimagine Puerto Rico's future often do so through a commentary calling for more autonomy in conjunction with promoting green initiatives that will combat climate change.

Although the works I analyze are related to a natural disaster, aspects of the US-led post-María recovery efforts were entangled in a colonial system that led to a human-made disaster. Etkin (2015) defines disasters as having "historical and cultural roots and need[ing] to be understood in context. They affect people differently, depending on culture, class, race, socioeconomic status, worldview, and psychology" (p. xxi). In agreement, Torres (2019) avers that "the story of Puerto Rico cannot be told without reference to Western modern catastrophe and coloniality" (p. 337). To his point, the US-led mismanagement of the recovery can only be understood within the colonial context. Since the United States took possession of Puerto Rico in 1898, the former has oppressed the latter on their own soil. Arbino (2017), Vargas Morales (2003), and McCaffrey (2002) point to the military using Vieques as an experimental site for chemical warfare like Agent Orange and napalm from 1941-2003. During the decades-long presence, cancer rates soared among local residents who regularly confronted military aggression.[1] Lopez (2008) and Garcia (1982) have shown the eugenics-led mass sterilization of one-third of Puerto Rican women carried out by the United States in the 1950s and 1960s. Ayala and Bernabe (2007) detail how Operation Bootstrap galvanized the island's economy through industrialization in the

[1] The Puerto Rican island of Culebra also endured a military presence until 1975.

late 1940s, but by the 1960s had seen an increase in unemployment, mass migration, and an overhaul of the traditional agrarian sectors. In the case of Hurricane María recovery efforts, the US again wielded its oppressive power: from downplaying the number of deaths, to weekly power outages, to the delayed distribution of funds and goods (Coto, 2019). Disaster cleanup served as a metaphor for the long processes of slow, structural violence. Perhaps no example better articulates this slow violence than President Trump mocking the destruction by tossing paper towels to a crowd. Puerto Ricans face a hegemonic system where colonialism is constitutive and continuing, but rarely understood as colonialism because it is presented in the guise of terms like "territory" or "Free Associated State." These terms complicate decolonization, here defined as "the process of revealing and dismantling colonialist power in all its forms" (Ashcroft et al., 2010, p. 56). Regarding Puerto Rico, decolonization is all the more complex because the island is a part of the United States, however ambiguously, and its residents are citizens. In other words, although there have been movements for independence, there has been no independence to formally initiate decolonization.

Whereas decolonization is marked by a temporal period in which increased autonomy occurs, decoloniality can, and often expresses liberatory thinking within a hegemonic episteme. It considers differences in histories, social practices, values, beliefs, ideas, and identities, as part of a variety of approaches that subvert coloniality via disobedience. Maldonado-Torres (2007) identifies the process as the decolonial turn, or "a shift in knowledge production" that "introduces questions about the effects of colonization in modern subjectivities and modern forms of life as well as contributions of racialized and colonized subjectivities to the production of knowledge and critical thinking" (pp. 261-2). For Maldonado-Torres, the lasting institutions and legacies of colonialism is what characterizes "coloniality of being" (p. 252). Therefore, decoloniality is defined as "a program of de-linking from contemporary legacies of coloniality" (Mignolo 2007, p. 452) and works to unsettle how colonialism structures the lives of the colonized through Western constructs of class, race, and gender. Moreover, colonial institutions and their legacies actively attempt to erase traditional or non-Western modes of thinking (Lugones 2010, p. 13). According to Mignolo (2005), this epistemological violence in turn creates a colonial wound (p. 8). And, as Mignolo and Vasquez (2013) claim, decoloniality and cultural production work toward disrupting coloniality through "the unveiling of the colonial wound and the possibility of healing." Therefore, Puerto Rican comics not only refute the imposition of coloniality on the imagination, they also offer counter-narratives of healing and autonomy – through that interstitial space as outlined by Pérez.

These decolonial approaches have surfaced since María in contemporary art, children's literature,[2] and, as I show below, comics. In his study on decolonial aesthetics in Puerto Rican contemporary art, Rivera-Santana (2020) refers to these approaches as indicative of calls for independence. He writes that:

> This aesthetics of disaster processes socio-political realities by expressing the clashing realities of a history of colonization that is dramatically thrown into reprieve by the natural and subsequent tragic human disaster in Puerto Rico. This artistic expression attempts to express Puerto Rican potential to survive as a nation of people, and, at the same time, calls for an end to any form of 'benefit' from the protectorates of the State in Puerto Rico and the State in the United States (p. 346).

Seeing the United States fail them in terms of recovery, Puerto Rican writers and artists are using the aftermath of María to reconfigure the island's future from their own perspectives. Aldama (2009) agrees that "the visual and verbal telling of a comic book story in the present can recall a past (from the present moment of telling) or predict a future; such telling involves centrally readers capable of imagining a present, past, and future different from their present" (p. 105). Specifically, the contemporary deployment of hurricane comics is useful in exploring how groups make meaning of their lives and calamities. One approach to this is through a lens of trauma. Little scholarly research has been done on post-María comics pertaining to Puerto Rico, however, an exception is María Fernanda Díaz Basteris (2019). Through a framework that blends the post-colonial criticism of Knowles (2015) and Ward (2015), with trauma studies in comics as examined by Earle (2017), her analysis focuses on how Puerto Rican webcomics produced by women create a space for gendered critiques of the United States' mismanagement of the island, particularly their hurricane relief efforts. I will be looking at some of the same webcomics that Díaz Basteris interrogates, though my analysis also considers English-language comics edited by people of Puerto Rican descent as well as Spanish-language comics penned by Puerto Ricans. Although many comics address the trauma that stemmed from Hurricane María, I hope to move beyond the lens of trauma and examine texts that approach the hurricane through a decolonial lens of reclamation, self-reliance, and recovery as methods to confront future climate change.

[2] For children's literature, see Torres and Medina (2021).

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Comic Relief: English-Language Anthologies and Humanitarian Aid

An outpouring of cultural production, both on the island and off, followed Hurricane María. Two such publications were *Puerto Rico Strong* and *Ricanstruction*, English-language graphic novel anthologies that were published in the United States and tied to philanthropic endeavors. They had major distributors like Amazon and Barnes and Noble that broadened their accessibility and dissemination. In turn, their audience was larger, and their cause more attention-grabbing. Building off the success of his superhero series *La Borinqueña*, author Edgardo Miranda-Rodriguez's edited benefit anthology *Ricanstruction* was published in May 2018 with 100% of the proceeds going to help Puerto Ricans on the island with solar-powered lamps, food, and clothing.[3] As of September 2020, the book had raised more than $165,000 in humanitarian aid, which Miranda-Rodriguez used to fund $10,000 micro-grants to island-based organizations that are dedicated to reef conservation, climate change, literacy instruction, and woman-focused family education (La Borinqueña grant awardees, 2018). These organizations symbolize the author's vision of the island's future in which small grassroots organizations work directly with the community (Castelblanco, 2018). Miranda-Rodriguez's anthology of sixty-eight original entries (comics and pin-ups) includes contributions from high-profile writers and celebrities: Puerto Ricans Rosario Dawson and Gabby Rivera both penned stories.[4] In fact, DC comics permitted Miranda-Rodriguez to utilize several of their canonical heroes for the cause: Batman, Superman, Wonder Woman, Aqua Man, and the Flash make appearances alongside Miranda-Rodriguez's superhero La Borinqueña. Plots featuring renowned superheroes are sure to attract a larger mainstream audience, thereby garnering more financial support. On the one hand, the narratives' intentions show solidarity between Puerto Rico and mainstream America and La Borinqueña's presence in this anthology is instrumental to island representation because she navigates New York and Puerto Rico with ease in an outfit that evokes the Puerto Rican flag. On the other hand, the dependency on the DC superhero, often depicted as an outsider with strong ties to the United States, reinscribes a hierarchical power relationship when set alongside the local population in need of saving. However, not all the short narratives in this anthology fall into this formula of messianic superheroes. I am interested in narratives that underscore the power of the people because it is in their resiliency and community-organizing that I find narratives that shift the paradigm.

[3] Miranda-Rodriguez (2016 and 2018a) published two volumes of *La Borinqueña* prior to *Ricanstruction*.
[4] I refer to the works "¡Pa'lante!," and "#Queerborinegra."

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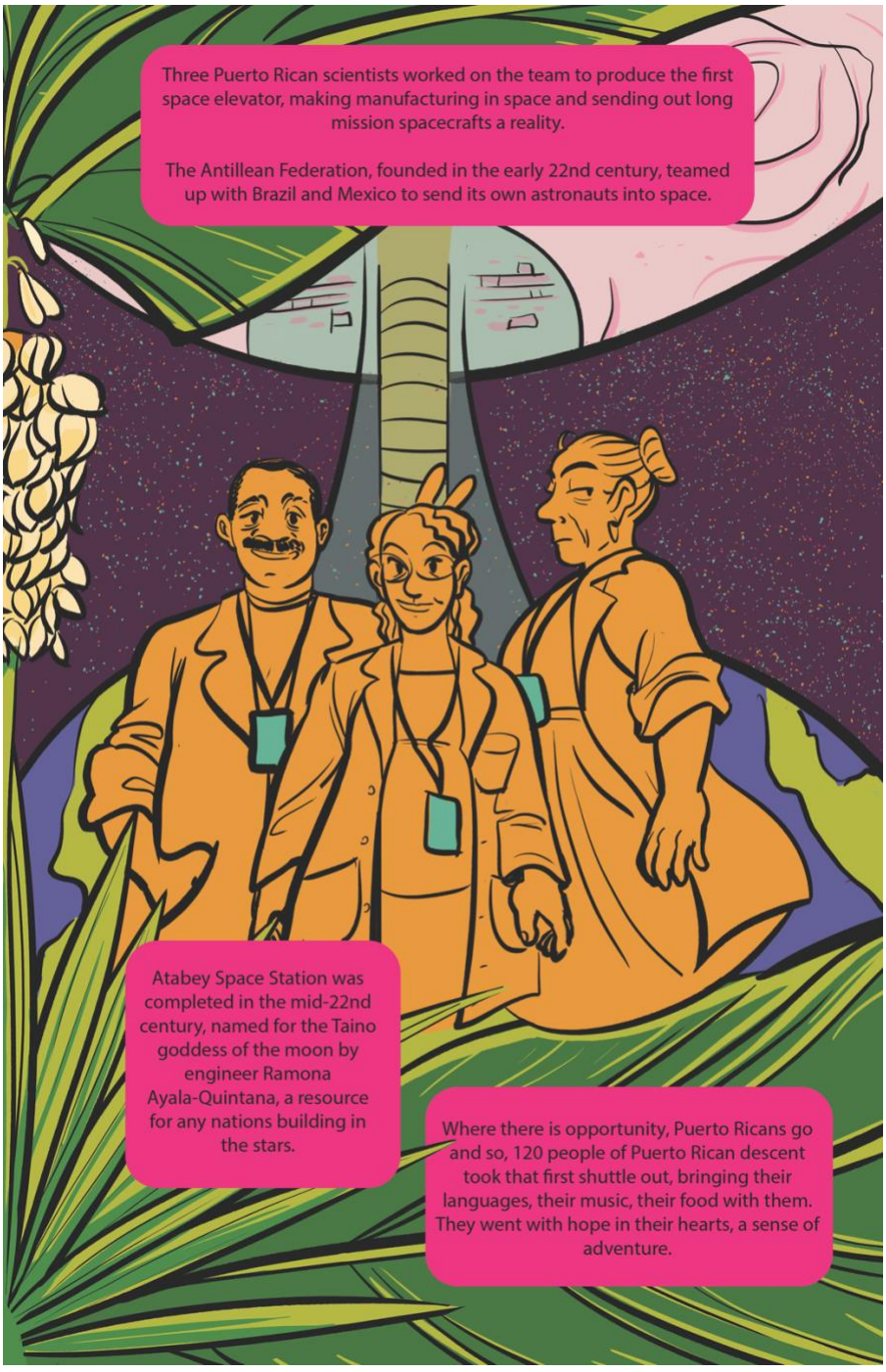
Figure 1. ***Tristan Tarwater's "Pasitos grandes"***



The comic incorporates technological innovation into Puerto Rico's decolonial future. In this imaginary science and tropicality meet. From “Pasitos grandes,” by T. Tarwater, 2018, in M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico Strong*, p. 39. Copyright 2018 by Oni-Lion Forge Publishing Group. Reprinted with permission.

Alexandra Román's "Thirty years later" (2018) is an intergenerational story in which a grandmother and granddaughter sit near a fallen tree and converse about the transformations that Puerto Rico underwent in the thirty years after Hurricane María. These transformations, accompanied by illustrated flashbacks, were in concert with nature and include exchanging "power grids for solar energy" (p. 156) and "wooden houses for ecological structures" (p. 156) that can withstand future hurricanes. The ecological structures reflect an understanding that local architecture must prepare for future hurricanes by developing new permanent models for building construction. In other words, Román asserts that the current model of building structures, and rebuilding them after a damaging hurricane, must change due to storm-intensity going forward. The age range of the two characters is relevant in conveying this message. The granddaughter is not old enough to remember what Puerto Rico was like prior to Hurricane María, so she relies on her grandmother's maternal wisdom to guide practical living as a means to recover knowledge. The grandmother character is significant because of her role in Puerto Rican families as a marker of cultural continuity. Her mere presence in the household disrupts the American notion of the nuclear family. As a cultural repository, she holds and shares the family's history and she communicates the family and community's values as models to shape younger generations (Olmedo, 2002, p. 36). As a community elder, the grandmother has access to local knowledge, and by passing it on orally, tells how living on the island has improved. Those improvements are decolonial in nature: moving toward eco-friendly forms of energy embraces conservation while eliminating the exploitation of fossil fuels that countries like the United States promote at unsustainable levels. At the same time, moving away from "wooden houses" recalls the long history of deforestation that has taken place throughout the Caribbean. This salient imagining of the future of Puerto Rico implies a divergent path from its current dependent relationship with the United States.

Elizabeth Yeampierre's "Bohio Girasol 2050" (2018) also takes place in the future and has a similar trajectory toward local, grassroots organization. She refers to 2017 as the painful birthing of a new and determined society that would cease to be subjugated by the superpower that had cast its oppressive shadow on the island for hundreds of years (Yeampierre, 2018, p. 164). The declaration reshapes how one thinks about Hurricane María, shifting it from a tragedy to an opportunity to restart. Similar to "Thirty Years Later," the story is structured around multiple generations working together. In "Bohio Girasol 2050", a larger community details how elders pass on knowledge in farming, permaculture, healing, solar energy, water de-salinization, and midwifery to apprentices who will carry on the work. The passing of knowledge from elders to younger generations is key to healing colonial wounds,

according to Medina (2014), "because it is a way of knowing and being in the world that values community and understands our interdependency" (p. 169). The story shares that climate change has devastated the North, causing hunger and violence. It is unclear how the tropics avoided similar perils, especially given that scientists predict the tropics to feel the brunt of climate change first. However, this clever inversion of models juxtaposes the island and the Global North through a commentary on land. Yeampierre remarks that those in the Global North "stopped paying attention to land they and their ancestors had extracted for generations" thereby allowing "people of African and Indigenous origin to reclaim their land and long forgotten traditions" (2018, p. 167). This paves the way for Puerto Rico, and other lands that comprise the tropics, to reverse global power dynamics and reclaim lands and knowledge once lost to them. Moreover, the story suggests that children learn through apprenticeships rather than attending school – an institutionalized site of colonial power. In this future, education is kept at a local level, focused on applied methods that strengthen people's connection to the land, and by extension, their culture's values and traditions. Presumably, local history would be taught rather than disconnected, colonial American history. Finally, the presence of La Borinqueña necessitates a comment. Throughout *Ricanstruction*, Miranda-Rodriguez's superhero appears and saves distressed civilians. However, in "Bohio Girasol," silence characterizes La Borinqueña's presence. The community welcomes her, yet they do not need her. She is a witness to the innovation taking place. Yeampierre contests the over-reliance on one person to play savior and opts to promote community-based knowledge through local culture.

Taking up a similar theme, Sandra Guzman's "My beloved Borikén" (2018) describes a narrator who lives in the Global North to postulate that Puerto Ricans have become disconnected from their Taíno ancestors throughout history, particularly due to Spanish colonization. In her inversion of colonial discourse, she presents the Taínos as "noble and valiant" (p. 100), while describing the Spanish as "sickened with greed" (p. 100). Due to colonialism, Guzman claims that Puerto Ricans have lost their identity and connection to the island. Therefore, Spanish colonialism is the disaster, not Hurricane María. The hurricane provides a rupture to return to autochthonous ways of living. To that end, the author evokes a discourse of nativism from below. According to Coker (2015), nativism from below "is an attempt to preserve or rehabilitate Indigenous culture in opposition to assimilating imperial/colonial culture" (p. 15). Guzman begins reclaiming Taíno cosmovision when she moves away from Catholic monotheism, and instead praises a variety of gods who are expressions of nature: Ata Ey, goddess of the earth, moon, fresh waters, sea and fertility; Cagauana, goddess spirit of love; Juracan, the god of wind,

etc. Recalling Taíno beliefs, she reminds the reader that "The Gods and Goddesses of Boriken are merciful" (p. 102) because their acts, such as hurricanes, are not tragedies, but an impetus for positive change. In that vein, Guzman writes that "these are the gifts of the hurricane, to reimage the island with harmony and respect for all things large and small" (2018, p. 104). The respect for all things large and small acknowledges traditional knowledge in which every species plays a role in maintaining ecological health. The call to embrace pre-colonial beliefs after María is decolonial because it permits populations to reconnect with their traditions and values while moving away from those that the colonizer imposed upon them. The author includes within those values songs to honor nature, a chance for children to play innocently, multigenerational knowledge, and a balanced ecosystem that provides through agriculture and fish (pp. 101-102). The example of fish is particularly significant because the author comments how "nothing is wasted," an allusion to the excesses of late capitalism and overfishing. In that vein, "waste" leads to a disequilibrium in the relationship between humans and nature, but the hurricane provides a rupture from imposed practices. Through the rupture the community transforms by remembering traditional ways. In that sense, collective memory is a channel to reimagine new possibilities and seek rebirth. The fact that the narrative's last lines are in the Taíno language demonstrate the author's intention toward recovery. Here Guzman presents two different perspectives. The pre-colonial perspective offers a healthy lifestyle, community, and an overall sense of interconnectedness between humans and the environment; whereas her reference to the era of US colonialism features expressions like "we have lost our way" (p. 102). and a protagonist who complains of a "foggy mind" (p. 102), that emphasize a sense of disorientation. The aftermath of a disaster like Hurricane María, then, symbolizes an opportunity for restorative ecological balance wherein the community can exact greater agency and return to its preferred lifestyle. Additionally, Guzman offers a sort of environmental nativism wherein a return to pre-colonial ways seemingly reverses climate change, or at the very least, reframes perspectives on tropical storms.

Despite not carrying the same star-studded roster as the comic anthology *Ricanstruction,* or the crossover opportunities into the DC universe, the collection *Puerto Rico Strong* offered forty-one unique stories in comic form from different Puerto Ricans both on the island and the US mainland. It also donated all proceeds to the United Way of Puerto Rico and Lion Forge matched the first $25,000 in sales with pledges to health-care, child-care, and education (Betancourt, 2018). The majority of the content addressed Hurricane María, however, other stories ranged from first encounters between the Taínos and Europeans to the United States' efforts

to sterilize Puerto Rican women.[5] Within the scope of this paper, I will consider the comics by Morillo (2018) and Tarwater (2018) for their decolonial engagement with recovery.

Javier Morillo's "Macondo, Puerto Rico" borrows its title from the fictitious Colombian town that serves as the setting for many of Gabriel García Márquez's works. By evoking Macondo, Morillo creates a parallel between it and Puerto Rico. In García Márquez's works, Macondo is an isolated town that becomes exposed to the outside world by foreign economic interests. It is precisely these interests that cause the town's demise. The allusion is an accurate one as Puerto Rico's perpetual colonial status has left it vulnerable to economic interests that have exploited it under the plantation system (sugar, coffee) while at the same time positioning it within the global economy. In García Márquez's *One Hundred Years of Solitude* (1967), a rain that lasts four years devastates the town, causing many of its residents to depart. Although Hurricane María was much swifter in its damage, the comparisons are not lost, as many people have fled the island. In fact, Morillo's character begins the comic living outside of Puerto Rico, praying the Rosary as María touches down. In contrast to Guzman (2018), who viewed Catholicism as an extension of Spanish colonialism, Morillo identifies Catholicism (represented by the Rosary) as a symbol of resistance to the Protestant values espoused during US colonialism. Therefore, by "re-learning" to pray the Rosary (2018, p. 162), the protagonist is subverting the United States' value system.

"Macondo, Puerto Rico" contextualizes Puerto Ricans' pathway to American citizenship, and later, the ability to vote in presidential elections made available to those living on the US mainland. This information is given to us through flashbacks and through a juxtaposition between a Puerto Rican living on the mainland (the protagonist) and a Puerto Rican living on the island (his college friend Ileana). Through historical and contemporary examples, he recounts the many abuses that the US government has inflicted upon Puerto Ricans. Morillo views the US's mishandling of the post-María cleanup as a continuation of this abuse:

> I see the dreadfully slow recovery and wonder why *we* don't have a plan. We know what Wall Street wants to make of Puerto Rico. Prioritize bank debt over people, lower minimum wage, turn the island into a playground for the rich, like Cuba in the 1950s (2018, p. 161).

[5] For colonial stories, see Ayala (2018) and Rosado (2018). For sterilization stories, see Rivera (2018) and Shwed (2018).

The use of "we" distinguishes Puerto Rico from the United States, signifying that the colonizer and the colonized do not share similar goals for the island's future. The United States seeks to manipulate the disaster to maintain its colonial enterprise through economic stagnation and dependence. In this model, Puerto Ricans will ultimately participate in the tourism sector, which is another form of colonialism that creates a subservient population. Morillo urges Puerto Rico to break from this vertical relationship and strategize initiatives that more directly benefit Puerto Ricans. His work culminates with a series of rhetorical questions stemming from post-María recovery that emphasize an alternative plan that both moves away from Western approaches to energy and economy and allows for long-term survival: "Why weren't we ready to replace coal with sustainable power? Can the island once again produce food for itself? What is our answer to disaster capitalism?" (2018, p. 161). Morillo's implied answers assert that the island's decolonial efforts are tethered to survival through green initiatives and local sustenance as opposed to importing energy and food from the mainland. The mention of coal points to a commentary on climate change, given that fossil fuels are major contributors to rising global temperatures. Although tropical countries like Costa Rica have committed to eliminating fossil fuels in an effort to reduce their footprint, the United States has continued large-scale use, putting Puerto Rico in a precarious position because of its dependency on the United States, coupled with their location in a region directly threatened by increasing temperatures and rising ocean levels. Morillo's call for Puerto Rico to adopt green energy would ultimately create goodwill among its regional neighbors in an effort to stem climate trends.

Tristan Tarwater's "Pasitos grandes" (2018) is set at the Atabey Space Station in 2062 where a guide uses advanced technology to give students a visual tour of Puerto Rican history from the pre-colonial era to the present. Commenting on pivotal themes in Puerto Rican history (Spanish colonization, American colonization, industrialization, mass exodus, and economic hardships), the tour moves into post-María. Calling the United States' efforts "abysmal" (p. 36), Tarwater looks toward grassroots initiatives that repaired the island through aid and proper resource-distribution (p. 37). The apparent success of community cleanup spurred additional decolonial initiatives in the comic that end Puerto Rico's economic dependency on the United States. For example, a repeal of the 1917 Jones' Act improves Puerto Rico's economy, making it attractive for eco-friendly companies to come to Puerto

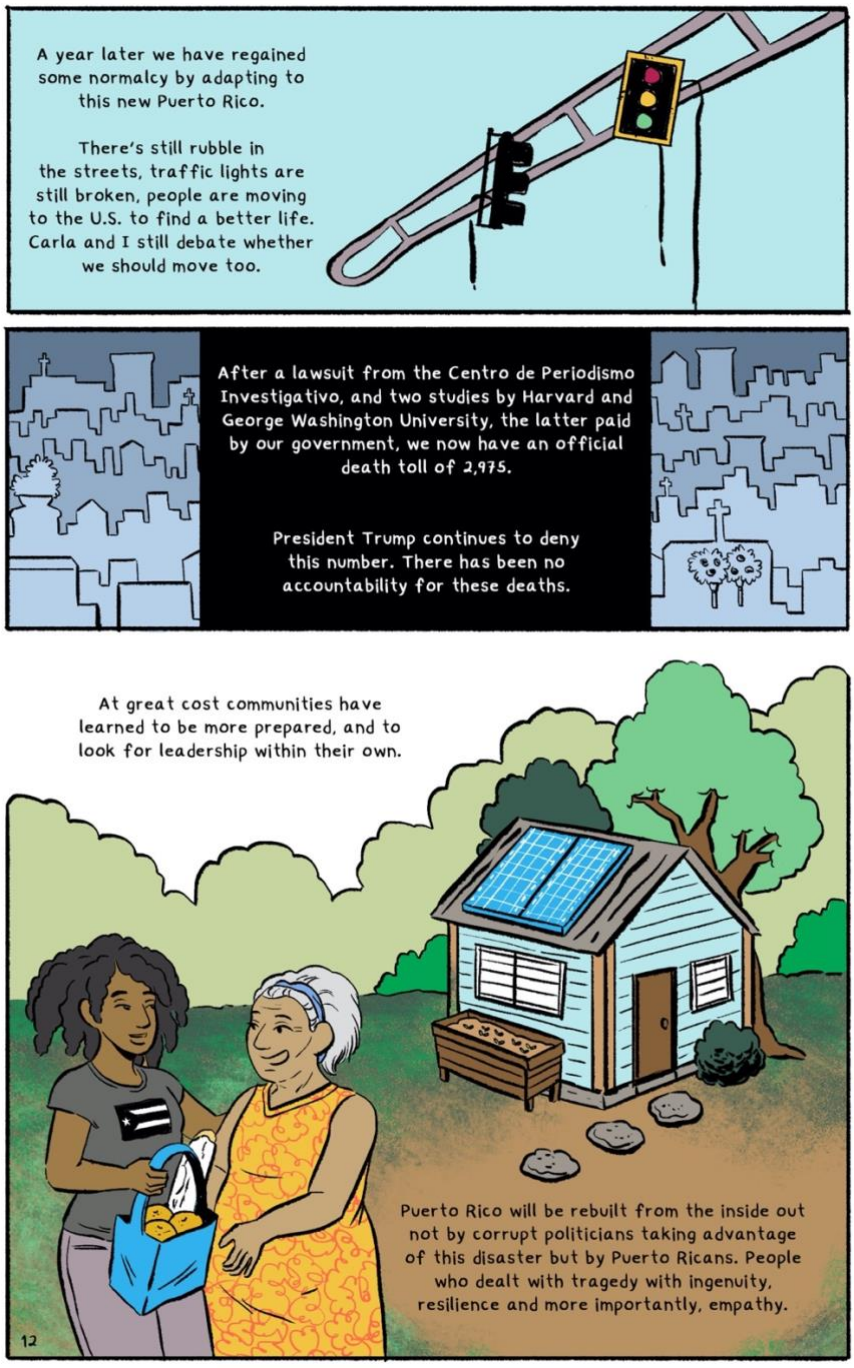
Rico and hire Puerto Ricans to implement renewable energy and technology (p. 38).[6] Island advances in terraforming "traditional foods" position Puerto Rico as agricultural leaders, making them ideal candidates to carry out similar projects on the moon (p. 38). In this future, Puerto Rico's decolonial status is buttressed by economic liberation and a blending of traditional ways with new technologies. This idea of Puerto Rican futurism pushes beyond independence to imagine Puerto Rico as a leader in green energy initiatives and also a member of the Antillean Federation (p. 39). The very fact that this tour is being conducted via virtual reality from a space station highlights the advances that Puerto Rico has made since gaining independence, but it is the Antillean Federation that adds a significant intervention to this work. The possibility of a connected Caribbean speaks to a movement away from vertical relationships based on previous colonial arrangements (i.e. US-Puerto Rico, The Netherlands-Curaçao) and privileges horizontal relationships within the region that would benefit from new economic opportunities that would follow the aforementioned end to the Jones Act.[7] Tarwater's decolonial vision, like others in these anthologies, is tied to environmental balance and a reconnection to the past that provides a foundation of continuity for an inventive future. However, the author's departure lies in the elaboration of Morillo's implicit concept of a more unified insular region that can confront and manage glocal concerns, like climate change, together.

The West *Indies*: Independent Comics for *Independentistas*[8]

Puerto Rico Strong and *Ricanstruction* enjoyed large print runs, mainstream audiences, and publicity. However, independent Puerto Rican graphic novelists and comic strip artists engaged with Hurricane María in other ways, often through small-scale self-publication.[9] Readers seeking these materials would find them on individual website stores. Moreover, most of the small-scale comics are in Spanish, thereby addressing a different, more local audience. As a result, the authors usually articulate calls for greater autonomy through intimate relationships and insights.

[6] Yglesias (2017) summarizes the Jones Act as a shipping regulation law that has economically debilitated Puerto Rico because any goods being shipped to Puerto Rico from the United States (or vice versa) must be done so on an American-built ship that is crewed by U.S. citizens or permanent residents.
[7] Arbino (2019) foregrounds horizontal relationships in cultural production by placing Curaçaoan writer Tip Marugg alongside regularly recognized gothic writers like Jamaica Kincaid, Mayra Montero, and René Depestre with the aim to increase dialogue among the linguistic blocs of the Caribbean and to avoid a strict framing of literary output within colonial relationships.
[8] Although these other works address Hurricane María, I am not considering them within the scope of my paper either due to content or creator background: *Sato* by Jordan Clark, *It Also Rains in Puerto Rico* (2018) by Ian Nose, and *After María: Everyday Recovery from Puerto Rico* (2019) by Gemma Sou.
[9] The following works are originally in Spanish. All translations are mine.

Figure 2. ***Rosa Colón's María (2018)***



This comic proposes grassroots activism with an eco-friendly message. From *María*, by R. Colón, 2018, Soda Pop Comics. Copyright 2018 by Soda Pop Comics. Reprinted with permission.

One Spanish-language anthology was Soda Pop Comics' *Nublado: Escombros de María* (2018). This short collection featured thirteen authors who wrote short, black-and-white comic strips about their experiences with the hurricane and its aftermath. Many focused on themes of migration,[10] interactions with US figureheads,[11] and the silence and darkness which linger after the storm.[12] Two stories offer optimism towards the future, but fall short of articulating a decolonial future. Luis Rodríguez's "Cosas cayeron" [Things fell], consists of two panels. In the first, a young boy stands in front of a large tree, whose leaves have been stripped off to show barren branches. The crown of the tree is missing, presumably showing the cyclone's ruinous impact. His second panel reveals hope. He writes, "Pero cosas, cosas crecerán" [But things, things will grow]. The use of "but," atypical when starting a sentence, prepares the reader for a statement that contradicts the preceding one. The image follows in line. It is a close up of the first image, zoomed in on the ground beside the standing child. There, with one leaf pointing up in strength, and another pointing down as if weakened, is a young sapling inside of a pot. The child and the sapling mirror each other. Both survived the hardships of María and are symbols of resilience. Similarly, both will be part of the island's future. This optimistic and straightforward message unites nature and humans in rebuilding efforts, creating a reciprocal relationship in which the sapling will need care in its early stages to reward the island later on with the potential for shade, food, or ecological sustainability. Trees help protect against climate change because they store carbon dioxide and release oxygen. In that vein, this sapling represents long-term change and also symbolizes the type of mutually beneficial exchange that would favor the island and differs from the current dynamic between the United States and Puerto Rico.

The second comic is Maelo Cruz's untitled one-page piece that shows a traffic jam in Gurabo, Puerto Rico, in 2017 as drivers attempt to buy gas prior to María touching down. Throughout the six panels, Cruz focuses on one protagonist who is increasingly drenched by rain entering the vehicle. By the time he is able to fill up his car's tank nine hours later, he is an amorphous mass of rainwater. The author uses hyperbole to emphasize the rainfall's intensity – which could also serve to foreshadow the severity of future storms. The only text in the comic comes through the form of a radio disc jockey who contextualizes the storm's impact. In the penultimate panel, Cruz condemns the government for not having the proper resources to manage María. The disc jockey comments that "...sin embargo, no tenemos duda que PR sigue siendo la isla bendecida" [however, we have no doubt

[10] Colón (2018b) and González (2018).
[11] Castor (2018) and Robbins (2018).
[12] Santiago (2018) and Sáez (2018).

that PR will continue being a blessed island] (2018, p. 18). Cruz's ending puts forth confidence in the island's ability to respond. This attitude is juxtaposed with a book that the protagonist is reading in one of the panels: René Marqués's *La carreta* [The Oxcart], a 1952 play about an agricultural family who, in an intense period of industrialization known as Operation Bootstrap, moves from their country home to San Juan, and from San Juan to New York City in hopes of prosperity. However, with each move, the "better life" they seek becomes more complicated. Correspondingly, the family becomes more disconnected from their traditions and the land, and more inculcated in a capitalist mindset propelled by industry and mechanization. Only with the lead protagonist's death is the family able to return to the island. By evoking Marqués's seminal play in the comic strip, Cruz is warning that migration does not necessarily equate to a "better life" – a relevant message to convey in a moment of intense difficulty. In its place, Cruz offers an affective sentiment toward homeland through the radio announcer's optimism in the final panel in the form of a call to stay and rebuild the island, despite governmental ineptitude. Between the disc jockey and the reference to *La carreta*, Cruz plays with polyvocality to create a discussion on the benefits of remaining on the island and the negatives of leaving. Furthermore, the storm symbolizes the power that the United States lords over Puerto Ricans. With the protagonist's transformation into an amorphous mass of rainwater, the author suggests that the United States' authority, like the storm, is an overwhelming force that Puerto Rico must resist if the island is to reach its potential.

In Rosaura Rodríguez's self-published graphic novel *Temporada* (2019), the first-person narrator's uncertainty imposes itself into the narrative structure. Indeed, the structure of the text is like other graphic novels inasmuch as there is little text on the page and the artwork plays an integral role. *Temporada* is structured in three parts. Rodríguez's goal in the first part is to demonstrate an inability to communicate due to power outages and to present an inertia to the island's cleanup. The author expresses this inertia by challenging herself to see how many pages she can write "cuando estemos en este limbo" [while we are in this limbo]. The second part reveals a society wrought with school closings, widespread death, and a desire to return to normalcy. Finally, the third part acknowledges the long road ahead to recovery and a desire for accurate information regarding the environmental and societal destruction. However, within those three parts are markers of trauma, such as fragmented and disjointed structure and narration, as outlined by Kaplan (2005, p. 65). For instance, a general lack of a narrative arch gives way to disjointed comments. Statements such as "Cuándo harán saber el conteo de muertes. La cifra real" [When will they know the death count. The real statistic], followed by "la ciudad es salvaje" [the city is

savage], reflect the lack of information due to the temporality of disaster, and also signal a lack of structural cohesion. At the same time, the fragmentation also points to her struggle to process the trauma as the author superimposes form on the content to recreate a sentiment of disruption. In a publication without page numbers and rare punctuation, Rodríguez's narrator recognizes the choppiness of her work: "Empecé pensando que esto sería más narrativo Pero perdí el hilo" [I started thinking that this would be more of a narrative But I lost the thread]. One passage is of particular interest because of its political statement. After describing how ensuing fires destroyed a forest, Rodríguez comments that "Al menos el huracán se llevó el letrero de Ricky" [At least the hurricane took the Ricky billboard]. The criticism of Ricky Rosselló, who served as Governor of Puerto Rico from 2017-2019, predates the text scandal that led to his resignation. The hurricane figuratively washes away the political system, represented by a pro-statehood governor, cleansing the island with a *tabula rasa* to be remade in the author's vision. However, *Temporada* does not offer that vision explicitly. Although the graphic novel ends on a pessimistic tone, Rodríguez does point to creativity when confronted with disaster as a sign of hope. One scene depicts a person who has rigged a water filtration system as a viable local option to cope with inadequate freshwater access. The image shows that by pumping the system, as one would peddle a bike, the contaminated water can be purified into drinking water for residents to fill their jugs and carboys. Commonplace in post-María, this type of inventiveness will be paramount as freshwater resources continue to diminish. In a rare moment of pride, Rodríguez writes "El ingenio caribeño es vida" [Caribbean ingenuity is life]. Paired with the commentary on the Ricky Rosselló billboard, Rodríguez's perspective becomes clearer: Puerto Rico's recovery will depend on the community's innovation to rebuild, not on the political system that governs it.

A comparable message to Rodríguez's *Temporada* can be found in Colón's *María* (2018a). The comic begins with the hurricane and the ensuing guilt that the two characters feel as survivors with access to supermarkets and gas stations. Like Rodríguez, Colón writes to manage her trauma. Similarities further abound in the criticism of Rosselló and Trump for the mishandling of the recovery efforts. In a precursor of the protests that ousted Rosselló in 2019, Colón (2018a) explicitly condemns the governor for being "sequestered with electricity and air conditioners" (p. 6) while downplaying the magnitude of the disaster alongside Trump (p. 7). By aligning Rosselló with Trump, Colón creates a dichotomy between authorities and people's suffering. In fact, Colón has been intentional with her anti-colonial commentary through webcomics that she has written prior to, and after, *María*. For instance, Colón (2017) challenges Puerto Rico's status, calling on it to explore

independence. She writes that "Puerto Rico's uncertain status affects everything from how we import goods to how we interact with the global community…It's time for Puerto Rico to thrive on its own terms." Colón (2018c) criticizes the incompetence of FEMA, Rosselló, and the US government for their handling of the situation and seeks new approaches to natural disaster management. When considering Colón's body of work, independence and decolonization through local politics are recurring themes to dismantle corruption on the island.

For Colón, decolonization starts at an organic, grassroots level. The somber tone throughout *María*, in which she asks if Puerto Rico will ever rise from the rubble, ends optimistically. In her last panel, Colón advocates for the need for local community participation and activism. She writes that "At great cost communities have learned to be more prepared, and to look for leadership within their own" (2018a, p. 12). Here Colón separates herself from Puerto Rico's leaders (notably Rosselló) and calls on Gramscian intellectuals, those organic thinkers of the working class who rely on common sense and folk wisdom to lead the people. She then concludes that "Puerto Rico will be rebuilt from the inside out not by corrupt politicians taking advantage of this disaster but by Puerto Ricans. People who dealt with tragedy with ingenuity, resilience, and more importantly, with empathy" (2018a, p. 12). For her, the hurricane does not necessitate the need to only rebuild the infrastructure of Puerto Rico; it necessitates the need to break from the colonial system which has been set in place and the politicians that are complicit in maintaining it. In that vein, Díaz-Basteris is correct in noting that for Colón, the collective trauma in Puerto Rico did not begin with Hurricane María, but with the United States' invasion of the island in 1898 due to the Spanish-American War and their subsequent ownership of the island stemming from the Treaty of Paris (2019, pp. 17-18). The final panel's image is equally telling for Colón's turn to local leadership, adding an eco-feminist perspective. The image shows a young Afro-Puerto Rican woman visiting an elderly woman out in the country. The former brings the latter fresh bread and other foodstuffs, thereby highlighting respect for elders, compassion, and community assistance. In the background is the older woman's house, replete with a small garden. The solar panels atop the roof suggest the search for alternative, eco-friendly forms of energy. The move away from the city to the country continues a recurring trope that re-connects one to the land (as seen through the small raised garden) and seeks a lifestyle apart from the industrialized urban city. Additionally, the young woman is wearing a t-shirt imprinted with the Puerto Rican flag. The black-and-white Puerto Rican flag has become a symbol of anti-colonial resistance to the United States' government both on the island and on the mainland. Created by an all-women artist collective known as La Puerta, the flag

has been widely used in protests since 2016 (Agrelo, 2019). The fact that the character is wearing it reenforces Colón's position toward the United States, and the call for an independent Puerto Rico. The author's choice to use a black-and-white flag symbolically severs the island's relationship with the United States because it breaks from the traditional red, white, and dark blue that the two have shared in common since 1952.

Comic Libre: When Life Imitates Art

According to Mignolo (2011), decoloniality is "decolonial thinking *and doing* (p. xxiv, my emphasis), thereby making it both theoretical and actionable. Puerto Rican writers have created a space within comic books to reimagine the island as sovereign through decolonial imaginaries whereby counter-discursive voices participate in the negotiation of political and ecological relationships. While these spaces of resistance have existed in Puerto Rico since their annexation to the United States, the failed recovery efforts after Hurricane María hastened decolonial thinking among comic book writers, prompting them to view the hurricane as an opportunity toward an independent future. Authors' approaches to healing the decolonial wound differed, whether it was themes like technology or nativism presented to English-speaking or Spanish-speaking audiences. However, their vision for the island unanimously pointed to green initiatives. A reworked relationship with nature emerged wherein the communities positioned themselves with more autonomy to nurture clean energy, local and traditional food production, and a greater reciprocation with nature. As climatologists warn of increasingly intense tropical storms and rising sea levels, self-reliance may be more important than ever before. The mere fact that many of the comics are set in the future suggests that the island, and to a certain extent the world, has staved off further disasters caused by climate change via these aforementioned methods.

Finally, activism, specifically community-based and grassroots, emerged as the authors demanded to reclaim power from politicians in D.C. and on the island. Though these examples are part of the decolonial imaginary that literature offers, "decolonial doing" took shape in July 2019. In the aftermath of the hurricane, life imitated art when 500,000 demonstrators in Puerto Rico worked in solidarity to oust Ricardo Rosselló amid "Telegramgate", the scandal in which a leaked group text conversation revealed that Rosselló and his cabinet members made light of the deaths related to Hurricane María along with homophobic, misogynistic, and racist remarks. Among the thousands of people protesting were women dressed as La Borinqueña. With photos of women dressed as the superhero appearing all over

social media during widespread protests of Rosselló, the futures offered in the graphic novels suddenly had a place in the present. Rossello's ousting was proof of decolonial action as people came together to affirm the marginalized communities that those in power had lambasted. People who have read these comic books are empowered to see a future of their choosing. Miranda-Rodriguez took to the *Bronx Free Press* the day after Rosselló's resignation to address its importance: "Yesterday was the first true step in the direction towards decolonization and it was led peacefully by a new generation of activists that are part of the Ricanstruction of Puerto Rico. These are the true heroes that we should celebrate" (2019). Through the lens of decoloniality, both producers and consumers of Puerto Rican culture envision an autonomous future for the island that foregrounds self-reliance and renounces dependency. To that end, authors in this study have empowered alternative voices to continue assessing and questioning the island's vulnerability under the United States, thereby empowering communities to foster political and ecological transformation.

References

Acevedo, N. (2019, July 19). What's behind Puerto Rico's protests, scandal? Here's 5 things to know. *NBC News*. https://www.nbcnews.com/news/latino/what-s-behind-puerto-rico-s-protests-scandal-here-s-n1031486

Agrelo, J. (2019, July 4). How a change of color for the Puerto Rican flag became a symbol of resistance. *Mother Jones*. https://www.motherjones.com/media/2019/07/puerto-rico-resistance-flag-black-and-white-flag-san-juan-la-puerta-colonial/

Aldama, F. L. (2009). *Your brain on Latino comics: From Gus Arriola to los bros Hernandez.* University of Texas Press.

Arbino, D. (2017). Half-mast: Shifting landscapes of protest and demilitarization in Vieques. In S. Puri & L. Putnam (Eds.), *Caribbean military encounters* (pp. 271-288). Palgrave-Macmillan. https://doi.org/10.1057/978-1-137-58014-6_14

Arbino, D. (2019). "The ugliness of my surroundings": Tip Marugg's Ecogothic Poetics of Isolation. *eTropic: Electronic Journal of Studies in the Tropics*, *18*(1), 125-140. https://doi.org/10.25120/etropic.18.1.2019.3668

Ashcroft, B., Griffiths, G., & Tiffin, H. (2010). Nativism. In Ashcroft, B., Griffiths, G., & Tiffin, H. (Eds.), *Post-colonial Studies: The Key Concepts* (2nd ed.), (pp. 143-144). Routledge.

Ayala, C.J. & Bernabe, R. (2007). *Puerto Rico in the American century: A history since 1898*. University of North Carolina Press. https://doi.org/10.5149/9780807895535_ayala

Betancourt, D. (2018, March 15). A new comic book anthology raises money for Puerto Rico, telling stories of history and fantasy. *Washington Post*. https://www.washingtonpost.com/news/comic-riffs/wp/2018/03/15/a-new-comic-book-anthology-raises-money-for-puerto-rico-telling-stories-of-history-and-fantasy/

Castelblanco, F. (2018, October 24). Edgardo Miranda-Rodriguez on La Borinqueña, Wonder-Woman, and Ricanstruction at New York Comic Con 2018. *Comicsverse*. https://comicsverse.com/edgardo-miranda-rodriguez-nycc2018/

Castor. (2018). Cómo estás? In R. Colón and Y. Santiago (Eds.), *Nublado: Escombros de María* (pp. 19-22). Soda Pop Comics.

Clark, J. (2018). *Sato*. Self-published.

Coker, K.J. (2015). *James in postcolonial perspective. The letter as nativist discourse*. Fortress Press. https://doi.org/10.2307/j.ctt13wwwpq

Colón, R. (2018a). *María*. Soda Pop Comics.

Colón, R. (2018b). Untitled. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (p. 2). Soda Pop Comics.

Colón, R. (2018c, September 28). "One year later, Puerto Rico is standing still." *The Nib*. https://thenib.com/hurricane-María-one-year-later/

Colón, R. (2017, October 16). "Puerto Rico: Should I state, or should I go?" *The Nib*. https://thenib.com/rosa-colon

Coto, D. (2019, September 20). "Puerto Rico faces slow recovery 2 years after the storm." *AP News*. https://apnews.com/article/hurricane-María-caribbean-hurricanes-storms-puerto-rico-966a0ad2b5094233a99551843025111f

Cruz, M. (2018). Untitled. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (p. 18). Soda Pop Comics.

Dawson, R. & Atchison, D. (2018). ¡Pa'lante! In E. Miranda-Rodriguez (Ed.), *Ricanstruction: Reminiscing & rebuilding Puerto Rico* (pp. 14-16). Somos Arte.

Díaz-Basteris, M.F. (2019). Webcomics, huracanes, y colonialismo en Puerto Rico. *Alter/nativas: Revista de estudios culturales latinoamericanos 9*, 1-24. https://alternativas.osu.edu/assets/files/issue9/ensayos/diaz-final.pdf

Earle, H.E.H. (2017). *Comics, trauma and the new art of war*. University Press of Mississippi. https://doi.org/10.14325/mississippi/9781496812469.001.0001

Etkin, D. (2016). *Disaster theory: An interdisciplinary approach to concepts and causes.* Elsevier.

Florido, A. (2019, September 24). 2 Years after Hurricane María hit Puerto Rico, the exact death toll remains unknown. *NPR*. https://www.npr.org/2019/09/24/763958799/2-years-after-hurricane-María-hit-puerto-rico-the-exact-death-toll-remains-unkno Garcia, A.M. (Director). (1982.) *La operación* [Film]. Latin American Film Project.

García Márquez, G. (1967). *Cien años de soledad.* Editorial Sudamericana.

González, W. (2018). Untitled. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (pp. 12-13). Soda Pop Comics.

Guzmán, S. (2018). My beloved Borikén. In E. Miranda-Rodriguez (Ed.), *Ricanstruction: Reminiscing & rebuilding Puerto Rico* (pp. 99-104). Somos Arte.

Kaplan, E. A. (2005). *Trauma culture*: *The politics of terror and loss in media and literature.* Rutgers University Press.

Knowles, S. (2015). The postcolonial graphic novel and trauma: From Maus to Malta. In A. Ward (Ed.), *Postcolonial traumas: memory, narrative, resistance* (pp. 83-95). Palgrave-Macmillan. https://doi.org/10.1057/9781137526434_6

La Borinqueña grant awardees. (2018). *La Borinqueña*. https://www.la-borinquena.com/2018-la-borinquena-grant-awardees

La Borinqueña grants program. (2018). *La Borinqueña*. https://www.la-borinquena.com/la-borinquena-grants-program

Lopez, I. (2008). *Matters of choice: Puerto Rican women's struggle for reproductive freedom*. Rutgers University Press.

Lugones, M. (2008). The coloniality of gender. *Worlds & Knowledges Otherwise 2*, 1-17.

Maldonado-Torres, N. (2007). On the coloniality of being. *Cultural Studies 21*(2-3), 240-270. https://doi.org/10.1080/09502380601162548

Marqués, R. (1952). *La carreta*, *comedia puertorriqueña en tres actos*. Casa Baldrich.

McCaffrey, E. (2002). *Military power and popular protest: The U.S. Navy in Vieques, Puerto Rico*. Rutgers University Press.

Medina, L. (2014). Nepantla spirituality: My path to the source(s) of healing. In E. Facio & I. Lara (Eds.), *Fleshing the spirit: Spirituality and activism in Chicana, Latina, and Indigenous women's lives* (pp.167-185). University of Arizona Press.

Mignolo, W. (2005). *The Idea of Latin America*. Blackwell.

Mignolo, W. (2007). Delinking. *Cultural Studies 21*(2–3), 449–514. https://doi.org/10.1080/09502380601162647

Mignolo, W. (2011). *The Darker Side of Western Modernity*. Duke University Press. https://doi.org/10.2307/j.ctv125jqbw

Mignolo, W. & Vasquez, R. (2013, July 15). Decolonial aestheSis: Colonial wounds/decolonial healings. *Social Text Online*. https://socialtextjournal.org/periscope_article/decolonial-aesthesis-colonial-woundsdecolonial-healings/.

Miranda-Rodriguez, E. (2016). *La Borinqueña #1*. Somos Arte.

Miranda-Rodriguez, E. (2018a). *La Borinqueña* #2. Somos Arte.

Miranda-Rodriguez, E. (2019, July 26). "A new day for Boriken."*The Bronx Free Press*. https://thebronxfreepress.com/a-new-day-for-borikenun-nuevo-dia-para-boriken/

Morillo, J. (2018). Macondo, Puerto Rico. In M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico strong* (pp. 155-162). The Lion Forge.

Nose, I. (2018). *It also rains in Puerto Rico*. CreateSpace Independent Publishing.

Olmedo, I. (2002). What grandmothers can teach us about Puerto Rican culture and community. *Practicing Anthropology*, *24*(3), 34-38. https://doi.org/10.17730/praa.24.3.p48417618838481u

Pérez, E. (1999). *The decolonial imaginary: Writing Chicanas into history*. Indiana University Press.

Quijano, A. (2000). Coloniality of Power, Eurocentrism, and Latin America. (Trans. M. Ennis). *Nepantla: Views from the South*, *1*(3), 533-580. https://doi.org/10.1177/0268580900015002005

Rivera, G. (2018). #Queerborinegra. In E. Miranda-Rodriguez (Ed.), *Ricanstruction: Reminiscing & rebuilding Puerto Rico* (pp. 145-147). Somos Arte.

Rivera, L. (2018). Family ends with me. In M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico strong* (pp. 96-101). The Lion Forge.

Rivera-Santana, C. (2020). Aesthetics of disaster as decolonial aesthetics: making sense of the effects of Hurricane María through Puerto Rican contemporary art. *Cultural Studies, 34* (3), 341-362. https://doi.org/10.1080/09502386.2019.1607519

Robbins, J. (2018). Presión. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (pp. 27-30). Soda Pop Comics.

Rodríguez, R. (2019). *Temporada*. Self-Published.

Román, A. (2018). Thirty years later. In E. Miranda-Rodriguez (Ed.), *Ricanstruction: Reminiscing & rebuilding Puerto Rico* (pp. 155-157). Somos Arte.

Rosado, A. A Taino's tale. In M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico strong* (pp. 80-85). The Lion Forge.

Sáez, D. (2018). Lo que recuerdo de María. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (p. 16-17). Soda Pop Comics.

Santiago, Y. (2018). Waking up in darkness. In R. Colón & Y. Santiago (Eds.), *Nublado: Escombros de María* (pp. 14-15). Soda Pop Comics.

Shwed, Ally. (2018). La operación. In M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico strong* (pp. 101-103). The Lion Forge.

Sou, G. & Cei Douglas, J. (2019). After María: Everyday recovery from disaster. The University of Manchester Press.

Tarwater, T.J. (2018). Pasitos grandes. In M. Lopez, D. Rodriguez, H. Newlevant, D. Ruiz, & N. Schwartz (Eds.), *Puerto Rico strong* (pp. 21-40). The Lion Forge.

Torres, F. L. (2019). Deconstructing the superhero: Interrogating the racialization of bodies using all-new, all-different avengers, Vol. I. In R. Ginsberg & W. Glenn (Eds.), *Engaging with multicultural YA literature in the secondary classroom* (pp. 162–170). Routledge. https://doi.org/10.4324/9780429053191-17

Torres, F.L. & Medina, C.L. (2021). Cuentos combativos: Decolonialities in Puerto Rican books about María. *Journal of Literacy Research 53*(2), 242-264. https://doi.org/10.1177/1086296X211009294

Tuck, E., & Yang, K. W. (2012). Decolonization is not a metaphor. *Decolonization: Indigeneity, Education & Society*, *1*(1), 1–40.

Vargas Morales, T.L. (2003). *Señal de primavera*. Isla negra.

Ward, A. (2015). *Postcolonial traumas: Memory, narrative, resistance.* Palgrave-Macmillan. https://doi.org/10.1057/9781137526434

Wuebbles, D.J., Fahey, D.W., Hibbard, K.A., Dokken, D.J., Stewart, B.C., & Maycock, T.K. (Eds.). (2017). *Climate science special report: Fourth national climate assessment, volume I*. U.S. Global Change Research Program. https://doi.org/10.7930/J0J964J6

Yeampierre, E. (2018). Bohío Girasol 2050. In E. Miranda-Rodriguez (Ed.), *Ricanstruction: Reminiscing & rebuilding Puerto Rico* (pp. 164-169). Somos Arte.

Yglesias, M. (2017, October 9). The Jones Act, the obscure 1920 shipping regulation strangling Puerto Rico, explained. *Vox*. https://www.vox.com/policy-and-politics/2017/9/27/16373484/jones-act-puerto-rico.

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Atmosfera Rizaliana: Metonymic Journeys of Storm Tropes in José Rizal's Writing on the Philippines

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Abstract

Stormy weather appears in recurrent instances across the literary and political oeuvre of José Rizal, a nineteenth-century figure who is one of the most significant and well-known personages in Philippine history. This paper analyzes the manner by which he describes storms in a few of his personal and political works, and observes that there is a deployment of metonymic logic that undergirds not only the texts, but a variety of other movements across the nineteenth-century cultural, technological, and political landscape. The metonymic logic of storm tropes are, in this sense, not only a productive literary modality in understanding weather representations during the Philippine fin de siècle, but also become illustrative of political and historical developments during the period. Based on this overarching logic, the paper articulates the possibility of understanding global climate and climate change as a series of interconnected and associated postcolonial and ecocritical experiences that are able to figure the world at large through an alternative expansion. This paper also investigates previous critiques that categorize the Rizaliana's weather as romantic, and interrogates the assumptions that are deployed in such categorizations – and what they might mean for Philippine postcolonial ecocriticism and its climate imaginaries.

Keywords: storm tropes, postcolonial ecocriticism, tropical imaginaries, climate change, nineteenth-century literature, José Rizal, Philippines

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Meanwhile, of course, typhoons—
—Christian Jil Benitez, *No Wild Iris*

Atmosfera Rizaliana

In the writing of a history of storm tropes from and about the Philippines, it would be remiss to ignore the contributions of the nineteenth-century ilustrados, and of José Rizal in particular, who is perhaps the most prominent figure among them. Nationalist, novelist, intellectual, polyglot, political martyr, Rizal is referred to as the first Filipino by some (Guerrero, 1963), and the first Malayan by others (Anwar Ibrahim quoted in Chanco, 2011; Ibrahim quoted in Flores, 2014, p.52) for his early conceptualization of the Philippine islands as a distinct national entity. Rizal wrote profusely on a variety of subjects and his influence is hard to deny both within and past the temporal ambit of his life. Augenbraum has commented that Rizal's figure is so enigmatic, and Rizaliana studies so popular in Philippine academia, that it has produced an Ur-Rizal theory wherein the man in question "cannot be known [because] he is a *santo*" (Rizal, 2006, pp.xxiii). This aspect of unknown-ness, however, cannot be attributed to a lack of material. Information regarding Rizal is not difficult to come by, and interested readers might consult one of his many biographers (such as Guerrero, 1963; Zaide, 1963; Nery, 2011; Ocampo, n.d.); Nick Joaquin's analyses of the man's life (Joaquin in Rizal, 1976; Joaquin, 2005, pp.50-76); Benedict Anderson's Philippine-oriented studies (1991; 1998; 2005); or even the man himself (Rizal, 1961c; Rizal, 1962; Rizal, 1976a; Rizal, 1976b; Rizal, 1997; Rizal, 2007; Rizal, 2011b; Rizal, 2015) to get a firsthand grasp of his literary and political sentiments.

However, as a brief introduction to the author of the ouevre which this article studies, José Rizal might be succinctly described as the symbolic figurehead of the Philippine reformist movement, and has been called the father of the Filipino novel (Mojares, 1983, p.137) for his two works, the *Noli Me Tangere* (1887) and the *El Filibusterismo* (1891). The novels and their author have been directly associated by many with the rise of the Katipunan and the 1896 Tagalog Revolution (Agoncillo 1956; Abinales & Amoroso, 2017), and after his death, Rizal's personality has been subsequently hailed by a number of groups as the guiding spirit of their millenarian uprisings (Sturtevant, 1976; Ileto, 1979).

Studies on the man can be found in a large number of works. The Rizaliana is very much given to investigations regarding national, anticolonial, postcolonial, Southeast Asian, and greater Malay thinking – a scope of topics which describe the flux of interests extant during the Philippine fin de siècle, because those were the political objectives Rizal's writing sought to directly address. Ecocritical studies of Rizal are

rarer in comparison, and as far as I am aware, only Filomeno Aguilar (2016) has undertaken a weather-oriented analysis on the tropic representations to be found in the Rizaliana and the wider ilustrado archive. Possible reasons for this scarcity might be found in the character of romanticism that permeates Rizal's figurations, and owing to ecocriticism's fraught relationship with romance as an intellectual modality (Huggan, 2009) the Rizaliana poses more difficulty than other works written with environmental issues at their heart and center.

Yet, it would be negligent to ignore the Rizaliana based on these difficulties – especially if one is attempting to understand the history of atmospheric figurations from and about the archipelago and their consequent relation to the discourse of the climate crisis. Contemporary ideas are, after all, significantly formed by their connection to elements of the past, whether these relations might be described as foundational, oppositional, or otherwise alternative (Williams, 1977, p.122), and to speak of a Philippine ecocritical approach necessarily entangles itself with the thickness a historical analysis entails. Extant writing on a Philippine-grounded ecocriticism is very much aware that the experience of empire (whether Spanish, American, or Japanese) suffuses the foundation and trajectories of its environmental humanities (Santa Ana, 2018; Yapan, 2019) and this paper is an extension of this thinking through its particular study of the Rizaliana.

The paper begins by describing the general biographical and political contexts under which Rizal had been writing before closely reading some of his works (specifically, the letters between himself and his family describing European and Philippine storms in 1882, and the *Brindis*[1] of 1884). It then goes on to point out instances wherein Rizal resorts to using metonymy in his descriptions of turbulent weather, and shows how his metonymic logic is more than an aesthetic literary feature. Rather, it is a modality whose logic can be used to describe a variety of technological, cultural, and political developments that were happening all over the world. Metonymic weather, or 'weather in fragments' as this paper calls it, had a variety of effects, some positive and some negative, but all were undeniably productive and still provide insight into how experiences of weather and climate were understood and how they can be possibly rethought in light of the present climate crisis.

The paper also takes a small detour to entangle itself with earlier critiques of the *Brindis* by Filomeno Aguilar, whose "Romancing Tropicality" (2016) makes the case for a categorization of Rizal's weather imagination as romantic. Issues regarding generic classifications are then brought to the fore, and discussed in terms of the

[1] "Brindis" is the Spanish term for congratulatory speech made during a toast. Because toasts do not usually have specific titles, this speech is also known under a number of different names, such as "In Honor of Two Filipino Painters" (Rizal, 1976a) and "Rizal's Homage to Luna and Hidalgo" (Rizal, 2001).

implications and expectations they set regarding Rizal's ecocritical legacy. Finally, this paper concludes by returning to its discussion of the metonym, and how it has an expansive feature which describes possible emerging relations between peoples and cultures affected in different ways by climate change. In its expanded use, metonymic logic allows for the imagination of an "overlapping community of fate" that connects different experiences of weather together through sentimental or alternative associations, a bridging which the current climate crisis demands from all of us, now more than ever.

Ilustrado Upbringing: A Passage Between Spain and the Philippines

José Protasio Rizal Mercado y Alonso Realonda was born on the 19th of June 1861 in the town of Calamba, Laguna. The Philippines at the time had been a colony of Spain for almost three hundred years and was witnessing the Castillian empire's slow decline during the last few decades of the nineteenth century. Rizal was 7 when Queen Isabel II was overthrown during the Glorious Revolution; 8 when the Suez Canal opened and shortened travel time between the Philippines and Spain; 11 when Filipino priests Mariano Gomez, Jose Burgos, and Jacinto Zamora (colloquially known together as GomBurZa) were executed for their supposed involvement with the Cavite Mutiny in that same year; and 13 when the Bourbon monarchy was restored to the throne with Alfonso XIII.

These are only some of the events that framed Rizal's upbringing, and it would not be an overstatement to say that it was a period of turbulent political flux. Despite the political atmosphere, economically, various parts of the Philippines were experiencing sporadic growth which allowed a few families such as Rizal's an upward class mobility. The children of these fortunate few had access to higher degrees of education (whether in the Philippines or abroad), and were marked by a Hispanized upbringing that set them apart from most people of the Philippines. Rizal, and the children who grew up like him, then came to be known as ilustrados or the enlightened class of the Philippines. As a group, they generally believed that the proper resolution to most of the colony's problems was legal reform and progress through widespread education, and not a complete separation from Spanish empire. Friars, both politically and ideologically, were figures which the ilustrados were often in heavy disagreement with, and given that much of political control in the islands was under the purview of religious organizations, the repercussions for their opposition were serious and considerable, ranging from imprisonment, exile, and in the most dire instances execution – as was the case for GomBurZa.

In 1882, 21 year-old Rizal left the Philippines to continue his education in Europe, and began writing his novels soon after. At 26, he published the first one, the *Noli Me*

Tangere, at 30 his second, the *El Filibusterismo*, and both earned him the ire of conservatives and the affection of the liberals in the Philippines and Europe alike. In the midst of all this, he was studying ophthalmology, writing articles for *La Solidaridad*, attempting to lay the foundations for a study of Philippine history and culture, and involving himself with the Reformist movement alongside other ilustrados such as Marcelo H. del Pilar and Mariano Ponce. The last project, hopeful and optimistic as it was in the beginning, eventually ended with a decisive split between Rizal and del Pilar, and while a variety of factors contributed to the worsening relationship between Rizal and the rest of the Philippine colony in Europe, it all eventually culminated in him deciding to return to the Philippines in 1892 in spite of the danger to himself such a homecoming posed.

His return to Manila resulted almost immediately in his exile to Dapitan, a small rural settlement in the southern island of Mindanao. He had become infamous for his writing, and was not a man who authorities believed could be left unchecked. After four years of exile, rising revolutionary movements both in Cuba and the Philippines provoked Antonio Canovas' administration to implement dire measures in the hopes of quelling any more unrest in the Pacific. While Spain sent troops to quash Marti's revolution in Cuba, it also decided to land a decisive blow against the symbolic figurehead of the Philippine rebellion. Rizal was executed by firing squad on 30 December 1896 on charges of sedition. He was at the time 35 years old.

Having framed the general political climate in Spain and the Philippines, the analysis begins by circling back to the middle of Rizal's life. It starts with his first autumn in Spain and his first taste of life abroad in the year 1882.

Weather in Fragments

It seems as if Rizal left the Philippines with an impeccable sense of timing. He had barely arrived in Madrid when things started to go awry, or more awry than is usual, back on the islands. As early as August, Rizal began receiving word of problems caused by the year's rainy season, but the letters started sketching a direr picture within a span of a few months. August heralded the beginning of both the monsoon and the cholera epidemic in Manila, with the latter killing around one out ten at the height of its spread (De Bevoise, 1995, p.118).[2] Right on its heels a few typhoons followed, and right after those, a beriberi epidemic, all of which proceeded to

[2] De Bevoise analyses a variety of epidemics in the Philippines from the theoretical perspective of total environments, which he defines as not just ecological, but economic and cultural as well (1995). Based on Vic Hurley's studies (1938), cholera was still ravaging the archipelago as late as the American Occupation, and underground religious organizations, such as the one headed by Dionisio Magbuela (more popularly known amongst his followers as "Papa Isio" or "Pope Isio") in Negros Island, proclaimed it was a disease caused by the Americans poisoning the wells (p.123).

compound the fallouts of the previous disasters with effects unevenly extending well into the next few decades. Word of these three disasters (cholera, storms, and beriberi) reached Rizal inconsistently. From his family, news came in incohesive fragments, and he had to piece all the information together to get a general grasp of what was going on. Four of his siblings gave conflicting reports in their letters between October and November. Olimpia, on one hand, tells him around sixteen people die every day in their hometown of Calamba because of cholera; Paciano, on the other, relays that they hardly have any cases. Josefa, meanwhile, tells him that while the storm that recently passed was not that strong, the water "grew so large" [tubig na lumaqui], that people living by the coast had all moved back to the towns, and that young girls had started manning their own boats to flee the flood. Maria, finally, and still without any consistency with her other siblings, takes the cosmic-folkloric and trans-oceanic route at the behest of their father: "Ipinapatanong sa iyo ni Tatay cung uala ca rao naquitang cometa dían na pares ñg aming naquiquita dine buhat ñg mag ca Cólera, na cun aming maquita ay cun a las cuatro ñg umaga"[3] (Rizal, 1961a, pp.58-59). This is to say nothing of all the news he received from colleagues elsewhere in the Philippines. The situation is somewhat summarized by Rizal's brother-in-law, Mariano Herbosa, whose letter narrates all these events in Calamba in those last few months of 1882:

> *Dine ay maicalauang bumagio di lubhang malalacas noong 20 nang Octubre at 5 nang Noviembre datapuat ang tubig ay totoong lumaque, ang mañga bahay namin ay hinde nasira, ang sa Nora Neneng ay napanitan nang caunting bubong, gayon din ang cay bilas na Antonino, ang ating ilog ay totoong masayá dahil sa sulong nang tubig totoong napacalaqui, ang sabi nang manga matatandá ay hinde rao lumaqui nang ganito ang tubig cailan man cundi ñgayon lamang caya ñga't sa calzada, patungo sa dagat, ay namamanca na buhat sa may puno nang talisay at manga bahay sa tabi ng dagat ay iguinibá na nang tubig, ang manga camalig nang azucal ay pinasoc nang tubig at marami ang natunao na azucal nang taga Tanauan.*
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> *Sa caramihan nang tauong naliligo at nañguiñgista sa ilog, isang arao, si Turnino, anac ni cabesang Bastian, si Lucas na anac ni cabesang Moises Ustar . . . at ang caibigan mong si Basilio Salgado, ay nacacuha nang isang bagong anac, lalaqui at hindi pa napuput-lan nang pusod (datapuat patay), ay ang guinawa ay ibinaon doon din sa tabi nang ilog at hinde nag bigay tanto sa Justicia, caya't nang malaman sa Tribunal ay sila'i napreso at ginawa ang diligencia de*

[3] "Tatay wants to ask you if you have not noticed a comet over there like the one we constantly see here since the cholera [outbreak] started, which we see every 4 o'clock in the morning." Translation mine.

"inhumación" at sila'i ipinadala sa Cabecera, at hangang ñgayon ay sinisiyazat cun sino ang iná ng nasabing bata.

Ang cólera ay lumilipas na dine at bagaman may namamatay ay isa isa na lamang, marahil ay ang nagpalipas ay mañga baguiong nag daan sa balac nang iba ay ang namatay dine lamang sa ating bayan ay mahiguit sa limang daan pati mañga hindi taga rine, hindi co totoong na seseguro ang bilang ñg tauong nañga matay.

Yto at ang baguiong dumaan ang siyang dinadahilan nang pag tiguil ng Diariong Tagalog na totoong dinadamdam co na di umano'i ang sabi sa canilang despedida ay sila'i quinaqapos nang personal.

Here a second storm that was not so severe arrived on the 20th of October and the 5th of November and while the water truly grew large, our [family members'] houses were not destroyed, only a little bit of Señora Neneng's roof was ripped away, the same as with our in-law Antonino, our river was truly cheerful because the surge of water was really very great, and the old people say that the water has never been this big until now, which is why on the streets, beginning from the talisay trees all the way to the sea, they have begun to ride boats, houses by the coast have all been destroyed by the water, the sugar storehouses have been flooded, and most of the sugar from Tanauan has melted.[4]

So many people have started bathing and fishing in the river that, one day, Turnino, the son of Cabesang Bastian, Lucas, the son of Cabesang Moyses Ustar . . . and your friend Basilio Salgado, fished out a newly born child, a boy with his umbilical cord still attached (already dead), and they buried him right by the river without informing the Justicia, which is why when the Tribunal found out they were imprisoned, and made to do diligence for "inhumation" and they

[4] Miguel Selga records around 3 storms crossed the Philippines during October and November of 1882: the first between 18-22 of October (727.60 mmHg), the second between 23-27 October (726.43 mmHg), and the third from 3-8 November (no barometric measurement given). Based on the measurements, the storms we do have data on qualify as "remarkable" typhoons (verging on "very remarkable"), and Selga's brief description of late October storms seems to provide that they were quite out of the ordinary. The storm that began on 18 October, writes Selga, "is known as the great typhoon of Manila and near provinces," which is in interesting contradistinction to how Rizal's family describes the said storm in their letters. The distance between "what is known" and "what is felt" makes itself very palpable in this case (1935, pp.44, 50).

> were all sent to the Capital, and up until now they are still investigating who the mother of the said child is.
>
> The cholera has receded here and though some people still die, it is now only one by one, and it is probably the people who have decided to weather the storms here, in just our town the number of deaths has exceeded more than five hundred including those who are not from here, but I am not completely sure about the number of people who have died.
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> This and the storms that have passed are the reasons why *Diariong Tagalog* has ceased operations, and I felt truly distraught when they said in their farewell it is because their resources have become inadequate. (Rizal, 1961a, pp.60-61) [translation mine]

The scene is familiar in its excessive and overflowing characteristics; Mariano relays the news in a stream of consciousness that disregards punctuation. Rizal is told a story in a torrential manner, and Mariano's grammar mimics the continuous cascade of tragedy he relays. Miserable events come together from all directions without pause, and one has barely come to terms with one misfortune before another is swelling into view. Where does one even attempt to begin to understand, and what? With natural disaster, or with the epidemic? The literal melting away of the sugar plantation harvest, upon which so many families' livelihoods depended? The Tribunal's attempt to find the culprit in a supposed crime and the imprisonment of some townspeople, who had only been trying to provide some sort of closure amidst all that wreckage? The closing of *Diariong Tagalog*, which, aside from being one of the periodicals that would publish Rizal, was also one of the first bilingual newspapers in Manila and would have made much positive headway in informing the public regarding of proposed legal reforms, if only it had survived longer than a few months? The news overwhelms; it is a story of many deaths, all coming to a head during the monsoon. Rizal cannot answer with any solid assurance, far away as he is, so instead he writes that he hopes for everyone's continued safety and for his siblings to do what they can for their neighbors. When it is his turn to relay events from his side of the world, twenty-one year old Rizal, too, tells a story about the weather,[5] and probably suffering from the comparison of

[5] The letter from Rizal was written 13 January 1883, around two months after Mariano's letter which was written 13 November 1882. While conversation did meander around a number of different topics across the letters between these dates, Saturnina (Rizal's sister) was still relaying that flood was a continuing problem in their town in December of 1882 (Rizal 1961a, pp.66-67), alongside the symptoms of a new sickness (beri-beri) becoming noticeable amongst the people. We might surmise that in this case, Rizal's response in 1883 was not temporally distant from the news of these concerns.

intensities, and with the misfortunes in Calamba still fresh in everyone's mind, he gives a slightly scoffing account of Madrid's storms.

> *El ocho se abrieron las clases y volvimos a nuestras interrumpidas tareas escolares. Empezó a llover lo que era un gusto, pero una lluvia fina y ticatic como decimos allí durante una semana. Las calles estaban llenas de barro sucio y espeso, el suelo resbaladizo y entre los huecos del adoquinado viejo y gastado charcos y pantanitos como lubluban ng calabao [. . .] Que fea estaba Madrid. Las aceras y las calles se llenaban de paraguas que han dejado tuertos a muchos con sus puntas compasivas. A lo mejor venía un viento que volvía al revés al desgraciado paraguas dejando en ridículo y grave compromiso al dueño o dueña de tan flexible mueble. Al menos allí cuando llueve, llueve bastante bien que sirve para lavar las calles y tienen las caidas de las casas para guarecerse, pero aquí la lluvia es finísima como matang tinapa. Luego los periódicos hablan de temporal; pero Dios mio, ¡que temporal!*
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> On the eighth, classes opened and we returned to our interrupted homework. It started to rain which was a treat, but a fine shower, *ticatic* as we say there, for a week. The streets were full of dirty and thick mud, the floor slippery and between the gaps of the old and worn cobblestones, puddles of water like *lubluban ng calabao* [carabao pools] [. . .] How ugly is Madrid. The sidewalks and streets are filled with umbrellas that have left many one-eyed because of their compassionate tips. A wind may come to turn that unfortunate umbrella upside down, leaving the owner of such flexible furniture in a ridiculous and grave commitment. At least there when it rains, it rains quite well so that it washes the streets and people find shelter beneath the house eaves, but here the rain is as fine as *matang tinapa* [smoked fish eyes]. Then the newspapers talk about a storm; but my God, what storm! (1961a, pp.81-83) [translation mine]

The derision is familiar to many who have experienced homesickness, but more than that, Rizal makes the observation that so many weather representations *traveled* during the nineteenth century in fragments. Contrary to the usual belief that there is a national kind of weather that characterizes the experience of one place versus another, Rizal's vexation, problematic as it is, creates through figuration a Madrid that has fish eyes falling from heaven and carabao [native water buffalo] pits forming in street crevices. Rizal conjures tropical weather in a place most unhomely to it, and weaves it into the setting so that he might describe an unknown experience to his

family. It is, to paraphrase James Clifford, Madrid with a difference (1992). The description of place is a wonderfully frankensteined creature that marries both the temperate and the tropical into one, and it is impossible to ignore that at the core of this whole assemblage is the desire to share his expanding perspective with the people he loved. Affection and sentimentality compel Rizal to construct an image and a narrative that can be shared between him and his family, no matter the material and physical distances that existed between them.

And Rizal's partitioning of the weather into bits and pieces was not just a textual development, but part of a larger contextual one as well. The idea of traveling weather, in this sense, follows the conceptual proposition forwarded by Hau and Tejapira that travel "need not be defined as a physical movement of people, since the term encompasses circulations of ideas and discourses enabled by inflows of goods and commodities such as books, films, and other consumer items within and beyond Southeast Asia" (2011, p.5). Alongside Rizal and his letters, technological advancements were also bringing bits and pieces of weather elsewhere. Ice, which had never been widely known (if it was known at all) in the Philippines previously, began traveling by the ton to the archipelago until local ice plants became operational in the late nineteenth century (Ocampo, 2015), which prompts us to remember that contemporary Philippine desserts much beloved during summer (from mais con hielo to halo-halo, from dirty ice cream to iced water) are only as recent as the ability of temperate things to travel and maintain their non-literary form in the tropics. In another related development, one is also reminded of the fact that the late nineteenth century was a time when the consumption of exposition universelles, the publication of travelogues and ship diaries, and orientalist exhibitions of every kind were very much in vogue and much applauded across the world. Weather in bits and pieces was present in all of these things, whether implicitly (the structure and material of the clothing being displayed, the form of the reconstructed native huts and villages) or explicitly (such as in artwork, like Ciriaco Arevalo's sculpture *Baguio / Storm*). And what all these examples serve to demonstrate is that there was an undeniable impetus to share and take part in this grand cosmopolitan arena of the nineteenth-century, with weather in active circulation in one adapted form or another. Some have called this circulation an effect of the modularity prompted by the rise of the local newspaper (Hau & Tejapira, 2011, p.6), but one can also think of this movement as similar to the gestures of the metonym (Jakobson & Halle, 1971, pp.90-96; Kelen, 2007, pp.14-26) as it was enacted by the political concerns of the ilustrados.

Metonymy, according to the *Oxford English Dictionary* (*OED*), "is the action of substituting for a word or phrase denoting an object, action, institution, etc., a word or phrase denoting a property or something associated with it . . . In extended use: a thing used or regarded as a substitute for or symbol of something else." In Jakobson

and Halle's analysis (1971, pp. 90-96; Kelen, 2007, pp.14-26), even synechdoche can be considered a species of metonym, especially when one observes that the overall logic of the latter governs the movement of the former. Synecdoche still deploys the logic of associations, but in a very specific manner with its figuration of the relationship between parts and wholes as substitutive for one another. The exchange of goods and the ideas they were thought to represent might be thought of as metonymic if one considers that all things are only partial or modular depictions of whole social and cultural processes, snapshots of a movement in one place that are in turn transported around the world for a variety of political, economic, or artistic motivations. In contemporary studies, Christian Benitez (2019) demonstrates how metonymic associations concretize abstract concepts in the Philippine context, revealing themselves to be gestures of a worlding grounded in specific experiences.

Yet it would be naïve to think that this circulation (sharing is a word I have previously used to describe this whole process) is governed by simple altruism, no matter its stated intentions or claims. As with all things, power undergirds every effort and operation to provide something of interest, something of note, something of *value*, and participants in the cosmopolis were always sharing in response to either the historical, dominant, or emergent structures of power impinging on their lives. The participation of storms and weather in this case becomes a particular currency in that larger pattern of global exchange and representation, and depending on what grounds these exchanges were made (from colony to metropole, from metropole to metropole, from one colony to another, or in some other relational form entirely), flows of power were either reinforced or overturned, realities either flattened or enriched. And the ilustrados understood this very well.

Sentimental Weathers of the Cosmopolis

This idea, that there is a circulation of weather fragments to and from the Philippines and in which Rizal was involved, becomes pronounced as a political maneuver in that famous *brindis* he had given for the painters Juan Luna and Félix Resurrección Hidalgo.[6] In 1884, both had just won awards at the Madrid Exposition: Luna a gold medal for *Spoliarium* and Hidalgo a silver for *Las Virgenes Cristianas Expuestas al Populacho*. The Philippine colony in Madrid—small, new, and ridden with disagreements—embraced the victory in one of the rare moments of joyous solidarity between its members. Maximino Paterno organized a dinner to celebrate the painters' achievements, and Rizal was slated to give the evening's congratulatory toast, an

[6] Félix Resurrección Hidalgo and Juan Luna are two ilustrado peers of Rizal, best known for their artistic talents as painters in both the Philippines and in Europe. Nick Joaquin (1980, p.13), in a reading of Luna (but which nonetheless applies to Hidalgo as well) puts forward that their achievements "proclaimed the arrival of the Filipino on the world scene". Guerrero (1963, pp.111-119) has implied that Rizal's aspirations as a writer might possibly have been influenced by the success both achieved in 1884, the subject of which is described in the *Brindis*.

honor to him no doubt, given that Graciano Lopez Jaena was the more well-known orator of the group. Rizal does not disappoint his audience, and he takes up once more his thesis on the traveling fragments of weather, this time not only through the geographic dimension, but the historical as well. While he begins with a unifying thematic that characterizes so much of early Propaganda Movement rhetoric ("genius is like light and air, the patrimony of all: as cosmopolitan as space, as life, as God"), the middle section of the speech provides an understanding of the atmospheric formation of subjects. There is an experience of homeland, according to Rizal, that resists effacement, and which reappears time and time again in the most unexpected of places, even when the initial environment that had formed it in the first place is out of the immediate frame of reference.

> *Ellos bebieron allá la poesía de la naturaleza; naturaleza grandiosa y terrible en sus cataclismos, en sus evoluciones, en su dinamismo; naturaleza dulce, tranquila y melancólica en su manifestación constante, estática; naturaleza que imprime su sello a cuanto crea y produce. Sus hijos lo llevan a donde quiera que vayan. Analizad, si no, sus caracteres, sus obras, y por poco que conozcáis aquel pueblo, le veréis en todo como formando su ciencia, como el alma que en todo preside, como el resorte de mecanismo, como la forma substancial, como la materia primera. No es posible no reflejar lo que en sí siente, no es posible ser una cosa y hacer otra; las contradicciones sólo son aparentes, solo son paradojas. En El Expoliarium, al través de aquel lienzo que no es mudo, se oye el tumulto de la muchedumbre, la gritería de los esclavos . . . con tanto vigor y realismo como se oye el estrépito del trueno en medio del fragor de las cascadas o el retemblido imponente y espantoso del terremoto.*
>
> *La misma naturaleza que engendra tales fenómenos interviene también en aquellas pinceladas. En cambio, en el cuadro de Hidalgo late un sentimiento purísimo, expresión ideal de la melancolía, la hermosura y la debilidad, victimas de la fuerza bruta; y es que Hidalgo ha nacido bajo el azul brillante de aquel cielo, al arrullo de las brisas de sus mares en medio de la serenidad de sus lagos, la poesía de sus valles y la armonía majestuosa de sus montes y cordilleras.*
>
> *Por eso en Luna están las sombras, los contrastes, las luces moribundas, el misterio y lo terrible como resonancia de las oscuras tempestades del trópico, los relámpagos y las fragorosas irrupciones*

de sus volcanes; por eso Hidalgo es todo luz, colores, armonía, sentimiento, limpidez, como Filipinas en sus noches de luna, en sus días tranquilos con sus horizontes, que convidan a la meditación y en donde se mece el infinito. Y ambos, con ser tan distintos en sí, en apariencia al menos, coinciden en el fondo, como coinciden nuestros corazones todos a pesar de notables diferencias; ambos, al reflejar en su paleta los esplendorosos rayos del sol del trópico, los transforman en rayos de inmarcesible gloria con que circundan a su patria; ambos expresan el espíritu de nuestra vida social, moral y política; la humanidad sometida a duras pruebas; la humanidad no redimida; la razón y la aspiración en lucha abierta con las preocupaciones, el fanatismo y las injusticias . . .

There [in the Philippines] they absorbed the poetry of nature; nature grand and terrible in its cataclysms, its transformations, its dynamism; sweet, peaceful, and melancholy nature in its constant manifestation; nature that imprints its seal upon whatever it creates or produces. Her sons bear this within themselves wherever they may go. Analyze, then, their accomplishments and their characters, and however little you may know this nation, you will see her in everything, such as the molding of her knowledge like the soul that governs everything, like the spring of a mechanical object, like substantial form, like raw material. It is impossible not to show what one feels; it is impossible to be one thing and act like another; contradictions are only apparent; they are merely paradoxes. In the *Spoliarium*, through that canvas that is not mute, one can hear the tumult of the throng, the cry of the slaves . . . with as much intensity and realism as the crash of thunder amid the roar of torrents, or the imposing and frightful rumble of an earthquake.

The same nature that conceives such phenomena also intervenes in those brush strokes. One the other hand, in Hidalgo's work there beats an emotion of the purest kind, the ideal expression of melancholy, beauty, frailty, victims of brutal force; and this is because Hidalgo was born beneath the brilliant azure of that sky, to the murmurs of the breezes of her seas, in the midst of the serenity of her lakes, the poetry of her valleys and the majestic harmony of her hills and mountain ranges.

For that reason in Luna's are the shadows, the contrasts, the moribund lights, mystery, and the terrible, like the resonance of those

> dark tempests of the tropics, the lightning and the roaring eruptions of its volcanoes; for that reason Hidalgo is all light, color, harmony, feeling, limpidity, like the Philippines on her moonlit nights, on her tranquil days, with her horizons which invite meditation, and where the infinite gently sways. And both, while being so different in themselves, in appearance at least, basically coincide, as all our hearts coincide despite notable differences. Both, reflecting in their palettes the splendorous rays of the tropical sun, transform them into rays of unfading glory with which they surround their homeland. Both express the spirit of our social, moral, and political life; humanity subjected to severe tests; unredeemed humanity; reason and aspiration in open struggle with preoccupations, fanaticism, and injustice . . . (Rizal, 2001)[7]

Weather is easy enough to find in the speech. Partitioned between Luna and Hidalgo are the violent and the idyllic aspects of tropical weather respectively, but the contrast is made to function as complementary in the same way that all other binaries in the speech (Spain and the Philippines, raw and cultured substances, the dark sleep of ignorance and the jarring shock of contact) are harmonized in the understanding that difference creates a fuller experience of the world. However, if two years prior, Rizal was already thinking of weather through metonymic representations and merging two distinct imageries into a hybrid one, the 1884 *Brindis* goes a step further by conceptualizing not only on the level of the image, but on the level of function. Rizal develops a trajectory wherein tropes operate as indicators and then develop and act as interveners. Weather in the *Brindis* leaves marks on people (a "nature that imprints its seal" and which "her sons bear with them wherever they may go"), ones which can be felt or seen even by the most ignorant of audiences ("and however little you may know this nation, you will see her in everything"). This is the first function: the weather as characterizing. Later on in the speech, these metonyms begin to perform more than just indications. Rizal goes on to say that instead of just passive markers (as one would suppose is implied by the term "imprint"), weather-traces become active agents capable of "intervening" at the level of the brush stroke. Thus the second function: the weather as operative. It is this last function which has very interesting logical consequences, because it implies that weather's travels surpass their immediate containers, journeying as it does through the world in endless modular configurations. While the initial encounter with weather is instantiated by direct experience, the logic supposes that the weather does not simply disappear once aspects of its materiality change (in the case of storms, if one follows the trajectory of the logic, one supposes they do not dissipate just because the event itself has technically ended). It travels

[7] This translation by Encarnacion Alzona and Raul Guerrero Montemayor has been slightly edited.

with the subjects that have experienced it, and through these subjects permeates whatever it is they consequently create. Once again, we find here the logic of the metonym, of associations. Thus, Rizal's narrativization of events: Luna and Hidalgo grew up in the Philippines, but they never completely left its weather behind; it traveled with them to Europe in their characters. Upon their arrival, tropical weather did not simply distinguish them from other people who had grown up with different weathers, but continued to guide their hand and suffuse their work at the very level of the brush stroke. If tropical weather can be seen—can exist—within and through something as divorced from its immediate materiality through a chain of associations (from immediate contact, to characteristic imprints, to brushstrokes), then to a certain extent, it can exist in the temperate zone as long as any part of Luna and Hidalgo's oeuvre exists there, in one form or another (again: "you will see her in *everything*").

The weather logic of the *Brindis* – as charted above – leaves one immediately beset by the question of intent. Although contemporary scholars can critique the contradictory and problematic maneuvers of Rizal's logic (Mojares 2002; Aguilar, 2016;) and comparative flaws shared by early colonial thinkers from other cultures can be found (Scott, 2004), to my mind, a fair judgement of intent must be weighed against the historical considerations which this intent both speaks to and/or contradicts. Why did this conception of traveling weather *matter* to the ilustrados? What made it so important for Rizal to conceptualize tropical weather as exceeding its technical geographic zone? Having solidified the connection between weather and creative genius, parts of the answer to these questions may lie in the thematic laid out at the very beginning. If we follow the line—"genius has no homeland, genius sprouts everywhere, genius is like light, air, belonging to all: it is as cosmopolitan as space, as life, as God"—then we might suppose that the desire to trope weather as a common good follows the political aims of cosmopolitanism in general.

Cosmopolitan, which is defined as "belonging to all parts of the world", without restriction, is from the root "cosmopolite", which is defined not only as "a citizen of the whole world", but a person or a subject that is able to survive and thrive in *transference*.[8] This transference, especially when it is framed through the ilustrado

[8] *Oxford English Dictionary* (*OED*), s.v. "cosmopolite, cosmopolitan." In contemporary academic use, cosmopolitanism in its broadest, most general sense, is defined as "the moral obligations owed to all human beings based solely on humanity alone, without reference to race, gender, nationality, ethnicity, culture, religion, political affiliation, state citizenship, or other communal particularities", a statement often instigated by the acknowledgement that all of humanity (no matter the specificities which assemble their particular identities) are now more than ever entangled in "overlapping communities of fate". As with all things, the term is filled with both promise and problems. Some critics have identified its use as connected with a kind of cultural elitism prevalent during the 1950s and 60s; others have stressed there is an underlying myopia in the way it flattens difference in its attempt to consolidate a "stable" "universal" sphere of existence, without acknowledging the ways in which this maneuver is in itself a skewed construction and tends toward a damaging abstraction. Efforts to recover the term from this negative appraisal stress its endless potential for solidarity across national lines, producing quite a number of counter/rooted/vernacular/discrepant/inverted cosmopolitanisms in turn. David Harvey comments on the

experience, can be understood across three intertwined registers: the geographical (to transfer locations, or travel), the translational (to transfer meaning), and the aneconomic proprietary (to transfer ownership, not only from one to another in full, but to all parts of the world in equality so as to nullify its capitalist aspect. In some ways, it is also to *give* as a means to *share with the commons*). When understood together, one supposes that the full embodiment of citizenship in the cosmopolis not only signifies the ability to apprehend the world in its broadest possible sense (to transfer one's self between one culture to the next, to experience what before had never even been known, and to be given the freedom to make meaning of these experiences), but also the ability to give back in some alternative but equivalent way. In Rizal's figuration of the achievements of Luna and Hidalgo, one can trace the presence of all three: the aggressive longing to exceed the territorial confines of the Philippines ("they were born in the Philippines, but they could have been born in Spain"); the urge to articulate the achievement of this worldliness at par with what they had encountered in Europe ("In the history of nations there are names related to an event which bring love and greatness to mind . . . Luna and Hidalgo belong among these names,"); and finally, the desire to share, both these achievements, these people (and implicitly, the weather that produced both) with the rest of the world ("Luna and Hidalgo belong as much to you as to us").

It is the last nuance that is most significant for this project, especially when one considers that—in the forceful establishment of the connection between Luna, Hidalgo, and the weather—Rizal tries to *give* this aspect of tropicality to the world; he articulates tropical weather as something of value and something worthy of being shared with the cosmopolis at large. The desire to give/share a particular experience of weather, *to make it a common good* through its metonymic relationship with people, broaches the possibility of a greater connection that surpasses national borders in spite of the infinite number of differences that abound in the world at large. The production of this whole theatrical rhetoric, this exaggerated romance, to my mind, was only ever intended to instigate a larger system of valuation, and consequent to that, a larger system of possible care in which all people are equally responsible. For Rizal, one cannot value genius without an appreciation of the conditions (atmospheric in this case) that have nurtured it in very specific ways. In the reverse, one cannot conceptualize any weather phenomena in broadly negative terms without considering its many effects, of which some might be unexpectedly positive though on a different trajectory than it was

significance of the tension between these two competing poles of thought: "Cosmopolitanism bereft of geographical specificity remains abstracted and alienated reason, liable, when it comes to earth, to produce all manner of unintended and sometimes explosively evil consequences. Geography uninspired by any cosmopolitan vision is either mere heterotopic description or a passive tool of power for dominating the weak". Other academic fields which broadly share the same concern for the counter-national might be "transnational" and "globalization" studies, as well as the off-shoot trajectories of "Asianism" and "Pan-Asianism". For all these arguments and historicizations, see (Apter, 2020; Brown & Held, 2010; Harvey, 2000; Hau & Tejapira, 2011; Lutz, 2004).

initially conceived. This gift of weather to the world, or the gift of this particular understanding of tropical weather and its peoples, allows Rizal to articulate an early conception of an "overlapping community of fate" (Brown & Held, 2010, p.295), one that is not only interested in the equality of all humans with each other, but invested in the range of their lived environmental realities as well.

It is also worth noting at this point that weather as a cosmopolitan gift also precipitates a restructuring of power relations between the colony and the metropole, one that follows a Maussian trajectory (Mauss, 1966).[9] The very ability to *give*, especially in terms of colonial relations when most things (taxes, bodies for war, bodies for forced labor, the terraformation of land to produce cash crops for the Spanish treasury) are dictates emanating from the economic needs of the metropole to the colony, is worthy of further commentary. Rizal, with and through Luna and Hidalgo, *gives* tropical weather to the world, and this act is a gift because it is bestowed on Rizal's terms, based on his desires, and without a specific or even known *demand* from the other for it. After all, one can only give gifts to equals, people of the same status. In the case of an inferior to a superior, one provides a tribute or a tax; in the reverse case, there are only blessings or indulgence. But Rizal and the painters were be able to give a *gift*, and it was a gift of the weather no less. The ilustrados wanted to gift Europe with tropical climate by transforming what had been commonly viewed as morally and physically debilitating into something valuable, as part of a masterpiece that enriches all of humanity by its very presence, a conceptual figuration which was rare in that day and age. Another way of understanding this affair is to comprehend the whole experience as a confrontation of two species of metonym; one imperial and one colonized. Both are undeniably limited, as is the case with all metonyms, and both are driven by agendas of power in a binary paradigm, but it is in the collision of these two metonymic species and the worlds they inevitably represent where our understanding of life-in-weather is either expanded or reduced.

And this gift was not only oriented towards Europe. In the Philippines, where that particular tropical climate was a lived experience, Rizal, Luna, Hidalgo provide a different aspect of the gift: the promise that the rest of the colony's children, absorbing the same "poetry of nature" that had produced the *Brindis*, *Spoliarium,* and *Las*

[9] Marcel Mauss' study of the nature of gifts in archaic societies supposes that the act of gift-giving is neither disinterested nor voluntary, as is often thought to be the case. For Mauss, one understands that no gift is free from competitive or agonistic obligations (both to receive and to reciprocate), and the response which determines both the senders and/or receiver's place in a community's political hierarchy. This sense is most noticeable in Rizal's gift of weather. The act of giving a gift to Spain is a kind of strategic maneuver, a subtle demand to change relations between the one and the other. Ilustrado gifts, even in their most "generous" iteration, have never denied they were attached to political interest. The obligation to respond to these interests is never far behind. For a more contemporary rehearsal of the politics and philosophy of colonial gifts and debt, Achille Mbembe's "The House Without Keys" studies the European laundering of pillaged African objects and the rhetorical transformation of the stolen items as "gifts" (2021, pp.149-172).

Virgenes, might achieve the same recognition from the cosmopolis someday. Surprisingly, the gift had also journeyed to Japan in a rather roundabout way, and there mobilized a very different set of fantasies. In 1888, Rizal had traveled with writer Suehiro Tetchō around North America, and the experience seemed to be so productive for the latter that he wrote five major works inspired by what he had learned from their encounter. Even though he had *never been* to the Philippines, Suehiro wrote two novels with the archipelago as its backdrop and "Philippine people" as its characters, with storms featured right in the title: *Nanyo no daiharan / Storm over the South Seas* (1891), *Arashi no nagori / Remains of the Storm* (1891), and an omnibus of both novels titled *O Unabara / The Mighty Ocean* (1894). The short comedic sketch in which "Rizal" (called the "Manila gentleman") features as a character is titled *Oshi no ryoko / The Travels of a Deaf-Mute* (1889), and is summarized and discussed briefly in Saniel (2018) and Hau & Shiraishi (2009). According to their analyses, the novels are as fantastical and as romantic as one can expect from a story written with absolute ignorance of its purported setting (Setsuho, 2003, p.24). It seems as if Suehiro's fantasy of the Philippines, devoid of any local ground, then becomes a mirror through which Japan's nanshin-ron (southward advance) becomes partly observable (Hau & Shiraishi, 2009). In a way, Rizal gets exactly what he had wished for ("No matter how little you may know . . ."), but is not alive to witness it culminate into one of its most damaging iterations—as one of the first ideological stirrings of meishuron (Japan-as-leader) Pan-Asianism, which with time would eventually develop into the imperial politics of Japan's Greater East Asia Co-Prosperity Sphere.

These are only some of the many afterlives the gift of weather produced in succeeding years, but if one had to limit oneself to its immediate and intended receivers, we know the gift did not generate the response Rizal or the ilustrados were hoping for. The understanding of this given-weather took a back seat to the more obvious political-colonial-racial corollaries it proposed, and Rizal's cosmopolitan atmospheres does not garner as much commentary as his racial cosmopolitanism. While repercussions were not really felt all that much in Madrid (where the *Brindis* had initially been given and published), copies of the speech eventually made their way to the Philippines, where it met a much more dramatic reaction from the conservative Spanish elements in the archipelago. Rizal was not dissuaded, though he promised his family he was trying to be as careful as possible. It seemed he was already committed to his cause as early as 1884, and was now even more motivated to attain the international recognition Luna and Hidalgo had both shown were possible in Europe. His artistic strength always lay in his writing, and he had already proposed a book project in partnership with the other ilustrados that year. That initial proposition never really gained momentum however,

and he must have consequently decided that he might as well write that book on his own. This book, of course, is none other than the *Noli Me Tangere.*

Romantic Atmospheres in the Tropics

Filomeno Aguilar's "Romancing Tropicality" (2016) revolves around much of the same concerns of this essay. Aguilar investigates the atmospheric tropisms present in the writings of the ilustrados and juxtaposes them against contemporary ideas regarding the human relationship with nature. Both of our analyses are grounded in readings of the *Brindis*, and how it reflects the political and environmental imagination of Rizal in the nineteenth century. There are many agreements between my interpretation and his, such as our shared opinion that the *Brindis* exhibits a romanticism grounded on problematic foundations, and that weather was most often discussed as part of a larger political, anticolonial strategy by the ilustrados. To repeat one of his most salient points: "In romancing the tropics as generative of life and creativity they were asserting a perspective that inverted the prejudiced view of Spaniards and other Europeans, but remaining within environmental determinism" (2016, p.446). In my own earlier discussion, the form of this determinism is one of oppositional limited metonymies, whose logical flaws are apparent to contemporary scholars, but whose significance to nineteenth-century anticolonial politics cannot be denied. In the larger scheme of things, Aguilar's and my interpretation and intentions have possibly more similarities than they do differences.

However, this essay departs and extends from Aguilar's in the sense that it is invested not only in the categorization of parts of the Rizaliana as romance, but what such categorizations might mean for us as readers faced with our own contemporary issues regarding climate, climate change, and the world it attempts to bring forth. Echoing Frederic Jameson: "It is not just a question here of deciding to what genre a given work belongs, but also and above all of determining what it means to assert that a work "belongs" to such a classification in the first place" (1975, p.151). Genre classifications, after all, function as conventions through which a text is understood. Others have also already shown how these conventions are not only consequential to literary studies, but also function as historical modes of emplotment (Scott, 2004) whose organizing functions must be understood as socio-political as much as they are aesthetic (Jameson, 1975, p.162). For myself, I do not deny that the Rizaliana presents romantic characteristics[10] or that romance has limitations as a modality.

[10] Entire books are written on the subject of what exactly counts as romance and romantic, and generalizations made here must be used simply as starting points instead of as rigid descriptors. Classically defined, romance outside of the Philippines is often associated with the works of writers such as William Wordsworth, Samuel Coleridge, Lord Byron, John Keats, William Blake, Percy Bysshe Shelley, Friedrich Schlegel, and Friedrich Schiller (to name only a few) from 1700 to 1835. Key ideas often used to describe the subjects of their writing tend to revolve around the primacy of poetic genius, imagination, and sentimental feeling as a responses to the dominance

What I would like to complicate however, is the easy use of traditional views regarding romance, especially in terms of the speed at which they are deployed to make assertions regarding Rizal's environmental imagination. Rizal does display a romantic affinity, but in a strange way, and it is in the study of this strangeness where Philippine postcolonial ecocriticism might find its most valuable ground and direction, and which possibly needs further elaboration at this point.

"Romancing Tropicality" makes various associations with the ilustrado articulation of romance, some of which are: romance is a nostalgic maneuver borne from a perception of various kinds of displacement, both physical (p.424) and political (p.425); that romancing catastrophe is an aesthetic, or "merely an element of nature's poetry," (p.424); and that it is attuned only to the idyllic, as is visible in the statement that "No ilustrado waxed nostalgic about typhoons and other natural calamities back home" (p.427). Other similar assertions follow, such as: "Any knowledge of the

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of classical and neoclassical forms in literature and art, and to alienations consequential to the forms of modernity and industrialization occurring in Europe during their lifetimes. In terms of nature, the romantics valorized the subject as the absolute model whose meditation allows the human mind to access not only the sublime, but also man's emancipation from religious and social restrictions. Nature functions as both supreme Other and Ideal, replacing religion as the premier ground of the Sacred (Dizon, 1996, p.416; Schneider, 2000). Romance also has direct links to the French Revolution, and the consequent rhetoric that frames such political upheavals that followed after it across the world (Simpson, 2000; Scott, 2004), a historical example which the ilustrados referred to and praised in their own political writing (Fores-Ganzon, 1967, p.226-229).

Yet, these classical definitions are detoured by the particular conditions of the colonies they arrived in. Prior to the Philippines' entry into world trade, the most popular literary forms on the island were the medieval romances, of which the pasyon (the Tagalog adaption of the passion of Jesus Christ) and the metrical romances (such as the legend of Bernardo Carpio, Arthurian and Charlemagne romance cycles, and the lives of saints) can be taken as representative of (Lumbera, 1986; Eugenio, 1987). Variety in secular literature only came with the opening of the Suez Canal in 1869, and even that remained heavily monitored by religious and colonial authorities (Lumbera, 1986, p.93; Jurilla, 2008, pp.31-32). According to Fansler (1916, p.203): "Until the American occupation . . .the reading-matter of the [Philippine] natives was largely the reading-matter of the Spaniards in the sixteenth century and earlier." Thus, romance in the Philippine context runs through a variety of circuits that belie the usual trajectories in which the genre is studied in its European context, and representations of nature follow suit. However, no matter the historical and cultural distances between Spain, the Philippines, and the rest of Europe, similarities can still be found in terms of the broadest definition of the genre's narrative form. Philippine romances from the seventeenth to the twentieth century strongly portray ideal patterns of life (no matter how estranged it is from the presents they emerge from) rather than a realistic representation of it, which is a hallmark characteristic of the romance narrative (Mojares 1983, p.57). This definition of wish-fulfillment follows the premises postulated by Frye (1957), and which David Scott, this time following Hayden White, shows is also a kind of historical emplotment (2004, p.63).

If one were to focus on Rizal and the confluences of the romances in his subject position, inevitably we find both temperate and tropical traditions intertwined in strange ways, particularly if we remember that two of his favorite narratives were Alexandre Dumas' *The Count of Monte Cristo* and Francisco Balagtas' *Florante at Laura*. Prior to his leaving the Philippines in 1882, most of his boyhood poetry took on the form of heroic epics which featured historical characters as Elcano, Magellan, and Columbus (Rizal 1976b). While in Europe, he was also a prolific reader, and other scholars have given accounts of the library he had accumulated during his stay (Reyes, 1991, pp.381-385; Dizon, 1996, pp.413-415; Anderson, 2005, p.29; Rizal, 2011b). Of the more popular romantics, he had read Francois-Rene Chateaubriand, Victor Hugo, and Eugene Sue from the French; Mariano Jose Larra, Gustavo Becquer, and Miguel Cervantes from the Spanish; and Friedrich Schiller and Johann Wolfgang von Goethe from the Germans. But Rizal read widely, and he read the Romantics alongside the Realists, Larra (Romantic journalist and poet) alongside Zola (naturalist and novelist) alongside de Laveleye (economist) alongside Morga (historian), and the diversity and speed of his tour through the cultural archive of Europe (from the Classics through the Medieval to the Naturalists) gives the writing an unusual and peculiar flavor. It was all these things yet strangely, and these complications arose from his subject position as a man from the colonies.

destructiveness of typhoons could have been *occluded* by their intense longing for the tropical climate and estrangement from Spain's climate" (p.429) [emphasis mine], or that "One of the contradictions of the ilustrado's romanticization of the tropical climate was the tendency to pass over human suffering brought about by calamities that resulted from natural hazards back home" (p.428). From all these statements, one might assume that Aguilar describes ilustrado romance as a distance away from the Philippine real, and that it thus results in a skewed perspective about the realities of tropical climate that was only rectified (to a certain extent) with Rizal's return to the Philippines (p.439-440). However, if we take the letters from 1882 as an example, or even the *Noli Me Tangere*, which was published before his return to the Philippines in 1887, we find that Rizal himself never really forgot about the tropical real no matter his nostalgic tendencies, and that he was able to flesh it out in great detail in his first novel. If suffering brought about by weather is submerged in the *Brindis*, it is completely visible in the *Noli*, which at least shows that while the knowledge of the ravages of nature was not explicitly stated in some parts of the oeuvre, it was in others.

It might also be timely to remember that these reservations regarding romance have a long history in Philippine criticism; that as a genre, it is often said to be a misrepresentation of the world that ought to be corrected by realism. Eminent scholars such as Bienvenido Lumbera (1986, p.53-54) and Resil Mojares (1976, p.247-248) have argued that romance (particularly the medieval romance which was so popular in the Philippines from the seventeenth to the twentieth century) and its corresponding feature of sentimentalism proceeds from a neglect or avoidance of material and economic historical conditions, resulting in a conservative and quietist attitude that displays "a lack of interest in the objective world" from which arises a kind of political regression. From these arguments stem the general tendency to pronounce romance akin to a worldless idealism, a subjectivism resulting in a disengaged and apolitical solipsism (Mojares, 1976). Some have even gone so far as to argue that Philippine romance is partly responsible for the people's passivity and ignorance of their own material conditions during the long three hundred years of Spanish colonization (Reyes, 1984, p.170-171).

Yet, there is no escaping the real, and Rizaliana studies can only be made richer by engaging in a more complex romantic thinking. Even when Aguilar says that romantic tropisms occlude, his essay nonetheless shows how they reveal something else about the historical, political, and material conditions in which they were made. Romantic tropes are still flush with polyvocal reality even when they refuse to be straightforward about it – and weather tropes function as both content and container of that immense experience. What is at first glance considered "muted" (Aguilar, 2016, p.430) might actually be better understood as *mutation*, and if the weather described in Rizal was not completely reflective of the real, it was because it was *refractive*. And these

refractions, or mediations as Raymond Williams calls them (1977, p.98-100), are in themselves valuable because they point to the immanent critique that lies precisely in the Philippine uses of romance: that its estrangement, its very *alterity* from the real, is both a comprehension and navigation of the world at large and not its denial (Flores, 2011; Flores 2014).

What is at stake in this whole argument is the revelation of the world in its past, present, and future senses. We discuss Rizal because as Philippinists, we want to explore exactly what we can inherit from his legacy in terms of a postcolonial and ecocritical perspective. Similar to studies from other countries which have undergone their own romantic re-views and reinterpretations (Murphy, 2019; Rigby 2020), we regard Rizal as an example of a previous climatic model whose thinking still informs ideas about the present Philippine experience. From a larger, global perspective, he adds a distinctly colonial inflection to two critical genres – romance and ecocriticism – which are still so often discussed in Euro-American terms and from Euro-American perspectives. His very otherness to these discourses obliges us to question the many invisible and unconscious assumptions we deploy in our attempts to navigate the Philippine position and its imagined future vis-à-vis climate change.

Aside from romance, this essay has also made use of the logic of the metonym to illustrate a broader picture of a variety of movements that surround the texts in question. Framing the Rizaliana as both metonymic and romantic allows us to address the multivalent features of the Philippine historical past and to understand it as an intersection of various local and colonial forces. Rizal, as polytropic man (Flores, 2014, p.60-61), belongs to the world of romance as much as he does to the world of the metonym, and possibly to more worlds besides. And it is in the embrace of these multiple worlds within his oeuvre where we might begin constructing an interpretative historical posture commensurate to the immense demands of our current climate realities.

Metonymy and Transnational Solidarity

A common thread of concern between the past and the present is a similar desire for a transnational solidarity embedded in discourses regarding weather and climate. The analysis has shown how Rizal's weather fragments both failed and succeeded at instigating a variety of solidarities through metonymic associations, and there is a historical lesson to learn from that regarding the possibilities of our own current hopes and aspirations. No issue perhaps is as pertinent to both postcolonial and ecocritical projects as the conceptualization of a shared space where all might live with at least a minimum measure of dignity and safety. The necessity to imagine a livable world for the self and all the others (whether human or non-human) which make the self's life

not only meaningful but possible in these quickly changing times, resides in our ability to commit to the infinite dimensions of the planetary around us (Spivak, 2003, pp.71-102). Speaking from the particular historical juncture of the nineteenth century, Rizal and the ilustrados knew that any project of such a scale necessitates the engagement with a spirit of camaraderie that passes through and around the more traditional relationships that hegemons insist on. It is instructive to view turbulent weather, both in the historical and contemporary case, as not simply a natural phenomenon that happens, but as a catastrophic intersection[11] of technological, historical, and political factors whose experiences are never divorced from one another. In the face of all the continuous catastrophes occurring during the fin de siècle, solidarity became a keyword which the ilustrados resonated with, owing to the enormous and complex character of their project for reforms, and their understanding that their goals could not be achieved on individual or isolated national grounds.[12]

Springing from this general commitment, one supposes that relating on a transnational scale, whether through knowledge or by affection, is no small feat. There is an undeniable difficulty when people are asked to imagine the value of other weathers, especially those in alterity to the ones regularly experienced, and the ilustrados are prime examples of this struggle. It is hard, after all, to care for something one does not intimately know or has even experienced, and this hurdle is partly caused, to my mind, by the difficult relation posed by the weather in fragments, or the logic of the metonym. We know that when any phenomena or subject is reduced either to its positive or negative parts only, one ends up with a caricature, no matter how well meaning the intention of the figuration in the first place. The storm *can* guide the movements of a brush stroke – but if all one ever sees is that partiality, then other aspects of a whole seasonality are overlooked, and one ends up, once again, with places that are nothing but storms, or places that are nothing but tropical paradises. Reduction rehearses either the rationale of the disaster report or the tourism advertisement. And yet, even as this problematic condensation is raised and acknowledged, the more productive effects of metonymic logic are missed out. Less recognized in general is how everyone *already* lives in bits and pieces of weather from different places, through technological developments and a variety of adaptations. I have mentioned the journey of ice to the tropics earlier, but the same thing can be said of sun lamps, humidifiers, temperature

[11] The phrase “catastrophic intersection” is borrowed from a seminar by Amitav Ghosh (2020) where he describes the multiple dimensions that inform migration, elemental degradation being one of them. “[F]or them [climate migrants], climate change was not a thing apart, a phenomenon that could be isolated from other aspects of their experience by a set of numbers or dates. Their experience was formed rather, by sudden and catastrophic intersections of many different factors, of which some were undoubtedly new (like smart phones and changes in the weather), but some of these factors were not new at all, being rooted ultimately, in deeply embedded structures of exploitation and conflict.”

[12] Speaking of a concerted effort amongst the Philippinists to raise greater awareness regarding the colony’s affairs to those in Europe, Marcelo H. del Pilar describes attitudes towards the archipelago as “not significant in [sic] a colony of such minor importance as far as public opinion in Europe and Oceania is concerned. This position will not gain strength if it remains isolated.” Letter from Marcelo H. del Pilar to Jose Rizal, 8 April 1889 (2006, p.78).

control, and space heaters and coolers, to say nothing of the ways literatures and the arts transport weather fragments from all parts of the globe to others. And these metonyms are effective and productive *things*, with their own uses and with their own advantages, and whose existence is not so much the problem as much as people's thoughtlessly excessive and abstracted consumption of them are. In short, even if we do not have the privilege of traveling to other places, the weathers we experience at home already occur with certain kinds of transnational intercessions. Other weather metonyms have already traveled towards us, *are* with us already, in a contiguous network we already live but are slow to recognize.

Future Expansions in the Tropical Imaginary

A possible avenue of further exploration might be proposed once again by the movement of the metonym. While this argument has given focus to the reductive gestures of the modality, it has not forgotten that the metonym has an expansive function, too. The future of a larger, more inclusive solidarity perhaps lies in our ability to figure, through the principle of endless divergent associations, alternative ways through which a transnational community of weather might be imagined and understood, whether this be through affective, rational, or metarational means. In a study that tackles the movement of literary tropes and environmental justice in the contemporary North American ghetto context, Hsuan Hsu (2011) argues that it is the logic of the metonym which highlights most obviously the transcorporeal horizontal relations between peoples and their surroundings, asserting the significance of lateral disruptions to metaphoric hierarchies. To my mind, the argument can be pushed even further, moving past traditional imaginaries of bounded districts or cities to encompass larger horizons that span the full scope of the planetary. Once again, in bits and pieces, possibilities of this wider imaginary are already emergent in fractured patterns and bursts of sudden movement. The outpouring of international grief over the recent wildfires in Brazil and Australia tell us an affective understanding of a contiguous environment is already emergent for some people around the world, though this comprehension is still largely uneven and irregularly directed by the political optics of international media and the coverage of the environmental crisis' "spectacles."

Not quite different from the wildfires, the pandemic has also become a strange bedfellow of the climate crisis, with some theorists highlighting similar characteristics rather than fixating on their technical differences. "Within these pandemic times," says Judith Butler (2021 April), "air, water, shelter, clothing and access to health care are sites of individual and collective anxiety. But all these were already imperiled by climate change." Butler's relational leap, from the pandemic to the climate crisis, exemplifies another instance of metonymic contiguity we can follow, and its significance lies in the way that it underscores multiple associations between two

supposedly distinct disasters. Reticular links between species of catastrophe are rooted in a larger summative concern, one whose gravity pulls these two different problems along with the same amount of force and marks them with the same identifiable discursive signature: that the world we all share is not equally shared amongst us, and it is an inequity as old as colonialism itself. And these historical disparities recurve in multiple ways and times – though now they are more keenly felt than ever – in a boomerang arc that returns to the West both the causes and consequences of the imperial perils it has at some point generated and benefited from (Clayton, 2021). Yet it is not only the West where agency and recognition lie, especially when faced with a problem as imminent and encompassing as climate change. All are inevitably entangled by the promises and problematics of the tropical imaginary, and are called to respond in the ways most appropriate and commensurate to their historical and present circumstances.

The dilemmas are familiar to many in the humanities, for they are problems whose endurance beggars any conception of justice and fairness we can ever hope to lay claim to. Yet the metonymic struggle of the tropical imaginary, that complex movement between parts and larger wholes through which our solidarity is necessarily animated, obliges us nonetheless to a critical optimism. The metonym, in its most hopeful figuration, suggests that every form of limitation begets and advances its own unpredictable expansion. A whole becomes a part, but a part, too, inevitably hails a larger and more encompassing assemblage into its orbit, one that might contest and refigure the initial totality from which it was reduced. If the contemporary is filled with structural limitations, rife with political violence, state-sanctioned cruelty, and vicious indifference, we must imagine that every reductive, every constraining maneuver of and by power, also inexplicably gestures towards its own radical and associative dismantling with a corresponding solidarity. Rizal and the ilustrados, in their deployment of weather as part of political and anticolonial rhetoric, provide a moment when such maneuvers were initially being explored in the nineteenth century in response to the particular issues of their times, and while the features of their problems are not identical to ours, they are not quite so different either. More importantly, both their successes and failures at instigating transnational solidarities are historical examples which we can learn from as we imagine and shape the course of our own future prospects regarding climate and its many attendant problems. There remains still in the Rizaliana, the semblance of an unexplored potential that understands the many entanglements of the socio-political with the environmental, the local with the global, and such entanglements have never been quite as inexorable or as significant as they are now.

References

Abinales, P.N. & Amoroso, D.J. (2017). *State and Society in the Philippines*. Ateneo de Manila University Press.

Agoncillo, T. A. (1956). *The Revolt of the Masses: The Story of Bonifacio and the Katipunan*. University of the Philippines.

Anderson, B. (1991). *Imagined Communities: Reflections on the Origin and Spread of Nationalism*. Verso.

Anderson, B. (1998). *Spectre of Comparisons: Nationalism, Southeast Asia and the World*. Verso.

Anderson, B. (2005). *Under Three Flags: Anarchism and the Anti-colonial Imagination*. Verso.

Apter, E. (2020). Cosmopolitics. In Stoler, A., Gourgouris, S., & Lezra, J. (Eds.), *Thinking with Balibar* (pp.94-116). Fordham University Press. https://doi.org/10.5422/fordham/9780823288519.003.0008

Aguilar, F. V. (2016). Romancing Tropicality: Ilustrado Portraits of the Climate in the Late Nineteenth Century. *Philippine Studies* 64, (3-4), 417-454. https://doi.org/10.1353/phs.2016.0035

Benitez, C.J. (2019). Panahon and Bagay: Metonymy and the Close Reading of Dictionaries to Understand Filipino Temporality. *Philippine Studies* 67 (3-4), 457-488. https://doi.org/10.1353/phs.2019.0023

Benitez, C.J. (2021). No Wild Iris. *eTropic: electronic journal of studies in the tropics*. 20 (1), 42-53. https://doi.org/10.25120/etropic.20.1.2021.3773

Brown, G.W., & Held, D. (2010). *The Cosmopolitan Reader*. Polity Press.

Butler, J. (2021, April 21). Creating an Inhabitable World for Humans Means Dismantling Rigid Forms of Individuality. *Time2030*. https://time.com/5953396/judith-butler-safe-world-individuality/?fbclid=IwAR3oFx6ipy7g3hApISyvkJjc8e5lCebXgawidAjlbgebkb87M0zLfZLaPUQ

Chanco, B. (2011, June 20). Rizal as the Great Malayan. *PhilStar Global*. https://www.philstar.com/business/2011/06/20/697546/rizal-great-malayan

Clayton, D. (2021). Tropicality and the Choc en Retour of Convid-19 and Climate Change. *eTropic: electronic journal of studies in the tropics*. 20 (1), 54-93. https://doi.org/10.25120/etropic.20.1.2021.3787

Clifford, J. (1992). Traveling Cultures. In L. Grossberg, C. Nelson, & P. Treichler (Eds.), *Cultural Studies* (pp.96-116). Routledge.

CuUnjieng Aboitiz, N. (2020). *Asian Place, Filipino Nation*: *A Global Intellectual History of the Philippine Revolution, 1887-1912*. Columbia University Press. https://doi.org/10.7312/cuun19214

De Bevoise, K. (1995). Fallout from Cash Cropping. In *Agents of Apocalypse: Epidemic Disease in the Colonial Philippines* (pp. 133-157). Princeton University Press. https://doi.org/10.2307/j.ctt7s4xt

Dizon, A.J. (1996). Rizal's Novels: A Divergence from Melodrama. *Philippine Studies* 44 (3), 412-426.

Eugenio, D. (1987). *Awit and Corrido: Philippine Metrical Romances*. University of the Philippines Press.

Fansler, D. (1916). *Metrical Romances in the Philippines*. The Journal of American Folklore 29 (112), 203-234. https://doi.org/10.2307/534486

Flores, P.D. (2011). Everyday, Elsewhere: Allegory in Philippine Art. *Contemporary Aesthetics*, 3. http://hdl.handle.net/2027/spo.7523862.spec.303

Flores, P.D. (2014). Polytropic Philippines: Intimating the World in Pieces. In M. Antoinette & C. Turner (Eds.), *Contemporary Asian Art and Exhibitions: Connectivities and world-making*. Australian National University Press. https://doi.org/10.22459/CAAE.11.2014.03

Fores-Ganzon, G. (Trans.) (1967). *La Solidaridad, Volume I, 1889*. University of the Philippines Press.

Frye, N. (1957). Anatomy of Criticism: Four Essays. Princeton University Press. https://doi.org/10.1515/9781400866908

Ghosh, A. (2020 September 30). *Future or Past? Climate Change as Seen from the Global North and South* [Zoom presentation]. Institute for Religion, Culture, and Public Life, Columbia University, New York City, United States.

Gomez, L. (2003). Las Colecciones: La Critica Racial de los Peninsulares, Los Expositores. In *Un Imperio en la Vitrina: El colonialism Español en el Pacifico y la Exposicion de Filipinas de 1887* (pp.85-134). Consejo Superior de Investigaciones Cientificas.

Guerrero, L. (1963). *The First Fililpino: A Biography of Jose Rizal*. National Heroes Commission.

Harvey, D. (2000). Cosmopolitanism and the Banality of Geographical Evils. *Public Culture 12* (2), 529-564. https://doi.org/10.1215/08992363-12-2-529

Hau, C. & Shiraishi T. (2009). Daydreaming About Rizal and Tetcho On Asianism as Network and Fantasy. *Philippine Studies 57* (3), 329-388.

Hau, C. & Tejapira, K. (2011). Introduction. In *Traveling Nation-Makers: Transnational Flows and Movements in the Making Modern Southeast Asia* (pp.1-31). NUS Press.

Huggan, G. (2009). Postcolonial Ecocriticism and the limits of Green Romanticism. *Journal of Postcolonial Writing 45* (1), 3-14. https://doi.org/10.1080/17449850802636465

Hurley, V. (1938). The Popes. In *Jungle Patrol: The Story of the Philippine Constabulary* (pp. 117-128). E. P. Dutton.

Hsu, H. (2011). Fatal Contiguities: Metonymy and Environmental Justice. *New Literary History 42* (1), 147-168. https://doi.org/10.1353/nlh.2011.0007

Ileto, R. C. (1979). *Pasyon and Revolution: Popular Movements in the Philippines, 1840-1910*. Ateneo de Manila University Press.

Jakobson, R. & Halle, M. (1971). The Metaphoric and Metonymic Poles. In *Fundamentals of Language* (pp. 90-96). Mouton de Gruyter.

Jameson, F. (1975) Magical Narratives: Romance as Genre. *New Literary History 7* (1), 135-163. https://doi.org/10.2307/468283

Joaquin, N. (1980). Introduction: The Archetypal Filipino. In S.A. Pilar, *Juan Luna: The Filipino as Painter* (pp.13-20). Eugenio Lopez Foundation, Inc.

Joaquin, N. (2005). Anatomy of the Anti-Hero. In *A Question of Heroes* (pp.50-76). Anvil Publishing.

Jurilla, P.B. (2008). A Survey of Philippine Book History. In *Tagalog Bestsellers of the Twentieth Century* (pp.17-56). Ateneo de Manila University Press.

Kelen, C. (2007). *An Introduction to Rhetorical Terms*. Humanities E-Books. https://doi.org/10.1057/9780230608764_1

Llanso, A. (1897). *El Museo-Biblioteca de Ultramar*. Tipolitografia de Luis Tasso.

Lumbera, B. (2001 [1986]). *Tagalog Poetry 1570-1898: Tradition and Influences in its Development*. Ateneo de Manila University Press.

Lutz, T. (2004). Cosmopolitanism. In *Cosmopolitan Vistas: American Regionalism and Literary Value* (pp. 49-58). Cornell University Press.

Mauss, M. (1966). *The Gift: Forms and Functions of Exchange in Archaic Societies*. Cohen and West, Ltd.

Mbembe, A. (2021). *Out of the Dark Night: Essays on Decolonization*. Columbia University Press.

Mojares, R. (1976). Aspects of Sentimentality in Philippine Vernacular Fiction. *Philippine Quarterly of Culture and Society* 4 (4), 243-249.
Mojares, R. (1983). *Origins and Rise of the Filipino Novel: A Generic Study of the Novel until 1940*. University of the Philippines Press.
Mojares, R. (2002). Rizal Reading Pigafetta. In *Waiting for Mariang Makiling: Essays in Philippine Cultural History* (pp. 52-86). Ateneo de Manila University Press.
Murphy, O. (2019). Romantic Climates: A Change in the Weather. In A. Collett & O. Murphy (Eds.), *Romantic Climates: Literature and Science in an Age of Catastrophe*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-16241-2_1
Nery, J. (2011). Introduction: The Uses of Error A Rizal Chronology. In *Revolutionary Spirit: Jose Rizal in Southeast Asia* (pp.1-45). ISEAS Publishing.
Ocampo, A. (n.d.) *Rizal, Jose*. CCP Encyclopedia of Philippine Art. https://epa.culturalcenter.gov.ph/9/80/5652/
Ocampo, A. (2015, July). The Iceman Cometh. *The Philippine Daily Inquirer*. https://opinion.inquirer.net/86932/the-iceman-cometh
Pilar, Marcelo H. del. (2006 [1955]). *A Collection of Letters of Marcelo H. del Pilar*. National Historical Institute.
Reyes, S. (1984). The Romance Mode in Philippine Popular Literature. *Philippine Studies 32* (2), 163-180.
Reyes, S. (1991). French Influence on the Philippine Novel: 1882-1921. *Philippine Studies* 39 (3), 380-390.
Rigby, K. (2020) *Reclaiming Romanticism: Towards and Ecopoetics of Decolonization*. Bloomsbury Collections. https://doi.org/10.5040/9781474290623
Rizal J. (1930) *Epistolario Rizalino, Tomo Primero 1877-1887* (T. M. Kalaw, Ed). Bureau of Printing.
Rizal, J. (1961a). *Cartas Entre Rizal y los Miembros de la Familia, Primera Parte*. Comision Nacional del Centenario de Jose Rizal.
Rizal, J. (1961b). *Cartas Entre Rizal y los Miembros de la Familia, Segunda Parte*. Comision Nacional del Centenario de Jose Rizal.
Rizal, J. (1961c). *Reminiscences and Travels of Jose Rizal*. Jose Rizal National Centennial Commission.
Rizal, J. (1962). *Rizal's Poems*. Jose Rizal National Centennial Commission.
Rizal, J. (1976a). In Honor of Two Filipino Painters. In *Political and Historical Writing* (pp.6-9). National Historical Institute.
Rizal, J. (1976b). *The Complete Poems and Plays of Jose Rizal* (N. Joaquin, Trans.) Far Eastern University.
Rizal, J. (1997). *Noli Me Tangere* (S. Lacson-Locsin, Trans). University of Hawai'i Press.
Rizal, J. (2001 [1884]). Rizal's Homage to Luna and Hidalgo. *Malacañan Palace: Presidential Museum and Library* (Alzona, E. & Montemayor, G., Trans). http://malacanang.gov.ph/4071-jose-rizals-homage-to-luna-and-hidalgo/
Rizal, J. (2006). *Noli Me Tangere* (H. Augenbraum, Trans.). Penguin Books.
Rizal, J. (2007). *El FIlibusterismo: Subversion* (S. Lacson-Locsin, Trans). University of Hawai'i Press.
Rizal, J. (2011a). *El Filibusterismo* (H. Augenbraum, Trans.). Penguin Books.
Rizal, J. (2011b). *Jose Rizal: Correspondence with Fellow Reformists*. National Historical Commission of the Philippines.
Rizal, J. (2015). Rizal's Own Story of His Life (A. Craig, Ed.). Project Gutenberg (Original work published 1918).
San Juan, E. (2011). Sisa's Vengeance: Rizal and the Mother of All Insurgencies. *Kritika Kultura 17*, 23-56. https://doi.org/10.13185/KK2011.01702

Saniel, J. (2018). Jose Rizal and Suehiro Tetcho: Filipino and Japanese Political Novelists. *Asian Studies 54* (1-2), 353-371.
Santa Ana, J. (2018). Filipino Ecological Imagination: Typhoon Yolanda, Climate Change, and Imperialism in Philippine Poetry and Prose. In J.C. Ryan (Ed.), *Southeast Asian Ecocriticism: Theories, Practices, Prospects* (pp.61-86). Lexington Books.
Schneider, H.J. (2000). Nature. In M. Brown (Ed.), *The Cambridge History of Literary Criticism, Vol.V, Romanticism* (pp.92-113). Cambridge University Press. https://doi.org/10.1017/CHOL9780521300100.007
Scott, D. (2004). *Conscripts of Modernity: The Tragedy of Colonial Enlightenment*. Duke University Press. https://doi.org/10.1215/9780822386186
Selga, M. (1935). *Charts of Remarkable Typhoons in the Philippines, 1902-1934*. Bureau of Printing.
Setsuho, I. (2003). Japan and the Philippines, 1885-1905. In Setsuho, I. & Jose, L. Y., (Eds.), *Philippines-Japan Relations* (pp.19-46). Ateneo de Manila University Press.
Simpson, D. The French Revolution. In M. Brown (Ed.), *The Cambridge History of Literary Criticism, Vol.V, Romanticism* (pp.49-71). Cambridge University Press. https://doi.org/10.1017/CHOL9780521300100.005
Spivak, G.C. (2003). Planetarity. In *Death of a Discipline* (pp.71-102). Columbia University Press.
Sturtevant, D.R. (1976). *Popular Uprisings in the Philippines 1840-1940*. Cornell University Press.
Williams, R. (1977). Marxism and Literature. Oxford University Press.
Yapan, A. (2019). Ilang Paliwanag Tungkol sa Tunguhin at Direksyon ng Ekokritisismong Filipino." *Katipunan* 4, i-iv.
Zaide, G. (1963). *Jose Rizal: Life, Works, and Writings*. Villanueva Bookstore.

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On the Weariness of Time: El Niño in the Philippines

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Abstract

As a rehearsal of a "tropical imaginary" that attempts to accentuate the entanglement of literature with the material world, this essay 'coincides' Jose F. Lacaba's 1965 poem "Ang Kapaguran ng Panahon" ("The Weariness of Time") with the 2015 El Niño phenomenon in the Philippines and its violent culmination the following year in Kidapawan City, Cotabato Province, Mindanao. While time or *panahon* in the Philippine tropics is usually intuited as generative, this essay outlines the possibility of its being worn down, not simply as a "natural" consequence of the present climate emergency, but as a critical outcome of the predominant political infrastructures that practically prohibit the phenomenon of time from unfolding. As such, it becomes imperative to recognize that beyond the current conditions banally imposed as "arog talaga kayan" or "how things really are" is the urgent need for social reform—daring tropical imaginings through which Philippine time can possibly become anew.

Keywords: *panahon*, Philippine time, drought, slow violence, climate emergency, El Niño, tropical imaginary

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Ang Kapaguran ng Panahon

Kaya't siya'y naupo sa tabi ng ilog
Sa lilim ng dahong tiklop ng akasya.
Nanlulupaypay na tumayo sa tubig
Ang patpating kangkong sa kanyang paanan.

Ang walang-agos at natutuyong ilog
Ay hindi ginulo ng mga paa niya,
At hindi kumilos ang pagod niyang bibig
Upang mapaalis ang katahimikan.

Subali't matigas ang tigang na lupa,
At hapong nagbalik siya sa kanyang silid.
Pinisil ng palad ang pikit na mata.

At siya'y huminga sa dilim, at nahiga
Nang walang-tinig sa makinis na sahig,
At tinitigan ang pundidong bumbilya. (Lacaba, 1965, p. 29)[1]

The Weariness of Time

So they sat by the river, beneath
The folded leaves of the acacia.
By their feet, in the water,
The thin kangkong stood droopily.

The flowless and drying river
Their feet did not disturb,
Their tired mouth did not move
To chase the quiet away.

But hard was the barren earth,
And breathless they retired to their room.
They pressed a palm to their eyes closed.

And they breathed in the dark, and laid
Without a sound on the bare floor,
Then stared at the burnt out bulb. (Translation mine)[2]

[1] In its eventual inclusion in Jose F. Lacaba's (1996) first poetry collection, *Mga Kagila-gilalas na Pakikipagsapalaran: Mga Tulang Nahalungkat sa Bukbuking Baul* (*Legendary Adventures: Poems Recovered from a Decaying Trunk*), this poem is given a different title, "Dapithapon" ("Dusk"), while also changing the first line to "Pagod, naupo siya sa tabi ng ilog" ("Weary, he sat down by the river") (translation mine) (p. 48). This essay turns to the earlier version of Lacaba's poem given the discourse it directly initiates regarding the phenomenon of time itself, and the 50 year distance between this earlier version of the poem and the 2015 Philippine El Niño drought.

[2] The Filipino third-person pronoun *siya* in Lacaba's original poem is singular and, crucially, gender indeterminate. Here, the pronoun is translated as *they* to retain the gender fluidity of the farmer portrayed. At the same time, in

The phenomenon of the present climate emergency calls for a timely "tropical imaginary" (Lundberg, 2021) that coincides[3] Jose F. Lacaba's early sonnet from 1965 with the contemporary predicament of Filipino rural farmers.[4] In 2015, fifty years after Lacaba's poem was first published, many parts of the country experienced a drought similar to the one described in the poem which affected the lives of countless farmers (Ranada, 2015). In the province of Negros Oriental, Central Visayas, as early as April of that year, the damages to the farmers' crops and livestock were already estimated to be Php 28 million (~USD 630,000) (Espina, 2015). In the provinces of Maguindanao, North Cotabato, and Sultan Kudarat, in Central Mindanao, almost all of the rice and corn crops were spoiled by the extreme heat. Altogether – along with other damaged crops such as coconut, banana, coffee, and cacao – 11,292 farmers were projected to have incurred a loss of Php 103.7 million (~USD 232,000) by May of that scorching year (Ranada, 2015).

Although such "weariness of time"—or what Lacaba metonymically describes as the "barren earth" and "drying river"—as experienced in 2015 was a distinctly severe instance of the El Niño phenomenon (de la Cruz, 2014), the occurrence of drought was not entirely new and does not remain foreign for many Filipino farmers today. In reality, most farmers have learned over time to adapt to similar extreme circumstances. For instance, in the town of Libmanan in Camarines Sur in the region of Bicol, farmers, prompted by their avowed "automatic" readiness for droughts, would temporarily move to the nearby town of Paracale and shift trades to work as gold miners (Manalo et al., 2020, p. 6). Meanwhile, in the town of Anao, in Tarlac, Central Luzon, the farmers who regard agricultural labour as a crucial part of their identities adopt a different strategy, resolving to stay in their hometown and resorting instead to borrowing money or selling their remaining livestock merely to have sufficient capital for the next sowing season (Manalo et al., 2020, pp. 8-9). With such tactical acclimations—their varied exhibitions of individual *mêtis* or the "idiom of quick change" (Flores, 2014, 61) which grants them imaginative resourcefulness—these farmers

doing so, the singularity of *siya* is also displaced by the often connoted plurality of *they*, rendering the translation here to be a reimagining of Lacaba's poem, in which the solitary instance is transposed to a collective experience.

[3] *Coincide* operates here as an action that the essay performs, that is to say, the essay *coincides* two "events," namely a 1965 poem and 2015 drought. I hope to propose this gesture of "coincidental" reading as a counter/reaction to the discipline of "comparative" reading whose juxtapositions are often hinged primarily on spatial differences, in contrast to the present attention to the temporal.

[4] While Lundberg (2021) articulates the tropical imaginary in relation to climate change through creative production, particularly in the works of the Indonesian artist Slinat, I rehearse here the same "material poetics" (p. 98 ; see also Lundberg, 2008) through a materialist reading—a belabouring that is as much a creative production—that coincides Lacaba's poem with what initially appears to be an historically distinct, if not completely separate, event, namely the Philippine drought of 2015. In doing so, a certain predicament on time is intimated – what Nixon (2011) calls an "attritional catastrophe," or that which "overspill[s] clear boundaries in time and space…that simplif[ies] violence and underestimate[s]…the human and environmental costs…smooth[ing] the way for amnesia…" (p.7). In this rehearsal of tropical imagining, I propose as well a reversal of the rhetoric flow described by Lundberg (2021), through bringing the discourse on climate change this time from "the specific, artistic and local," as concretized by Lacaba's poem, and back to the "general, scientific and global," as embodied in the juxtaposed Philippine historical moment (p.98).

ultimately embody the Philippine notion of time in its etymological sense: *panahon*, from the obscure root *nahon*, which denotes adaptive labouring that entails a conscious turn to the most timely approach, including the possible movement to an entirely different place (Benitez, 2019b, pp. 468-471).[5]

Bearing in mind the Filipino farmers' capability to adapt their way through droughts, the last stanza in Lacaba's poem can now be read in a different light. The retiring of the farmer to their room, their laying "without a sound on the bare floor", their "star[ing] at the burnt out bulb", can be intuited as not merely an instance of thoughtless gazing—that idiomatic helpless perishing into an impending famine[6]— but as perhaps a contemplative moment on what they could do to keep up with the apparent "weariness of time." Therefore, while by the end of the poem the farmer could be perceived as despairing, they can also be recognized as still insisting on their agency: as the river runs dry and the earth becomes barren, the farmer still possibly dares to imagine the prospects of adapting, if not outright flourishing, amid the present crisis – albeit in ways that may differ from what they were formerly accustomed to. After all, such keeping pace with Philippine time is an imperative in the tropical archipelago, or as a farmer from Libmanan – evoking the perpetual likelihood of the weather and seasons at large to change drastically at any moment – puts it, "Mayong maginibo, arog talaga kayan" (Manalo et al., 2020, p. 8): "there's nothing that can be done, that's how it really is" (translation mine). And so, in the end, it appears that the farmers can only depend upon their own *mêtis*: as another farmer from Anao contemplates, the condition of the atmosphere might change "[in] just a wink of an eye," but their family "will not be poor as long as [he is] healthy" (Manalo et al., 2020, p. 8), that is, as long as he will be able to adapt to the changes unfolding over time.[7]

In this sense, despite the perceived weariness of the farmer in Lacaba's poem, they are also figured to be incessantly at labour. For even when they appear to be at rest—that is, when they seem to have completely lost all hope, lying wordlessly on the bare floor, staring at the burnt out bulb—they are still actually at work, in their unrelenting imaginings of ways to confront the vicissitudes of time in the tropics. In other words, even before the farmer in the poem moves to another place to work in a different trade,

[5] Here, it is interesting to note Flores's (2014) description of the "polytropic Philippine," whose *mêtis* demonstrates the multiplicity encouraged by the Philippine temporality: "the polytropic Philippine is temporary, alien or exile, guest worker or second family, surrogate mother or housekeeper, first teacher or mail order bride, plural in its sympathies, assuming the grief of others and suffering its own, moving—mobile and heart wrenching, modern and melodramatic—and compassionate in many ways, that is, suffering together with passion" (p.61).

[6] In Filipino, the idiom "ang mamatay nang dilat," "to die with eyes open," pertains to dying caused by extreme hunger. For instance, Calvento (2017) uses this idiom as the headline of their report on the aftermath of 6.7 magnitude earthquake in Surigao City, Surigao del Norte, Northeastern Mindanao, back in 2017, with a similar inadequate response from the government.

[7] This rather understated discourse between one's health and their capacity to keep pace with time is also articulated in the Philippine notion of *panahon*, through the common understanding of the term as the particular moment in which a given material is at its most bountiful (see Benitez, 2019b, p.464).

or rehearses other acclimating tactics in order to overcome the crisis at hand, their toiling has already been happening the moment they start imagining what such performance could be. Here, it can then be deduced that the "weariness of time" that Lacaba portrays and argues for in his sonnet is not only the ecological wornness concretized by the drought, or the tiredness that the farmer experiences after an entire day of fruitless work on the barren fields. Instead, this weariness is also the exhaustion suffered by the farmer from their unceasing psychological and emotional labour that is anticipated to be embodied likewise by their arms and legs in due time.[8] In this way, it is also the weariness that seems to prohibit itself from appearing as such, and instead manifests as merely the "natural" instinct to adapt to the times, given the way things "really are."

In other words, that labour must be rehearsed even during the purported moments of rest appears to be a demand of nature itself, for such is a suffering imagined to be in accordance to "how nature really is." After all, things—among them the bodies of water and land—are not always bountifully generous to humans in the easiest of ways, and so keeping pace with these things and the capricious changes of time itself is merely crucial for human survival. In Philippine terms especially, a time or *panahon* given for and named after a particular thing, say a species of flora, only signals the delimited duration of its plenitude: to say "panahon ng mangga" or the "time of mangoes" is to also point out the rest of the year in which these yellow fruits are nowhere to be found (Benitez, 2019b, p.464). One might insist their way toward the sweetness of mangoes through synthetic means such as using calburo or calcium carbide, but the resulting ripeness can only taste insincere: "hinog sa pilit", "ripened out of force."[9]

And yet, at the same time, the supposition of nature existing "how it really is" allows the intuition that even its most tropical swerves can be studied. Historically, the repetitive phenomena of things—indeed, their most perceptible, and thus learnable, rhythms—have granted humankind the capacity to somehow anticipate prospective futures, through timing with such cadences (see Rifkin, 1987). For instance, in 2013, scientists suggested another, and purportedly "improved", way of detecting eventual droughts through network science (Ludescher et al., 2013); such a proposition, of course, is a mere addition to a number of already preexisting forecasting procedures. In the case of the Philippine drought of 2015, its severity was already foreseen a year

[8] Indeed, as Marx (1990) succinctly reminds us, the farmer's "working day contains the full 24 hours, with… rest without which labour-power is absolutely incapable of renewing its services. Hence, it is self-evident that the worker [in this case, the farmer] is… labour-power for the duration of his whole life…" (p. 375).

[9] It is interesting to note here an ordinance proposed back in 2015 that prohibits the use of calburo to induce ripening to fruits (see *Councilor: Don't use 'calburo' to ripen fruits*, 2015): given the present preoccupation of the essay on the temporal, such ordinance can now be understood as primarily concerned—albeit, of course, unconsciously—on time, with its aspiration perhaps to resist the pressure from both the local and global markets to make these fruits perpetually available products, oftentimes to the detriment of "a balanced ecology," among others, that is protected by the provisions of the Philippine Republic Act of 7160.

prior its occurrence, and so as early as 2014 a national preparation was already asserted (Alampay & dela Torre, 2020). In May 2014, the Philippine Department of Agriculture commenced cloud seeding operations over Mindanao to facilitate the formation of more rain clouds over the area. At the same time, the Department also distributed seeds of a rice variant called "Rio Grande," valued for its quicker growth and more abundant yield compared to common variants, despite the likelihood of depleted watering (Ranada, 2014).

However, as demonstrated by the damages suffered by many Filipino farmers from that same El Niño drought, these government-initiated preparatory efforts did not equate to the successful adaptation of the country at large to the vicissitudes of time and the turns of the tropical climate. And although the local farmers then—and by extension, imaginably, the farmer in the milieu of Lacaba's poem—could have attempted to further insist upon their needs amid such ecological crisis, their struggles would not have necessarily elicited an immediate (or even any) response from the government. For instance, as the fatal drought of 2015 continued into the following year, by the end of March 2016 over 500 farmers from North Cotabato gathered in front of the National Food Authority office in Kidapawan City to voice out their urgent concerns. Despite North Cotabato having been officially declared under a state of calamity, around 15,000 sacks of rice previously promised by the local government remained undistributed among the affected families. The following day, over 6,000 people joined the gathering to express their solidarity. The sheer numbers made the participants spill over the Cotabato-Davao Road, inevitably causing a massive traffic jam in the city. Local police attempted to reach a compromise with the farmers and their supporters in order to ease the traffic; however, on the following day the negotiations culminated in violence. On April 1, 2016, over 150 people – protestors and police - were injured, and three among the protesters were killed (Macas, 2016).

With the Philippine national government claiming that the drought had little effect on the country, despite its severity on the lives of many citizens (Department of Agriculture, 2016; Pastor, 2016), it becomes understandable that for many Filipino farmers the damages due to drought and the necessity of individual acclimating tactics are simply construed to be how things "really are". In the midst of similar violent responses—including the lack of response itself—from the government, the farmers are ultimately "shown that it is not for the farmer to protest and criticize [the government], and they must simply remain quiet in the midst of poverty…that it is not natural for the farmers from the countryside to protest…" ("ipinapakita.. sa kanila na hindi dapat maging gawain ng magsasaka ang magprotesta at magreklamo, at dapat na manatiling tahimik lamang sila sa gitna ng kahirapan… na hindi natural sa mga magsasaka sa kanayunan ang magprotesta…") (Gealogo, 2019). In effect, the phenomenon of suffering—including the daily weariness these famers endure—is not

only banalized (see Arendt, 1963), but also naturalized, in its particular framing as an inevitable consequence of being materially entangled with the natural world.

And yet, any instance of incisive historicization intimates how the "natural" is always a composition in time: what might first appear as native and inherent is only insofar as its prior emigration or transplantation has been effectually forgotten, discursively concealed by its eventually acquired ordinariness, if not organicity.[10] Such are the workings of a catastrophe that is "slow and long lasting," one that unfolds across "unspectacular time," and is especially nourished by "vast structures that…constitute forms of violence in and of themselves" (Nixon, 2011, pp. 6, 10). This catastrophe includes the perpetuation of notions of the "natural" that primarily desire to preserve certain worldly configurations beneficial to only a few. This is the very irony perceived in the midst of the present Philippine climate emergency: that despite the collective experience of extreme changes brought by droughts and other phenomena induced by climate change, a certain stubbornness swarms and infests political structures, one that strategically denies the precarious situation of their constituents, and instead insists on things to keep going as they purportedly "really are." Farmers are commanded to continue their labour under the harsh tropical heat, no matter how fruitless such pursuits are in a time of drought; any attempt to implicate those who wield greater socio-political power within such crisis will only be reciprocated with bullets, instead of much needed rice grains.[11]

This then must be what Lacaba intuits as "the weariness of time" itself: a wornness that is not necessarily the exhaustion of time, with its promise of possibilities in the face of such severe phenomenon as drought; but the attrition of things in their having been prohibited the opportunity to turn and emerge alternatively. In other words, it is the institutional forbidding of time itself from practically taking place: not merely the mechanization of time in having a singular clock time across the Philippine tropics, flattening its otherwise plural temporalities for the sake of "the adamant dream toward a nation-state" (Benitez, 2021, p.42; see also Benitez, 2019b, p.458), but also the

[10] The Philippine term *likas* is particularly instructive here. Stressing the word's second syllable (*likás*) renders it to denote the "natural"; while shifting the emphasis to its first syllable ((*líkas*) renders it as "unnative," as in what could have been previously transplanted or emigrated. It is crucial to underscore that what ultimately demarcates these definitions is time itself: aside from the fact that it is an instant of a speech act that determines where the word will be accented, duration itself in the world at large also permits the practical assimilation of something into a given material ecology, which could eventually grant a transplanted thing its belongingness. In this way, it can ultimately be imagined that "an emigrant (*líkas*) can only be the eventual native (*likás*)" ("*líkas* din lamang sa isang banda ang kinalaunang *likás*") (Benitez, 2019a, p.v).

[11] This was sharply articulated by the social media hashtag that emerged as a response to events in Kidapawan City: #BigasHindiBala, literally "Rice grains, not bullets," pertaining to the violent response to the gathering, rather than listening to and providing for the needs of the affected farmers (see Tupaz, 2016). It is also crucial to note here that this aphoristic line reemerged four years later, amid the 2020 COVID-19 pandemic: #BigasHindiDahas, "Rice grains, not violence," pertaining to the brutal police response to 21 residents of Sitio San Roque, Quezon City, Metro Manila, who gathered—while being mindful of the necessary health protocols of the time—to call the attention of the local government to the promised aid still unreceived in the early months of the long Philippine lockdown (See Tandog, 2020; and *Sitio San Roque: Bigas hindi dahas*, 2020).

discursive impeding of its history, its barring from being imagined, and thus unfolded – differently. It is the seemingly natural circularity of Philippine time which is, in reality, constructed, imposed, and self-replicated over and over again through the coordination of various political infrastructures.[12] It is the questionable "universality" of Lacaba's poem from 1965, its problematic "verisimilitude" 50 years later in 2015, which is grounded in the simple fact that to this day farmers still need to tactically acclimate to droughts and other climatic extremes on their own. Farmers are still ultimately deprived of sufficient relief and structural support from the government, and instead coerced to perceive that their suffering will always be "how it really is," leaving them to their own devices.

The "weariness of time," in other words, is also a consequence of its prohibition, its being held captive to "a bad repetition, a vicious circle, a regressive or sterile process" (Derrida, 1992, p.9) wherein time itself has become something to which "mayong maginibo"—"there's nothing to be done." Therefore, the "weariness of time" is also the failure of imagining possibilities of time; or of merely imagining time as irrefutably and irreversibly attrit, when in reality, its any given instance can always be desired to turn into *another* (Benitez, 2019b, p.465), not only through the sheer *mêtis* of individuals but also through structural political gestures in general.

The necessity of imagining time alternatively returns us to Lacaba's poem, calling for a rereading of its final line in hopes of reconfiguring the farmer's staring at the burnt out bulb as a possible moment for emergence. Here, one can imagine that perhaps, in such an instance, not only does the farmer think of what tactics they could undertake to keep time with the drought they currently suffer, but they may also begin to interrogate the phenomenon of time itself, studying its long-enduring idiom of "how things really are" – if only to decompose and unlearn it. That, maybe, in their own language—most likely more lucid and urgent, distilled from poetry, far different from what I rehearse in this brief prose already alienated even to myself as an academic who coincides all these things at a glance, creating a "single spectacle from a point of privileged invisibility" (McClintock, 1995, 37)[13]—this is the initial moment of imagining, no matter how fleeting, of how things can also be not how they purportedly "are." In such a moment of patient looking, an epiphany may arrive—and indeed is hoped to arrive—to the farmer laying soundlessly on the bare floor, breathing in the dark: that there still lingers the plenitude of things, whose potential only remains dormant due to the deterrence of the powerful few; and that there is an inevitable interconnectedness

[12] This perceptible circularity of Philippine time can be instantiated in the present experience of COVID-19 pandemic in the archipelago, and under the Rodrigo Duterte regime, with its particular promise that "change is coming," yet ultimately regressing to the same structural violences comparable to those afflicted decades ago during the dictatorship of Ferdinand Marcos (see Benitez, 2020).

[13] McClintock (1995) particularly relates this privilege to "the image of global history consumed—at a glance," that which she calls "panoptical time" (p.37).

in all these things, "natural" and not, the farmer themself included, the reflexive recognition of which can allow the critical to unfold.

from **Pag-aaral sa Oras**

Pinag-aaralan ko
Ang paghihimbing at pagkurap.
Ang una'y pangangarap,
Ikalawa'y pagsipi ng tanawin
Mula sa isang sulyap.
Ano ang pagsipat?
Ito'y walang iba kundi
Komprehensibong pagsisiyasat.
Kung gayon, ano naman
Ang kisapmata at pagmumulat?
Ang mga ito ay usapin ng oras
Na sinasayang o iniipon,
At ng mga pagkakataong
Sinusunggaban o tinatapon.
Ang lahat ng ipinundar
Sa paraan ng pagmumulat
Ay huwag ibasura
'Wag ihagis sa pusali
Sa isang kisapmata
O 'sangsikap pa at kalahati! (Tariman, 2017, p. 124)

from **Study on Time**

I study what it is
To sleep and to blink.
The first is to dream,
The second is to extract the view
From a single glance.
What is to look?
This is nothing but
Comprehensive inspection.
And so, what then
Is a blink of an eye, its opening?
These are matters of time
Wasted or gathered
The timings

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Taken or thrown.
Everything earned
Through opening the eyes
Must not be thrown
Don't throw it to the mire
In a blink of an eye
Or an effort and a half! (translation mine)

Perhaps, in such a crucial moment of looking—and maybe, only in such a moment—can time itself become anew.[14]

[14] I use *anew* here as a modifier to the verb *become*, as in the Deleuzean sense of "becoming" (see Bankston, 2017). In other words, time "becoming anew" points to the moment of its unfolding once again; its turning into another. But while "becoming anew" can be rearticulated indeed as such "unfolding," "turning," or other similar action words that might be even deemed as "more direct," or at least "palatable," the term "becoming anew" is insisted here, considering how during the process of copyediting this essay, the said phrase initiated an entire event of unpacking that somehow performs what I mean by "time becoming": the re/consideration of the phrase back and forth between myself and the editor, in our respective locations in the Philippines, Indonesia, and Australia, allowed time itself to happen, and emerge generatively. It seemed that the more we tried to talk about this particular phrase, the more time it opened for us, and this way, the more ironic our very exchange has become for me: somehow, we were within the phrase; we have become what we were trying to understand. Such can only be an instance of coincidental reading.

References

Alampay, E.A., & dela Torre, D. (2020). Addressing Slow Onset Disasters: Lessons from the 2015-2016 El Niño in the Philippines. In W.L. Filho (Ed.), *Handbook of Climate Change Resilience* (Vol. 3, pp. 2125-2142). Springer.

Bankston, S. (2017). *Deleuze and Becoming.* Bloomsbury Publishing.

Benitez, C.J.R. (2019a). Pagsasalin, Bilang Kumpas Ekokritiko. *Katipunan, 4,* v-viii.

Benitez, C.J.R. (2019b). *Panahon* and *Bagay*: Metonymy and the Close Reading of Dictionaries to Understand Filipino Temporality. *Philippine Studies*, *67*(3-4): 457-488. https://doi.org/10.1353/phs.2019.0023

Benitez, C.J.R. (2020). #DuterteStandardTime: Pamamahalang Pamanahon. *Katipunan, 6*, 60-81.

Benitez, C. J. (2021). No Wild Iris. In Lundberg, A., Ngalamulume, K., Segata, J., Termizi, A.A., & Spicer, C.J. Pandemic, Plague, Pestilence and the Tropics [Special Issue]. *eTropic: Electronic Journal of Studies in the Tropics*, *20*(1), 42–53. https://doi.org/10.25120/etropic.20.1.2021.3773

Calvento, A. (2017, February 17). *'Dilat ang mata na mamatay.'* PhilStar. https://www.philstar.com/pilipino-star-ngayon/opinyon/2017/02/17/1672526/dilat-ang-mata-na-mamatay

Councilor: Don't use 'calburo' to ripen fruits. (2015, March 2). SunStar Philippines. https://www.sunstar.com.ph/article/396188/Business/Councilor-Dont-use-calburo-to-ripen-fruits-

de la Cruz, G. (2014, November 8). How El Niño could affect in the Philippines in 2015. *Rappler*. https://r3.rappler.com/science-nature/environment/73542-prepare-drought-less-rainfall-2015

Department of Agriculture. (2016, March 9). Cloud seeding aids in mitigating the impact of El Niño. *Official Gazzette.* https://www.officialgazette.gov.ph/2016/03/09/cloud-seeding-mitigating-impact-el-nino/

Derrida, J. (1992). *Given Time: 1. Counterfeit Money* (P. Kamuf, Trans.). University of Chicago Press.

Espina, M.P. (2015, April 17). Negros Occidental incurs P28M agri losses due to dry spell. *Rappler*. https://www.rappler.com/business/negros-occidental-agriculture-losses-drought

Flores, P. (2014). Philippine Polytropic: Intimating the World in Pieces. In Antoinette M. & Turner C. (Eds.), *Contemporary Asian Art and Exhibitions: Connectivities and World-making* (pp. 47-66). ANU Press.

Gealogo, F. (2019, September 24). Krisis sa bigas o paano mag-alay ng tula sa mga magsasaka. *Bulatlat*. https://www.bulatlat.com/2019/09/24/krisis-sa-bigas-o-paano-mag-alay-ng-tula-sa-mga-magsasaka/

Lacaba, J.F. (1965). Ang Kapaguran ng Panahon. *Heights, 14*(1), 29.

Lacaba, J.F. (1996). *Mga Kagila-gilalas na Pakikipagsapalaran: Mga Tulang Nahalungkat sa Bukbuking Baul* (2nd ed.). Office of Research and Publications, Ateneo de Manila University.

Ludescher, J., Gozolchiani, A., Bogachev, M.I., Bunde, A., Havlin, S., & Schellnhuber, H.J. (2020). Improved El Niño forecasting by cooperativity detection. *Proceedings of the National Academy of Sciences 110*(29), 11742-11745. https://doi.org/10.1073/pnas.1309353110

Lundberg, A. (2008). Material poetics of a Malay house. *The Australian Journal of Anthropology, 19*(1), 1–16. https://doi.org/10.1111/j.1835-9310.2008.tb00102.x

Lundberg, A. (2021). Balinese dancer wearing a gas mask: climate change and the tropical imaginary. *Scottish Geographical Journal, 136*(1-4), 91-100. https://doi.org/10.1080/14702541.2020.1858589

Macas, T. (2016, April 4). How the protest of hungry farmers turned into a deadly dispersal in Kidapawan. *GMA News Online*. https://www.gmanetwork.com/news/news/regions/561478/how-the-protest-of-hungry-farmers-turned-into-a-deadly-dispersal-in-kidapawan/story/

Manalo IV, J.A., van de Fliert, E., & Fielding, K. (2020). Rice farmers adapting to drought in the Philippines. *International Journal of Agricultural* Sustainability, 1-12. https://doi.org/10.1080/14735903.2020.1807301

Marx, K. (1990). *Capital: A Critique of Political Economy* (Vol. 1; B. Fowkes, Trans.). Penguin Classics. (First published 1976)

McClintock, A. (1995). *Imperial Leather: Race, Gender and Sexuality in the Colonial Contest.* Routledge.

Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor.* Harvard University Press.

Pastor, R. (2016, April 5). Kidapawan and why the Philippines is always short of rice. *Rappler*. https://r3.rappler.com/thought-leaders/128233-kidapawan-why-philippines-short-of-rice

Ranada, P. (2014, May 8). Gov't prepares PH agriculture sector for El Niño. *Rappler*. https://www.rappler.com/nation/philippine-agriculture-preparing-el-nino

Ranada, P. (2016, May 6). 100% crop damage reported in parts of Mindanao due to drought. *Rappler*. https://www.rappler.com/nation/mindanao-crop-failure-drought-oxfam

Ranada, P. (2015, June 5). DA awaits P939 million budget for El Niño efforts. *Rappler*. https://www.rappler.com/nation/department-agriculture-el-nino-budget

Rifkin, J. (1987). *Time Wars: The Primary Conflict in Human History.* Henry Holt.

Sitio San Roque: Bigas hindi dahas. (2020, April 3). *Kadao*. https://kodao.org/sitio-san-roque-bigas-hindi-dahas/

Tandog, T.K.C. (2020, April 30). 'Bigas Hindi Dahas': Covid-19 and state violence. *Fieldsights*. https://culanth.org/fieldsights/bigas-hindi-dahas-covid-19-and-state-violence

Tariman, K.L. (2017). *Pag-aaral sa Oras: Mga Lumang Tula Tungkol sa Bago.* High Chair.

Tupaz, V. (2016, April 3). #BigasHindiBala: Online support for Kidapawan drought protest grows. *Rappler*. https://r3.rappler.com/move-ph/128081-bigashindibala-online-support-drought-protest-kidapawan

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Climate Change and Ecocide in Sierra Leone: Representations in Aminatta Forna's *Ancestor Stones* and *The Memory of Love*

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Abstract

War has been instrumental in destroying land and forests and thus is a major contributor to climate change. Degradation due to war has been especially significant in Africa. The African continent, once green, is now almost denuded of its rich forests and pillaged of its precious natural resources due to the brutality of colonisation and more recent postcolonial civil wars. In Sierra Leone the civil war continued for over eleven years from 1991 to 2002 and wrought havoc on the land and forests. Thus the anxiety and trauma suffered by the people not only includes the more visible aspects of human brutality, but also the long lasting effects of ecocide which relate to climate change. Underlying narratives that address traumatic ecological disasters is a sense of anxiety and depression resulting from the existential threat of climate change. This paper demonstrates how narratives can metaphorically represent both ecocide and climate change and argues that such stories help people in tackling the real life stresses of anxiety and trauma. To establish the argument this paper has drawn on scientific and sociological data and placed these vis-à-vis narrative episodes in Aminatta Forna's novels *Ancestor Stones* (2006) and *The Memory of Love* (2010). In these novels Forna depicts the ecological crisis that colonisation and civil war have wrought on Sierra Leone. The anxiety and post-traumatic stress disorder – of war and ecocide – suffered by the fictional Sierra Leonean characters are explained through Cathy Caruth's trauma theory.

Keywords: Sierra Leone, civil war, ecocide, eco-anxiety, climate trauma, climate change, narrative fiction, Aminatta Forna

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Storying Climate Change in Sierra Leone

In October 2009, a few months before the Copenhagen UN Climate Change Conference (COP15), President Mohamed Nasheed of the archipelago nation of the Maldives, convened an urgent underwater cabinet meeting. The cabinet signed a petition requesting nations to lower their carbon-dioxide emissions. The dramatic signing was intended to alert the world to the imminent environmental dangers of greenhouse gases which contribute to climate change effects, including – and of particular concern to the Maldives – rising sea levels. This year, in November 2021 the UK and Italy will co-host the 26th UN Climate Change Conference (COP26). One of the goals of the meeting is to persuade all countries to work towards reducing net emissions of anthropogenic greenhouse gases to zero by 2050. Discussions will include the urgent curtailment of extractive industries and deforestation both of which destroy ecologies across vast regions and are root causes of climate change. Given the interconnectivity between ecologies and climate change, massive land degradation and deforestation becomes a form of ecocide, and the resulting climate change, although intangible, significantly impacts human life and induces anxiety.

As Una Chaudhury and Shonni Enelow explain in their article "Theorizing Ecocide: The Theatre of Eco-Cruelty":

> The first thing that makes climate change difficult to represent in art is the maddening fact that climate—unlike weather—can never be directly experienced. As the aggregation of numerous atmospheric and weather phenomena, climate does not manifest itself in any single moment, event, or location. The only way it can be apprehended is through data and modeling—through systems and mediations—all of which have to be processed cognitively and intellectually: have to, in short, be *understood,* rather than *experienced,* phenomenologically and temporally. (2014, p. 23)

This paper proposes to analyze how the complex process of climate change in Sierra Leone has been processed cognitively and intellectually through storytelling representation in Aminatta Forna's novels *Ancestor Stones* (2006) and *The Memory of Love* (2010). However, climate change representation is never simple or straightforward. As Susan E. Babbit in "Stories from the South: A Question of Logic" reminds us, stories are about something other than what initially appears to the reader. They are not explicit representations, but rather, answer or problematize important issues. Hence Babbit suggests "that stories themselves are not as epistemically significant as the questions that determine their meaningfulness in a specific context"

(2005, p.2). This meaningful context, in the novels of Forna, includes war induced ecological destruction in Sierra Leone. Babbit's thesis can be furthered through the arguments of both Timothy Clark and Maggie Kainulainen. Clark notes "that a story gains its power from material that the writer…chooses to exclude, such that its absence determines the contours of the text that readers actually follow" (2019, p.162). Here we are interested in how Forna's two novels have as a backdrop ecological trauma, as if this is the absence within which the characters live. Maggie Kainulainen in "Saying Climate Change: Ethics of the Sublime and the Problem of Representation" addresses the social imaginary – and in this case, the tropical imaginary. She notes that along with the climate crisis there is a crisis of representation, for how can we "bear witness to the deep interconnection and undecidability that climate change reveals"? As she contends, climate change "exceeds boundaries by forcing us to think of a time beyond the human scale…and poses a direct and terrible threat". On the importance of representations of climate change in narratives, she contends: "because climate change as a totality can only be encountered through discourse, the issue of representation is key" (2013, p.111).

The objective of this paper is to analyse how Forna's stories of personal trauma, as depicted through characters in the two novels, direct the reader to the significant issue of climate change due to the severe impact of mining and deforestation in Sierra Leone beginning with colonialism, but especially felt during the postcolonial period of the nation's civil wars. The paper pays particular attention to how the trauma of ecocide is depicted through various representations within these narratives.

Ecocide: Impact of the Civil War on the Environment

The United Nations Environment Programme (UNEP) technical report *Sierra Leone, Environment, Conflict and Peacebuilding Assessment* (February 2010) stated that this small West-African nation had an "abundance of natural resources and environmental assets. From tropical forests to impressive coastlines, from mineral resources to fisheries, the environmental has long been the backbone of economic development" (p. 7). However, since the country's independence from British colonial rule in 1961, it has experienced five coups, an authoritarian single-party rule, and a civil war that lasted eleven years.

> Inequitable benefits-sharing of natural resource wealth played a role in the impetus of the Sierra Leone civil war that ravaged the country from 1991 to 2002. Diamonds and other natural resources were used to fund combatants, and also became spoils of war. In the post-conflict era, the environmental impacts of the conflict and continued unsustainable natural resource management have presented

> challenges to development and peace consolidation that persist today. (p.11).

Sierra Leone's civil war brought environmental destruction in its wake. The long-drawn-out war and a weakened economy resulted in extensive mining (for blood diamonds), deforestation, land fragmentation, and loss of soil fertility. Deforestation led to the loss of rich biodiversity with an alarming rise in pollution levels. This kind of eco-violence happens in increments and thus goes largely unseen. It is a slow violence, akin to slow poisoning. As they lack immediacy the signs of destruction are not obvious and thus such casualties of nature are often ignored by people and Governments.

It is important to understand that just as warfare can lead to genocide it also leads to ecocide or mass destruction of the environment and extensive destruction of ecosystems. Environments, throughout history, have been silent victims to the large-scale destruction caused by human agency, especially during times of war. Armies and rebel forces burn down forests and habitats to kill people hiding there. There are many examples throughout history as well as in recent memory where crimes against ecology have accelerated the Anthropocene. Arthur Galston, an American biologist first named mass destruction of ecosystems 'ecocide' in 1970 at a conference in Washington DC. At the time, Galston's concept of ecocide provided a powerful conceptual tool in criticizing the use of the chemical agents Napalm and Agent Orange to destroy South Vietnamese forests. Later Galston's idea of ecocide gained wider currency and addressed the harm being done to natural environments that eventually affect animals and humans (Hay, 2013). Ecocide is committed largely during international wars and long-drawn-out civil wars. This was particularly the case in Sierra Leone which was rich in diamonds and natural resources. The rebels wanted diamonds to fund the conflict, so they destroyed large areas of forests and dug up the land to extract the gems, thereby inducing ecological devastation.

It is pertinent to note that the traditional models of trauma theory do not adequately address the trauma resulting from large-scale ecological devastation and climate change. Health hazards faced by humans and animals due to climate change have been invariably addressed as a physiological and tangible reality but the connection to the psychological response of people has been largely neglected. In the case of climate change especially, people, unable to address the exact issue, adopt a psychosocial defense mechanism – mostly evading it.

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Ecocide and Trauma in *Ancestor Stones* and *The Memory of Love*

Aminatta Forna's narratives are representations of such trauma in the wake of the civil war in Sierra Leone. In *The Memory of Love* (2010) Forna covertly depicts deforestation, changes in agricultural produce (cannabis instead of the staple foods of cassava and rice), and the severe impact on the personal health of the people. In *Ancestor Stones* (2006) she offers a critique of the impact of diamond mining, degradation of the environment, the attachment of people, especially women, to the land and its traditions – and the resultant trauma of disconnection. Although Forna explicitly narrates the psychological impact of war, she underplays 'pretrauma', a term coined by E. Ann Kaplan in her book *Climate Trauma* (2016) to signify the traumatic imagining of future catastrophe. Our intention in this essay is to explicitly analyse the narratives from the perspective of climate trauma and give an ethical dimension to the narratives that can help readers to visualise the potential traumatic futures of the characters in a post-conflict scenario. Our interpretations differ from previous intellectual understandings of Forna's novels, which have mostly been analysed from feminist and race perspectives, in that we focus on the intangible climate trauma amidst the lived experience of the characters in war-torn Sierra Leone.

Forna's narratives offer a disturbing account of the ecological impact of war. They show how people willfully engage in the destruction of the environment. Forna's *Ancestor Stones* and *The Memory of Love* can be read as narratives presenting human destruction of the environment at the site of war and the inevitable disintegration of ecological stability. *Ancestor Stones* narrated from the point of view of four women living in Rofathane, a fictional place in Sierra Leone, gives a graphic description of pretrauma in the shape of human trafficking and torture inflicted by the rebels on the people along with the destruction of habitat. White businessmen fanned the conflict and surreptitiously engaged the rebels in mining gold and diamonds. The rebels forced the people to work for them in mines and even smuggled them out of the country. We read: "A band of miners were marched away from their workplace and not sighted until months later when they appeared on the other side of the country" (2006, p. 283). The harrowing tale continues:

> They see the plastic containers, smell the petrol as it is splashed on the walls and roof of the store. Men with guns encircle the building. Those inside begin to shout and hammer at the door, frantic now…. They scramble over one another to escape the stifling fume-filled air and the certainty of death…. The screams of men as they burned must have been terrible, must have filled the air, sent the birds and animals fleeing. And yet nobody hears them. The killers were deaf to them ... We moved around the corpses, who stared up at us through melted

> eyes, reached out to us with charred and twisted limbs. (2006, pp. 290-91).

In regard to ecocide we read about trees being cut down, land dug up and river beds destroyed. The narrative leads us to the stories of two native women, Abie and Hawa. Abie returns from England to take possession of her ancestral coffee plantation and is shocked to find that it is no longer yielding as the entire area has been dug up to mine diamonds. Abie's lament, "All these had once been great avenues of trees" (2006, p. 10), is a pointer to the aridity of Africa after the plundering of resources, first by the colonisers, and later by the beneficiaries of the civil war. Hawa's story exposes us to the operation of a European mine owner, Mr Blue, whose only concern is profitable and secretive extraction of resources at heavy costs to the environment and the water table. Hawa and her friends, who were employed to carry water from the river to a factory, wonder why it needs enormous amounts of water. They hide behind a boulder and witness Mr Blue's ecocidal activities: "The white men stood on the shelf of the river bank and watched the men from the village digging, loading pans with gravel and rocks which other men carried on their heads and dumped into wooden boxes running with water. That was where all the water was going" (2006, p.147). The evidence of ecocide continues as the narrative tells us that in various places the white miners "were digging out of the river and up from the former rice fields" (2006, p.159).

This fictional representation directly relates to what the UNEP reported in 2010:

> The mining sites that were expanded were not rehabilitated in any way, leaving effluent, degraded sites and lost arable land. The mining also caused a great deal of persistent damage to the sector, in terms of reduced flows of natural capital and a heavily degraded environment.... The extraction of natural resources played a very important role in wartime economic activity, as was widely reported. While the focus has traditionally been on the diamond sector – as it directly fuelled the civil conflict itself – instability forced other types of extraction, such as gold, timber and non-timber forest products, and quarrying, to replace more sustainable income opportunities. Because natural resources can be quickly and easily exploited for sale, without long lag times or much in the way of capital investment, this unsustainable, but rapid, natural capital extraction was prevalent during the conflict years. (UNEP, 2010, pp.45-9)

In this context, it is pertinent to recall Greta Gaard and Lori Gruen's observation in their essay "Ecofeminism: Toward Global Justice and Planetary Health" (1993) that, "Forests are dynamic ecosystems, home to insects and animals alike, producers of

fresh air and water when left unharmed by humans.... Forests are intricately connected with human survival, as they supply the majority of the people with food and fuel" (p. 2-3). Thus, the anxiety of the women in *Ancestor Stones* is inherently linked to ecocide as a consequence of the civil war.

In *The Memory of Love*, the narrative is centred around the stories of three men: Elias Cole, a retired academic from a university of Sierra Leone; Adrian Lockheart, a psychologist from England; and Kai Manasray, a talented local surgeon. They are surrounded by victims as well as perpetrators of violence as they face the lingering consequences of war. In the opening chapter, there is a sense of pervasive yet intangible loss. Elias Cole says he heard a song of loss and suffering that makes him cry. In the song, a young man longed for a time past, a time he had only heard about in the words of those who'd lived it, a time of hope and dreams. He was singing of the life lost to him because it had been his misfortune to be born much later when the world was already a different place (2010, p. 2). The agonised lyrics are the song of every Sierra Leonean craving for what was and will never be again. In another instance, Adrian's encounter with patients in a Freetown asylum where they are dazed, chained, and tied to beds brings home the painful reality of the impact of the civil war on the lives of people. These cannabis addicts have become mentally deranged and are brought to the hospital by their families, who disown them. The place is full of stench and the odour of the drug. "The smell hits him and clots in the back of his throat – fermented and feral, the smell of hiding places and of stale fear" (2010, p. 78). He is told that the patients often have hallucinations like people suffering from malaria. "Though families usually recognise the symptoms for themselves. Then we'll check for all the rest, starting with drug abuse. … we can give him some haloperidol to keep him quiet" (2010, p. 82). He learns that "They keep the patients drugged. Drugged and chained" (2010, p. 84). Ileana, a psychiatrist in the hospital, talks about the condition of patients with Adrian. She refers to the acute substance abuse that was prevalent in Sierra Leone and how "it was encouraged among the new recruits [of the civil war]. They call it Booster Morale" (2010, p. 84). Here one can relate to Morten Boas' article on "Alcohol and Drugs in Post-War Sierra Leone" (2008), which states that "Alcohol and drugs played a part in the war as rebels, militia members and soldiers consumed it not only to boost their morale, but also as a tranquiliser to cope with the consequences of the human rights abuses that they committed" (p. 41).

The rebels involved in armed conflict, the doctors, and the victims of civil war, all used drugs. The rebels took drugs to become agents of violence and engage in random killings at the behest of their leaders; doctors used cannabis locally for the treatment of trauma; and the victims of the civil war took drugs to deal with their anxiety. A Reuters report of 2010 states that a majority of the local people are addicted to cannabis and that it has become a concern for Sierra Leone that people are mostly

cultivating cannabis rather than their staple foods of cassava and rice (Johnson, 2010, para. 2). Thus cannabis was readily available at a cheap price and was used by the populace as well as in the prolonged treatment of trauma. This extensive use was without consideration of the ecological hazards its propagation wrought. Forna hints of these hazards in her narrative. Adrian Lockhart's enquiry about the preferred drug for the treatment of patients in the mental hospital results in the answer: "Cannabis mostly. There isn't much else anyone can afford. There is a bit of heroin. Brown brown, it's called here. But that's a lot more expensive, obviously, and has to come in from elsewhere" (2010, p.84). Ian Wong, Jacob Brenner, and Van Butsic in their article "Cannabis an Emerging Agricultural crop, leads to Deforestation" published in *Frontiers in Ecology and the Environment* (2017) noted that excessive plantation of cannabis creates substantial threats to the surrounding environment. Taking up this argument, Ithaca College in its Science News on 31 October 2017, corroborated that "Planting cannabis for commercial production in remote locations is creating forest fragmentation, stream modification, soil erosion and landslides". In another study, "The Environmental Downside of Cannabis Cultivation", Jodi Helmer states that in the growing stage a cannabis plant requires 22 litres of water per day (2019, para. 6). Again, in a recent article "Cannabis and the Environment: What Science Tells Us and What We Still Need to Know" (2021), Wartenberg and co-authors clearly state that:

> Although the total land-use footprint of cannabis cultivation is small compared to other agricultural crops, outdoor cultivation sites tend to disproportionally be located in remote and ecologically sensitive areas; this can lead to habitat loss and increased wildlife exposure to chemical, noise, air or light pollution.
>
> In semi-arid, drought-prone regions, cannabis' water-use footprint can contribute to groundwater and streamflow depletion. In urban areas, compounds from human cannabis consumption persist in treated wastewater and could contribute to downstream contamination of aquatic ecosystems. (Wartenberg et al., 2021)

An article published in *Nature Sustainability* in the same year, goes further and states that cannabis is a climate gas. Researchers, it notes, "found that the energy required to yield one kilogram of dried cannabis flower produces the equivalent of 2–5 tonnes of carbon dioxide" (Summers et al. 2021, para. 3).

The stories in Forna's novels are fictional representations of such scientific opinion that show how people in Africa were involved in ecocide by implicating themselves in extractive mining and cannabis cultivation. Freetown, Sierra Leone's capital city, once rich in mineral resources has been denuded by the Government and the rebels, who

mined excessively for diamonds and turned arable land to cannabis plantations. The local inhabitants, beset with poverty and crime, suffer from post-traumatic stress disorder. Stories of the lives of men and women: Elias, Adrian, Kai, and Abie, Hawa and other female characters, serve to foreground the anxiety of existence. The stories subtly expose the exploitation of nature and people – especially women – both during and after the civil war. The repressed trauma and the associated stress disorder depicted through scenes of ecocide in the narratives serve to enlarge our understanding of the eco-anxiety represented in the novels. A parallel can be drawn between Sierra Leone and war-ravaged Vietnam where ecocide was performed by defoliation and bombing that caused environmental devastation and trauma.[1] Scientists have denounced the environmental destruction and potential human health catastrophe arising from the herbicidal warfare program infamously known as Operation Ranch Hand (Zierler, 2011, p.14). The history of wars has exhibited human control over water, land, forests and human resources. It has always been the prime motive of war, which itself explains the interconnectedness of war and environmental destruction. The World Atlas of Illicit Flows compiled by INTERPOL shows that: "The illicit exploitation of natural/environmental resources is estimated at 38 percent share of illicit flows to armed groups in conflict. When incomes from these natural resources are combined with their illicit taxation and extortion (26 percent) by the same non-state armed groups, the figure becomes as high as 64 percent" (Bielby, 2021). These statistics highlight the relationship between war and natural resources. The gradual climatic change that follows war and its environmental destruction leads to the depletion of natural resources required for human survival and results in a socio-psychological condition that can be called climate trauma.

The magnitude of landscape disturbance in a short period due to war is huge. And here it is important to note that the anthropogenic change resulting from wars didn't start with the use of modern warfare. Ancient armies also practiced various methods of environmental disturbance in order to combat their enemies. Joseph P. Hupy in his article "The Environmental Footprint of War" (2008), describes how the Roman barbaric tribes indulged in massive forest fires to burn their enemies; while the Roman army practised various forms of deliberate environmental disturbance like cutting off an army from a water supply: "they redirected streams or destroyed dams leading to catastrophic disturbances with the sole motive of wiping out the rival armies" (p. 408). The climate crisis that Africa, and in the case presented here, Sierra Leone, faces is a result of the plunder of its resources first by white colonisers and later by the perpetrators of the country's civil wars.

[1] Similar to our argument here regarding trauma, John Armstrong (2019) in his work on Vietnamese-authored war narratives of the American War (as it is called in Vietnam) points to the importance of trauma narrative. His argument differs from the one presented here in that rather than evoking ecology, he invokes the Gothic.

For a better understanding of the representations of war and its environmental devastation in the works of Aminatta Forna, it is pertinent to understand the geopolitical scenario of West Africa which forms the setting of her novels. A report presented by the government of Sierra Leone at the Third United Nations Conference on Least Developed Countries (2001), stated that many skilled people had left in order to avoid facing a jeopardised future in a country torn by civil war, and where it was extremely difficult to reconstruct the destroyed social and environmental infrastructure – which not only suffered massive destruction during wartime, but was followed by continuous plundering of the land due to mining. Here it is important to note that before the civil war in 1991, 40 percent of the people in Sierra Leone had access to safe drinking water which drastically deteriorated to 5 percent in the mid-2000s. Furthermore, there was a large-scale debilitating effect of war on basic sanitation, housing, schooling, and telecommunications etc. This extensive destruction of the social and natural environment finds poignant expression in both *Ancestor Stones* and *The Memory of Love*.

In *Ancestor Stones* Forna posits a rich and abundantly green Sierra Leone vis-à-vis a denuded one. A country which had orchards and plantations – "succulent mangoes, bursts of starfruit, avocadoes the size of man's head… sweet potatoes and yams peeped from earth, and great hands of bananas reached out to them" (2006, p. 6) – is reduced to ruined groves as both the colonisers and the rebels mine them for diamonds. The narrative moves through metaphors which allude to the trauma suffered. Asana, one of the women in the story, refers to the moon shadow man who imprisoned birds in cages. Caging the beautiful sunbird and doves serves as an allegory for trapping and caging all that was beautiful in Africa. Additionally, Asana's depiction of the moon shadow man as someone whose "massive feet crushed the foliage beneath them" (2006, p. 25) can be read as the destruction of natural resources due to colonisation which pains the African immensely, but is not overtly expressed. These narrative representations of the psychological condition of the Sierra Leonean characters can be better understood with reference to Cathy Caruth's theory of trauma which sheds light on the metaphorical representation of inexpressible trauma:

> ... not as the story of the individual in relation to the events of his own past, but as the story of the way in which one's own trauma is tied up with the trauma of another, the way in which trauma may lead, therefore, to the encounter with another, through the very possibility and surprise of listening to another's wound. (1996, p. 8)

Hence the "theory of trauma is written not only about but in the midst of trauma" (1996, p.8). In *Ancestor Stones* Forna contends, "That was the way it was with this country. Those who noticed refused to speak of it, as though they feared that to do so would

make it real" (2006, p. 223). Such apprehension and anxiety translate into a state of trauma. Pramod Nayar, a literary critic, refers to this condition as 'ecoprecarity' – "the precarious lives humans lead in the event of ecological disaster" (Nayar, 2019, p.7). In *The Memory of Love* Forna describes how the state of Sierra Leone underplayed the destruction of the environment in the peacebuilding process. We read that people "are blotting out what happened, fiddling with the truth, creating their own version of events to fill in the blanks. A version of the truth which puts them in a good light, that wipes out whatever they failed to do and makes certain that none of them will be blamed" (2010, p. 351). Forna's narratives not only subtly foreground the ecological damage done to Africa but also point to the manner in which the existing ecosystems face the threat of invasion and resultant transformation due to lack of political will and willful public amnesia.

Likewise of note in Forna's narratives is her subtle critique of the loss of the connectedness people had with the land as a result of emulating the ways of the white masters and imbibing a Western culture of greed and ruthlessness. *Ancestor Stones* tells the story of how female ancestors handed down certain stones to their daughters who would communicate their feelings to these stones and tell them about everyday matters. The stones, believed to have a life of their own, are a symbol of the age-old symbiotic relationship between the people of Sierra Leone, the land and nature. Hence the loss of stones (diamonds) from the land disturbs their mental balance, for they believed in the ancient myth that

> After heaven and earth Kuru made people. He called his angel and told him to separate the people into black and white. The angel did so. Then Kuru told the angel to bring all sorts of tools. When these were gathered in a pile in front of him, Kuru gave to the black people the plough, the hoe, the hammer and the anvil. And he sent them to live in the hills and the forests to be farmers and blacksmiths. They hoed the land and planted crops, and built themselves houses from earth and thatched them with palm leaves. To the white people he gave a compass, a ruler and a sextant. They built ships and sailed the seas. They traded and grew wealthy. Then Kuru saw that he had divided the gifts unfairly. So he gave the black people something that nobody else had. He gave them the power of divination. (2006, p. 143)

The stones symbolized the close association of women with their female ancestors through objects of nature. Dissociation of the women from the stones in the narrative, and their resultant trauma, can be read as an allegory of Sierra Leone being stripped of its natural resources due to continuous and random mining by the whites and the rebels and the helplessness of the people. Forna makes events pertaining to ecocide

and ethnocide run parallel. Her fictional representation is a pointer to the facts presented by the UNEP in their report *Africa: Atlas of Our Changing Environment* (2008) where they observe that productivity of about 65% of the continent's agricultural lands has declined due to mining and pollution over the past 50 years, and over 30% of Africa's pastoral land and almost 20% of all forests and woodlands are classified as moderately or heavily degraded. The deforestation rate in Africa is twice the average of the rest of the world with more than four million hectares of primary forest disappearing every year.

The chaos during the presidential elections in 1996 and the ensuing civil war in Sierra Leone form the milieu of Forna's narrative in *Ancestor Stones* where we find expressive images of a "sky choked with dust. The city stank. Hope had shrivelled and crumbled away" (2006, p. 271). The trauma emanating from dissociation with nature is synonymous with the country's state of affairs following the rampant ecocide as a result of eleven years of civil war. The individual stories of the women in *Ancestor Stones* are glaring testimonies. Mariama, one of the female characters observes towards the end of the novel:

> Something happened here. A change. Stealthy, creeping, slow. Like the way the desert is gradually covering the plain, one grain of sand at a time. It took place without us even noticing, so that the moment when we might have resisted passed unremarked. Suddenly it was irreversible. The evil had been let loose. But it was no longer among us, it was within. Everybody became part of it. In the city the animals grew fat while the humans starved. (2006, p.307)

The stealthy creeping change evoked in this passage can be understood through Rob Nixon's concept of 'Slow Violence'. In his book, *Slow Violence and the Environmentalism of the Poor* (2011) Nixon speaks of the changes that take place, unnoticed, as destructive forces remain unchecked over a long time. Here it is pertinent to note that it was slowly, years after the war, that Sierra Leone became listed as one of the world's poorest countries. Sierra Leone suffers from many environmental problems such as loss of biodiversity, air pollution and water pollution, which pose a serious hindrance to its economic development. Forna's narrative representations are likewise evocative of Elizabeth DeLoughrey's argument in her book *Allegories of the Anthropocene* (2019), that in an era characterized by environmental crises, one cannot afford to overlook the narratives based on countries of the Global South [in this case, the tropical Sierra Leone] which are mostly at the forefront of devastating ecological damage (p. 2). Both *Ancestor Stones* and *The Memory of Love* fictionalize and focus on the uncontrolled mining and cultivation activities which vastly contributed to the large-scale destruction of the forests, arable

land, river beds, and other water resources. The novels point to the fact that war and industrialization perpetrate slow violence and push the Earth into a “less biologically diverse, less forested, much warmer, and probably wetter and stormier state” (Steffen et al., 2007, p. 614). This slow violence wounds the psyche and the morale of Sierra Leoneans. Their trauma can be understood with reference to Cathy Caruth’s argument that trauma “is always the story of a wound that cries out, that addresses us in the attempt to tell us of a reality or truth that is not otherwise available” (1996, p. 4). Here, the focus on human trauma cannot be considered a deliberate departure from environmental trauma, but rather, the interconnectedness of both forms of trauma. Climate trauma draws one’s attention to pre-traumatic stress disorder with its anxious visualisation of the environmental predicament that lies ahead due to massive mining, drug cultivation and abuse. Climate crisis is also closely associated and synonymous with racial oppression in Africa as it refers to the control and exploitation of humans and nature by colonisers and further into postcolonial and neocolonial political arenas of control.

Forna's novels give us a picture of West Africa, and Sierra Leone particularly, where during and after the civil war more than half of the population were traumatised, addicted to drugs, and unaware of the destruction of the environment they were contributing to through unrestricted diamond mining and extensive cannabis cultivation. According to the National Drug Law Enforcement Agency Research Report, "Sierra Leone is currently the highest exporter of Marijuana to the neighbouring countries" (WADPN 2017).

In Forma’s novels what often seems inexpressible is articulated through language that is emotive and evocative. At one point in *The Memory of Love* the narrative reflects the resilience and numbness brought about by psychological trauma. There is a pervasive feeling of hopelessness. The story tells us that

> In this country there is no dawn. No spring or autumn. Nature is an abrupt timekeeper. About daybreak there is nothing in the least ambiguous, it is dark or it is light, with barely a sliver in between…. The air is heavy and carries the faint odour of mould, like a cricket pavilion entered for the first time in the season. It is always there, stronger in the morning and on some days more than others. It pervades everything, the bed sheets, towels, his clothes. Dust and mould. (2010, p. 27)

The feeling of distress is reinforced by Elias Cole’s daughter Mamakay as she says, “Sometimes I think this country is like a garden. Only it is a garden where somebody has pulled out all the flowers and trees and the birds and insects have all left,

everything of beauty. Instead the weeds and poisonous plants have taken over" (p. 351). Here the psychological distress is further amplified by an eco-anxiety – a form of anxiety which often remains unaddressed as the impact of injury to the environment lacks immediacy. In a similar example, Adrian comes across a lush green lawn that he wants to walk on to enjoy the pleasant feeling of soft cool grass under his feet. But he realizes that it is an illusion and the "grass here is spiky, and sharp. Walking across it would be like walking on hot coals" (2010, p. 78). This is suggestive of how the flora in this part of Sierra Leone has changed and how this realization induces anxiety in Adrian. At the same time, it is noticeable that Forna's characters, as espoused by their descriptions of changes in nature – evade the full trauma of a future imaginary of climate crisis.

Expanding upon Caruth's theory of trauma, we draw on the work of Lisa Van Susteren, a psychiatrist specialising in the psychological effects of climate change. She analyses that "much of traumatic stress disorder is how we imagine things are going to be…we have in our minds images of the future that reflect what scientists are telling us; images of people and animals suffering because of dumb choices we're making today" (quoted in Craps, 2020, p. 277). This is the predicament instigated by those Sierra Leoneans who emulated the vices of the whites and wanted immediate economic gain at the cost of their land and water, creating not only civil war, but at the same time causing ecocide.

Towards Reconnecting

Forna's novels showcase the wrong choices nations and people make. The fight for resources should not take place at the cost of environmental ethics. The fact that we are living in an era of climate emergency calls for renewed responses and reconciliation between humans and nature, and to acknowledge that people suffer from eco-anxiety as a result of climate change.

In this context, Zhiwa Woodbury's article, "Climate Trauma: Toward a New Taxonomy of Trauma" (2019), which broadens the scope of climate trauma to include social trauma, is pertinent. Woodbury contends that:

> Accepting the proposition that Climate Trauma is triggering these cultural traumas, bringing them to the surface in ways that demand reconciliation, we begin to see these movements not as distractions from the work we have to do on the climate front but rather as necessary components of a broader social upheaval that is removing the psychological barriers to effectively addressing the climate crisis. Similarly, by bringing increased awareness to the role Climate Trauma

> is playing in this social upheaval, reconciliation of cultural traumas is seen as a moral imperative. The oppressed supermajority can then begin to appreciate the broad, systemic changes that must accompany reconciliation of our relationship with the natural world. (p. 7)

Today, climate crisis is a cognitive reality. Understanding the repercussions of ecocide is of utmost importance. And the interconnections of war and the devastation of the physical environment find expression in a growing body of literature of this century that addresses the effects of war on the environment. Considering war as an anthropogenic agent of change because of its widespread destruction over large areas is extremely important in a world characterised by geopolitical conflicts. Everywhere in the world, the magnitude of anthropogenic disturbance by war is significantly high in comparison to other factors. As seen in the case of Sierra Leone, the prolonged duration of the country's civil war exacerbates the environmental catastrophe. Aminatta Forna's *Ancestor Stones* and *The Memory of Love* give fictional representations of the long-drawn-out conflict in Sierra Leone, whereby the direct and indirect traumatic impact of the civil war and its aftermath become more poignant.

Trauma rests in the effects of remembrance and revisitation. Through multiple characters' voices and shifting timelines, the two novels by Forna deal with the trauma of war including military-induced destruction of the environment and displacement of people from their natural habitats. Various events in the narratives highlight the role of war as an anthropogenic agent of change that results in the widespread destruction of a nation's ecology. The novels also hint of – but the characters avoid articulation of – the threat of impending extinction that overwhelms us and which induces climate trauma or eco-anxiety. And this looming sense of climate trauma simultaneously involves repression of the feelings of anxiety it engenders. In the face of the pending distress that will obviously happen in the future, the human psyche adopts a defence mechanism by trying to dissociate itself from the anxiety that results from climate change (Cherry, 2021). It is important to understand the ramifications that follow repression of climate trauma which will one day affect the entire human race.

Forna shows that the prolonged duration of war induces climate change in its wake and the magnitude of anthropogenic disturbance by warfare is significantly high because the natural environment is valued only instrumentally, solely for human utility, and its destruction justified as a military necessity – as evidenced in military strategies such as scorching the earth, extractive mining or polluting freshwater, etc. This is the bane of the Anthropocene and it calls for a radical and imaginative rethinking of the relationship between humans and nature as a way of preventing ecocide and moving towards a positive ecosophy for sustainability. Forna believes that indigenous stories

about families and ancestors, about the trees, animals, and rocks, about stars and planets and gods, can help us find and remember our place and anchor us in time and space. We, as humans, have a fundamental need for nature. Instead of trying to tame or eliminate or ignore it, it is time we learn to grow with nature. We need to take an active role in celebrating it, and caring for it; thereby nurturing our own needs in the process. Forna insists throughout her novels that only by taking responsibility for the Earth can we truly reconnect with it and with ourselves.

References

Armstrong, J. (2019). Gothic Resistances: Flesh, Bones, Ghosts and Time in Vietnamese Postwar Fiction. *eTropic: Electronic Journal of Studies in the Tropics*, *18*(1), 28-49. https://doi.org/10.25120/etropic.18.1.2019.3686

Babbit, S. E. (2005). Stories from the South: A Question of Logic. *Hypatia 20*(3), 1-21. https://doi.org/10.1111/j.1527-2001.2005.tb00484.x

Bielby, K. (2021, May 24). *Natural Resources Exploitation and 'Jihadist Drugs' Fueling Terrorist Groups*. Homeland Security Today. https://www.hstoday.us/subject-matter-areas/counterterrorism/natural-resources-exploitation-and-jihadist-drugs-fueling-terrorist-groups/

Bøås, M., Hatløy, A., &Bjørkhaug, I. (2009). Alcohol and drugs in post-war Sierra Leone. *African Journal of Drug and Alcohol Studies*, *7*(1). https://doi.org/10.4314/ajdas.v7i1.46358

Caldwell, G. (2011, May 25). *Coming Out of the Closet: My Climate Trauma (and Yours?)*. HuffPost. https://www.huffpost.com/entry/coming-out-of-the-closet_b_195770

Caruth, C. (1996). *Experience: Trauma, Narrative, and History*. Johns Hopkins University Press.

Chaudhuri, U., & Enelow, S. (2014). Theorizing Ecocide: The Theatre of Eco-Cruelty. *Research Theatre, Climate Change, and the Ecocide Project*, 22–40. https://doi.org/10.1057/9781137396624_2

Cherry, K. (2021, February 15). *Common Defense Mechanisms People Use to Cope with Anxiety*. Verywell Mind. https://www.verywellmind.com/defense-mechanisms-2795960

Clark, T. (2019). *Ecocriticism on the edge: the Anthropocene as a threshold concept*. Bloomsbury Academic.

Craps, S. (2020). Climate Trauma. In C. Davis & H. Meretoja (Eds.), *The Routledge Companion to Literature and Trauma* (pp. 275–284). Taylor and Francis. https://doi.org/10.4324/9781351025225-25

DeLoughrey, E. M. (2019). *Allegories of the Anthropocene*. Duke University Press. https://doi.org/10.1215/9781478090021

Forna, A. (2006). *Ancestor Stones*. Bloomsbury Paperbacks.

Forna, A. (2010). *The Memory of Love*. Bloomsbury Publishing.

Gaard, G. & Gruen, L. (1993) Ecofeminism: Toward Global Justice and Planetary Health. *Society and Nature,* 2, 1-35.

Hay, A. (2013, April 3). *The Origins of Ecocide*. Seeing the Woods. https://seeingthewoods.org/2013/04/03/the-origins-of-ecocide/

Helmer, J. (2019) The Environmental Downside of Cannabis Cultivation: Wide-scale cannabis cultivation is causing environmental damage. Federal regulations could change this. June 18, 2019**.** https://daily.jstor.org/the-environmental-downside-of-cannabis-cultivation/

Herman, J. L. (1992). *Trauma and Recovery: The Aftermath of Violence - From Domestic Abuse to Political Terror*. BasicBooks. whatnow727.files.wordpress.com/2018/04/herman_trauma-and-recovery.pdf

Hough, P. (2016). Trying to End the War on the World: The Campaign to Proscribe Military Ecocide. *Global Security: Health, Science and Policy*, *1*(1), 10–22. https://doi.org/10.1080/23779497.2016.1208055

Hupy, J. (2008). The Environmental Footprint of War. *Environment and History*, *14*(3), 405–421. https://doi.org/10.3197/096734008x333581

Ithaca College. (2017, October 31). Marijuana farming hurts environment, new study finds. *ScienceDaily*. Retrieved May 30, 2021 from www.sciencedaily.com/releases/2017/10/171031202705.htm

Johnson, C. (17 February, 2010) Sierra Leone farmers turning to cannabis growing:VP. https://www.reuters.com/article/ozatp-leone-drugs-20100217-idAFJOE61G0O020100217

Kainulainen, M. (2013). Saying Climate Change: Ethics of the Sublime and the Problem of Representation. symploke 21(1), 109-123. https://doi.org/10.5250/symploke.21.1-2.0109

Nayar, P. K. (2019). *Ecoprecarity: Vulnerable Lives in Literature and Culture*. Routledge. https://doi.org/10.4324/9780429294815

Nixon, R. (2011). *Slow Violence and the Environmentalism of the Poor*. Cambridge, Massachusetts; London, England: Harvard University Press. https://doi.org/10.4159/harvard.9780674061194

Steffen, W., Crutzen, P. J., & McNeill, J. R. (2007). The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature. *AMBIO: A Journal of the Human Environment*, *36*(8), 614–621. https://doi.org/10.1579/0044-7447(2007)36[614:taahno]2.0.co;2

Summers, H.M., Sproul, E. & Quinn, J.C. (2021). The greenhouse gas emissions of indoor cannabis production in the United States. *Nature Sustainability, 4,* 644-650. https://doi.org/10.1038/s41893-021-00691-w

Third United Nations Conference on The Least Developed Countries. (2001). *Presentation of the Government of Sierra Leone*. https://unctad.org/system/files/official-document/aconf191cp42sil.en.pdf

UNEP. (2008). *Africa: Atlas of Our Changing Environment*. UNEP.

UNEP. (2010) *Sierra Leone, Environment, Conflict and Peacebuilding Assessesment.* Technical Report. February. www.unep.org/conflictsanddisasters

Wang, I. J., Brenner, J. C., & Butsic, V. (2017). Cannabis, an emerging agricultural crop, leads to deforestation and fragmentation. *Frontiers in Ecology and the Environment*, *15*(9), 495–501. https://doi.org/10.1002/fee.1634

Wartenberg, et al., (2021). Cannabis and the Environment: What Science Tells Us and What We Still Need to Know. *Environmental Science & Technology Letters*, *8*(2), 98–107. https://doi.org/10.1021/acs.estlett.0c00844

West Africa Drug Policy Network (WADPN). (2017, February 2). *Cannabis legalisation in Sierra Leone, What Hope?* International Drug Policy Consortium. https://idpc.net/alerts/2017/02/cannabis-legalisation-in-sierra-leone-what-hope.

Woodbury, Z. (2019). Climate Trauma: Toward a New Taxonomy of Trauma. *Ecopsychology*, *11*(1), 1–8. https://doi.org/10.1089/eco.2018.0021

Zalasiewicz, J. A. (2009). *The Earth after Us: What Legacy Will Humans Leave in Rocks?* Oxford University Press. https://doi.org/10.1093/oso/9780199214976.001.0001

Zierler, D. (2011). *The Invention of Ecocide*. University of Georgia Press.

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The "Post-Quantal Garden" Annotated

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Abstract

The Post-Quantal Garden is a work of speculative fiction based on J.G. Ballard's short story "The Terminal Beach" first published in 1964. Set within Donna Haraway's climate-changed Chthulucene, the work is intended as an elliptical rumination on the history of nuclear testing in the Pacific, bio-hacking, tropicality, and apocalyptic narrative. Moving between historical fact and speculative fiction, the story takes the form of a scholarly introduction to and contextualization of fictional passages from an imaginary journal supposedly found during the very real radiological clean-up of Enewetak Atoll. Enewetak, an atoll in the Marshall Islands group, was used by the US for nuclear testing and was the site of operation Ivy-Mike, the first fusion bomb test, and is the setting for Ballard's Terminal Beach.

Keywords: Speculative fiction, cli-fi, JG Ballard, climate change, bio-hacking, nuclear testing, Chthulucene, Enewetak Atoll, tropical imaginary

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The most merciful thing in the world, I think, is the inability of the human mind to correlate all its contents. We live on a placid island of ignorance in the midst of black seas of infinity, and it was not meant that we should voyage far. The sciences, each straining in its own direction, have hitherto harmed us little; but some day the piecing together of dissociated knowledge will open up such terrifying vistas of reality, and of our frightful position therein, that we shall either go mad from the revelation or flee from the deadly light into the peace and safety of a new dark age.

— Lovecraft, "The Call of Cthulhu"

Preface

Of the many tragedies that befell the world in the wake of climate change, the loss of the Marshall Islands was a minor but important early augur of the devastations that would mark the latter half of the 21st century. Resting never more than a few feet above sea level, the small group of coral atolls running through the Pacific at roughly 10 degrees north, 170 degrees east, were among the first places in the world to disappear beneath the rising waters of the diluvial period. With tragic symmetry, anthropogenic sea level rise displaced most peoples of these islands during the mid-2020s, just as US nuclear testing had done half a century earlier. That the fruits of such colonial and technological hubris should be continually harvested by nations least responsible for them is one of the many horrific legacies of the Anthropocene. Displaced Marshallese communities would come to form the basis for many of the refugee camps that would eventually redefine the rapidly growing mega-cities of the US interior during the middle decades of the 21st century.

Beyond their shared fate, what distinguishes the Marshall Islands from other drowned places of this period is, of course, that *Macrocystis enewetaciae* was discovered there by Nobel laureate Aulani Alik. Famously, Alik discovered the heterokont in 2058, crowding the former lagoon of Enewetak atoll, from which it derives its name. As the reader undoubtedly knows, the discovery and subsequent engineering of *Macrocystis enewetaciae,* commonly known as God Kelp, breathed new life into the seasteading movement, kicking off the second green revolution, and firmly establishing the social and economic viability of carbon farming and sequestration as a method of carbon draw-down. If there is a single point on Earth where the entangled origin of the Chthulucene[1] can be located, it may very well be the sublime blue of Enewetak's submerged lagoon.

[1] The concept of the Chthulucene Epoch was introduced by the 20th and 21st-century philosopher Donna Haraway. The theory disposes of reductive Enlightenment notions of individual human singularity, instead embracing the inherent complexity – the 'tentacularity' – of life on Earth and the obligate, if often unrecognized, symbiosis between

And yet there have always been questions around the discovery of God Kelp. How did such a large species, growing so near the surface, evade discovery for so long? Did the history of Enewetak itself, as first a nuclear testing ground and then radiological disaster site play a role in hiding this important species? Could it be that God Kelp is the accidental result of Enewetak's long radiological history? Or, as Okung, Berman and Ling (2072) have provocatively suggested, is it that God Kelp, even before Alik's engineering, was an anthropogenic species, introduced by accident or some last, desperate act of bio-hacking gone wonderfully right? At the risk of sounding cliché, we may never know. However, a deep dive into the atoll's history, particularly the short period between the end of US nuclear testing and the beginning of radiological clean-up, provides tantalizing clues.

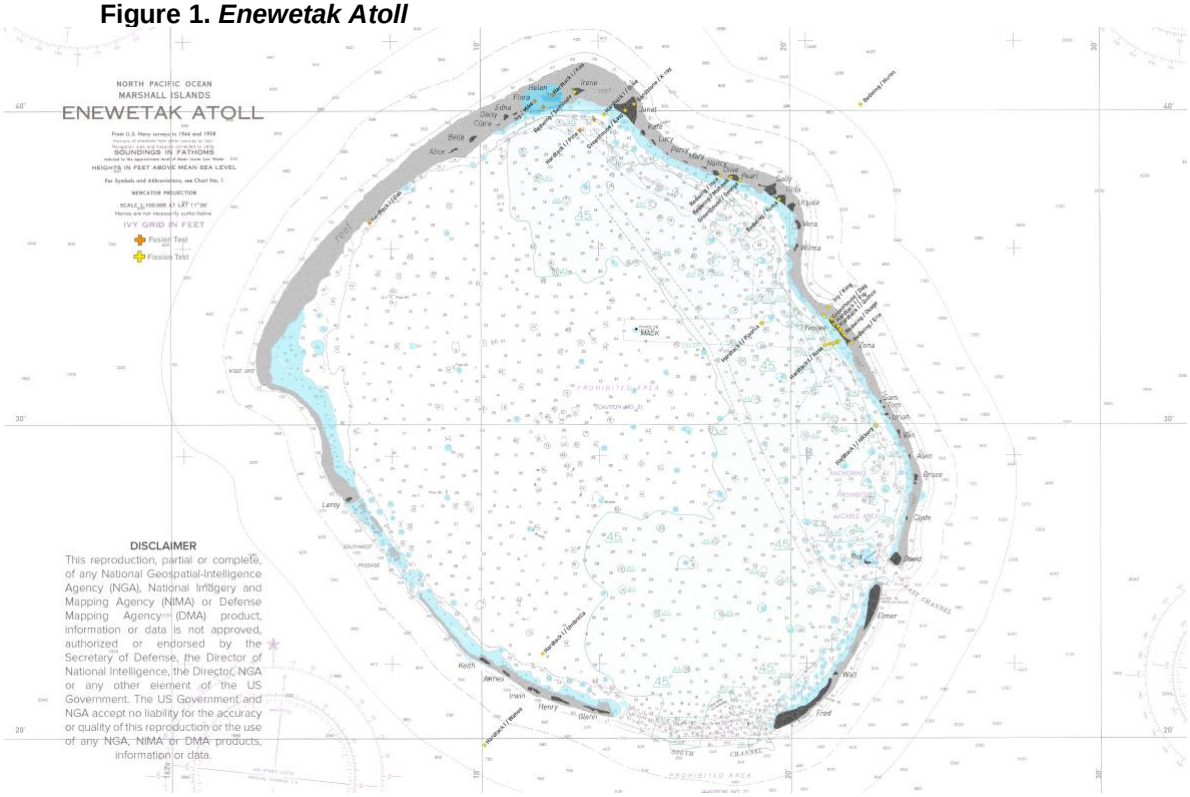
The postdiluvian landscape of Enewetak is the reflexive product of both 21st century changes in global climate and the vast 19th and 20th century colonial, technological, military and industrial complexes that sparked those very changes. After World War II, the Marshall Islands were converted to the Pacific Proving Grounds by the U.S. Department of Defense and the U.S. Atomic Energy Commission. Between 1946 and 1962, one-hundred and five separate nuclear tests were conducted in the region. Forty-three of those tests were conducted on Enewetak Atoll (also sometimes transcribed as Enewetok or Eniwetok). A chain of forty-three small islets surrounding a large central lagoon at the Western edge of the Marshall group, Enewetak is one of the most remote locations on Earth. Prior to the nuclear testing period, Enewetak's native inhabitants were relocated to Ujelang Atoll – roughly 135 miles to the southwest. Testing began at Enewetak in April of 1948 with Operation Sandstone and concluded in April of 1958 with a massive surface bombardment of the island during Operation Hardtack I. The island was abandoned between 1958 and 1963, and from 1963 to 1968 it was used as an impact and scoring target for intercontinental ballistic missiles launched from the United States. After 1968 the atoll was again officially abandoned until 1972. In April of 1972 President Richard Nixon announced that the atoll would be released to the Trust Territory of the Pacific Islands and radiological clean-up would begin.

The radiological clean-up of Enewetak was the first attempt by the US government to repair a landscape devastated by nuclear testing. The bungling of that operation

humans and all other creatures. Haraway introduced the concept sometime around 2014 and refined it through several essays and books. Restricted to academic circles for the first half of the 21st century, the idea of the Chthulucene eventually gained wide acceptance as the biological sciences came to replace the information sciences as the dominant intellectual, intersocial, and eco-nomic discourses of our time. The term Chthulucene, often written today as Cthulucene, is a fascinating example of convergent intellectual evolution. As it entered the popular imagination, Haraway's Chthulucene became conflated with the cosmic horror deity Cthulhu, first introduced by the American author H.P. Lovecraft in 1928.

mostly writes the final chapter of Enewetak's antediluvian existence. During this period all structures and soil were scraped from forty-two of Enewetak's forty-three islets. The collected material was then mixed with concrete and dumped into a large blast crater on Runit, one of Enewetak's largest islets. The concretized material was then capped with a concrete dome, later referred to as the "Runit Dome", and then largely forgotten. Runit was fully inundated during a typhoon in 2026, leaving only the top two-thirds of the Dome above water. Eventually, water infiltration weakened the dome, causing it to collapse on August 7th 2028. The collapse of the Runit Dome jettisoned radioactive material across the tropical Pacific. Some have gone so far as to place the collapse of the Runit Dome on the scale of the Chernobyl or Fukushima Daiichi disasters, albeit in a very remote location with few direct casualties.

Figure 1. *Enewetak Atoll*



View enlarged chart here: figure 1 *Enewetak Atoll*

This nautical chart was adapted from an original 1976 US National Geospatial Intelligence Agency Map showing Enewetak Atoll with the 20th century US designated code names for each Islet. The original map was rescued from a large cache of paper maps discarded by the US National Archives in Washington pre-inundation. The chart was digitally scanned and augmented by the author to bring out the islets and show the locations of the major US nuclear tests that were conducted on Enewetak.[2]

[2] US National Geospatial Intelligence Agency. (1976). *North Pacific Ocean, Marshall Islands, Enewetak Atoll* [map]. (1:100,000.) Washington DC : US National Geospatial Intelligence Agency. A curious feature of the original map is its rather lengthy disclaimer. NGA policies from the time reflect the relative growth of counterfeit and other misinformation circulating in the US during the 20th century's fin-de-siècle. Ironically it is partially such misinformation that delayed any significant US response to climate change resulting in the inundation of both

Records from operations on Enewetak were largely declassified during the late 1980s and 1990s. A series of lawsuits during this era, first on behalf of the native population and later on behalf of the American clean-up crews, sought restorative justice for the environmental degradation of the atoll and subsequent health ramifications resulting from the island's contamination.

Despite the extent and longevity of operations on Enewetak, its federal archives are relatively thin. A richer source of experiential information about the atoll comes from written and recorded accounts of some 4,000 US military personnel responsible for the environmental clean-up, and mid-21st century accounts from the few surviving native Enewetak people. Despite prohibitions against taking possibly contaminated materials off the island, numerous visitors throughout the 1960s and early 1970s felt compelled to carry various items away with them. While a large number of these items are now collected in Alik's Enewetak Archive in Bangkok, it is likely that many more have yet to be found or are lost to history.

The most important of the items collected on Enewetak during this period is undoubtedly the journal of Anders Travern. Travern, a petty officer aboard the USS *Constellation*, was thought lost at sea in 1964, but evidently made his way to Enewetak sometime in early 1967. Whether this was by chance or design we do not know. Travern's journal is a roughly bound collection of scrap papers running to several thousand pages. Largely the journal documents his day to day life on the island, and it is through his journal that we get one of the best descriptions of what the island may have been like at that time. No exact accounting of the structures built on Enewetak still exists, though Travern's journal and several snapshots taken by the radiological clean-up crews suggest that dozens if not hundreds of control bunkers, photographic or "camera" bunkers and "hooded" or radiologically shielded observation towers were built during the decades of nuclear testing. It is among the ruins of these structures

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Enewetak and, eventually, the very US National Archive facility where this map was held. I have included a statement from the NGA's Commercial Use Warning policy of that era for the reader's further edification.

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that Travern's journal is largely set, and it was in one such camera bunker that the journal was discovered by members of a radiological survey team in 1973.

Of special interest are Travern's seemingly nonsensical ramblings and his vague religious belief system which surface periodically throughout the journal. Collectively these few passages have come to be known as the "Post-Quantal Garden". We do not know whether Travern brought these beliefs with him to the island or if they are the product of his long isolation, but for many who have read them they seem to provide a clear, if apocryphal, set of answers to the questions surrounding God Kelp as well as a suitable origin myth for our current age.

"Yasuda," the subject of Travern's more shambolic passages remains a mystery. Perhaps, as Okung, Berman and Ling (2072) have suggested, Yasuda was a Japanese fisherman or other sailor, similarly marooned on Enewetak during its period of isolation. If so, he was never reported missing – at least under that name. More likely, Yasuda is, as Shelley and Bowers (2073) have suggested, a figment of Travern's imagination or the ramblings of a mind driven mad with hunger, scurvy, radiation sickness, or all three. The journal, if accurate, suggests that Travern was stranded on the island for at least four years, from 1967 to 1971. The episodes that comprise the Post-Quantal Garden seem to have occurred throughout that time, with the journal's abrupt and puzzling end suggesting that Travern may have died at some point in 1971. Conspiracy theorists have made much of the fact that no remains were reported by the radiological survey crews that began sweeping the island in 1974, though this is hardly surprising given the regular flooding and typhoons the island was subject to even at that time.

It is with an eye to such conspiracies that, with permission from the Enewetak Archive, the relevant sections of Travern's journal—those passages comprising the Post-Quantal Garden—have been reproduced here for the first time with annotations.

On a personal note, the reader should be aware that I make no claims for Travern's story, true or untrue, nor for the value of its mythopoeia. It is not my goal to illuminate the poetic or religious meaning behind Travern's words, nor to rationalize them – I leave that to you, dear reader. With this text I have only endeavored to set Travern's words within their historical context so that readers may better assess their value and/or authenticity. To a reader approaching these passages for the first time, I can only suggest that they proceed to draw conclusions with extreme caution.

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The Post-Quantal Garden

June 17, 1967

I am overcome by light. Light turning life to dust. Dust to life.

My memories of infant nightmares recall the fetal bliss of our interlocking spine and the terror of its severing. As a child, I felt his quantal soul call to mine across the sea. Life calling to death. Death to life. The frayed ends of our partial selves straining toward reunion. It is here that he called me, and here, in this place, he comes to me.

August 30, 1968

Six days past I lay upon the beach, unblinking Yasuda beside me, the sun a corona about the eclipse of his head.[3] It was there that he explained the mystery of our birth and division; how, in that singular moment when Little Boy hung in the air above Hiroshima, our unified soul first slipped into the world—and was also split. A phantasmal nucleus divided. His fractional self coming to rest within the child that was, burned but alive.[4] Mine pushed through the earth into the child that was not. [5] He told me what I knew as truth, that I fell from my mother on that day, silent and blue, unready but alive.[6] Afraid, I rejected him. I was unready, and in that singular moment of our reunion, my quantal mind broke and I fled amongst the craters.[7]

I wandered then, lying at night on the tarmac or wallowing, blind, within the mud and debris of the target basins.[8] Always the sun followed, endlessly circling above lagoon, atoll, horizon. Ever westward in its holy circumnavigation, its torrid glare born to purpose within those concentric fields of ruin, architectures of sight and measure: hooded towers, slotted bunkers, dead, prone within the target basins. An

[3] Scholars have interpreted the phrase “unblinking Yasuda” alongside the imagery of the solar corona as a reference to everything from Ra to Buddha to the icons of Christ within Eastern Orthodoxy.
[4] Note that some scholars have interpreted Travern’s scrawled antepenultimate sentence as beginning with the phrase, “his fractal” rather than “his fractional” as I have interpreted it here.
[5] The Unites States dropped the first fission bomb, “Little Boy” over Hiroshima on August 6th 1945. Birth records show that Anders Travern was born in Omaha, Nebraska on August 6th 1945, to Margaret and Jan Travern.
[6] Birth records from the Nebraska Department of Public Health show that Travern was severely underweight at birth, just 3lbs 2oz.
[7] Nuclear testing and intercontinental ballistic missile targeting left craters on many of Enewetak’s islets. Most of these were filled during reclamation efforts, though a number are still visible in aerial photographs of the atoll from the early 21st century.
[8] Regular references throughout the journal to “the tarmac” insinuates that Travern may have mostly lived on the largest Islet “Fred”, also known as Enewetak – from which the rest of the atoll draws its name. Enewetak’s landing strip, built during World War II, was used to shuttle food, personnel and supplies to and from the atoll during nuclear testing and after.

overexposure, a burnt husk, a landscape of light and shadow designed only to scrutinize death. [9]

December 27, 1968

My body cracks and splits as I shed my human skin. The sores on my hands and feet are filled to bursting and my knees swollen and hard as ripe beets and in my waking dreams I see the jagged outline of a Silurian carapace lurking just beneath. [10] To live I knew that I must scrape the salty flesh from the coconuts adrift in the lagoon – sunlight trapped in skeletal gyres, their meat like dirty snow.[11] August wanes and the angles of my heart soften, rounding to his pull, drawing me north around the island's curve.[12] I am frightened. I am but part. I do not know what it is to be one.

September 29, 1969

I dreamt a circular void – a deepness within the lagoon. At its center, spread upon a verdant mat, lay Yasuda, his hair like kelp upon the waves, his hands green amidst the sea.[13]

March 26, 1970

The dreams again though I had thought they ceased. This time I saw myself driven north along the inner curve of the lagoon, the sun boiling the flesh from my back, each islet slipping past, barren and white, like vertebra on a crooked spine, their alphabetized names: Wilma, Vera, Ursula recalling zones of significant time: Holocene, Pleistocene, Pliocene.[14]

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[9] Some have suggested that Travern's flight to Enewetak may have been done as an anti-war or anti-nuclear armament gesture, often quoting this passage to make their point. I find no evidence of such in the broader text nor in the remainder of the passages presented here.

[10] Sores and swollen joints are common symptoms of scurvy. Notably, Travern's journal contains very little detail about how or what he ate during his four or more years on the island.

[11] Though many of the Marshall Islands bear significant stands of coconut and breadfruit, nuclear testing left most of Enewetak's islets completely denuded. Accounts from operation Ivy-Mike (discussed later) describe the vegetation being stripped from the island by the nuclear blast.

[12] This is almost certainly an oblique reference to August Engelhardt, the German sun worshipper and cult leader who led a sect of cocoivores on the island of Kabakon off the coast of Papua New Guinea during the early part of the 20th century. A *New York Times* article from October 15th, 1905 describes Engelhardt's beliefs as such: "He held that man was a tropical animal, not intended to live in caves called houses, but to wander, as Adam did, with the sun beating upon him all day and the dews of heaven for a mantle at night. Living such a life, he believed that the healing and curative powers of the sun would in time render a man so immune that sickness could be overcome." That Travern was familiar with cocoivorism suggests that he had read more widely than his high school diploma and parochial upbringing would suggest.

[13] This is the only reference to kelp in Travern's journal. The omission is curious, especially given the descriptions given of the plant in Alik's 2070 autobiography *Infinite In All Directions* where she describes Enewetak's lagoon as "so thick with God Kelp that the outboard motor of our boat could hardly cut its way through the mass" (p. 214).

[14] Wilma, Vera and Ursula are the US Navy's names for three small islets along the north east coast of Enewetak. The Navy named each islet, mostly alphabetically, in clockwise direction, starting with Alice on the Northwest coast of the atoll and ending with Zona, and then picking up again with Alvin on the atoll's east coast. The islands run

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October 14, 1970

In the night the dreams came upon me once more. I saw blood amidst sand and pale coral, red first and then as opalescent seed, spread across the bones of eons.

On waking I committed myself to endings. I have broken camp and secured my few possessions within the dry confines of my bunker. I take only this journal and my service pistol, though I do not know if it will still fire.[15] I do not believe I will return.

I found him resting, enthroned amidst the coils of radio-wire and weed washed ashore along the curve of Irene.[16] His eyes bright pits beneath a tangle of hair. We met then, each half of us, amidst rock and wire, beach and bone. Our shadows cast down, our quantal soul, reunited.

At that moment, within sight of her void, Yasuda revealed the Paradox of Flora.[17] That, though I did not feel her death, still her particles settled within me. That she, though heavier, was now suspended. That we breathe her, and so she resides in us all. Flora, radiocaesium, collecting in our bones, changing us forever and yet we are unaware.[18] There, along Flora's rim, Yasuda explained that this was the site of first fusion–where our quantal souls would reunite, becoming exponential, exothermic.[19] He told how together we would make the world anew, forever post-quantal. Undifferentiated. Undivided. Whole.

In his tent amongst the dunes, Yasuda had fished the mutating genes from seaweed and stalk, culturing them amidst sea and sponge. And it was then, in that tent, that I

alphabetically backward in Travern's passage, suggesting that he may have started from Fred and was moving counterclockwise North along the atoll's curve.

[15] Tavern was issued an M1911A1 service pistol that was presumed lost with him.

[16] Irene is a small islet on the north coast of the atoll. Operation Seminole 56 vaporized part of the island leaving a crescent beach surrounding a water filled crater.

[17] Travern is likely referring to the American military pseudonym for the vanished islet Flora, also known as Eluklab by the native Enewetak people. Flora/Eluklab, along with the smaller islets Gene and Helen, was vaporized on November 1st 1952 by Operation Ivy-Mike, which was designed to test the first thermonuclear device in which a portion of the bomb's yield comes from a fusion reaction.

[18] Radiocaesium or cesium-137 is amongst the most problematic of fission products because of its high water solubility. Cesium-137 is a permanent anthropogenic addition to the global environment and can be found in all living things.

[19] The blast from Ivy-Mike resulted in a crater roughly 6,240 feet in diameter and 164 feet deep, which is still visible today. The explosion was so powerful that it flung pieces of radioactive coral onto the decks of ships anchored 35 miles away. Ivy-Mike is still the 10th largest nuclear detonation on record.

took up the syringe and perforated his body, spreading a staccato tattoo across chest, spine, hand, forehead, neck and shin. All while he gave onto me the revelation of cyst and mutation, of chromosome and chloroplast. And last, the final revelation of satiation and profusion – the revelation of the post-quantal garden, where all severance is erased, where life is welded to life in an undying circle.

And he told me what I must do.

October 15, 1970

Last night Yasuda bathed within the heat of inverted Flora, his flesh burgeoning with the polyps of new life. This morning his body lay upon the beach, warm but unmoving, and I felt my soul complete at last.

I have not disturbed the corpse. I must wait and watch for the sun, giver of all life, to distill the broth of its pores, for the polyps to grow within it, round and red as the arils of a pomegranate. Only then will they burst forth, saplings rampant upon this terminal beach.

September 27, 1971

And now, in death, I am become life, maker of worlds beyond knowing, gardener to generations unborn.[20] As I leave, I let my garden go wild, its seed to spread on wind and wave, that the world may consume, and be consumed by this new Eden.[21]

Blessed be Yasuda whose children thrive, rampant within this post-quantal garden.

[20] This sentence is an inversion of J. Robert Oppenheimer's supposed quoting of Vishnu's phrase in the Bhagavad Gita, "Now I am become Death, the destroyer of worlds" during the Trinity test near Alamogordo, New Mexico on July 16th, 1945.

[21] The declassified elements of the radiological survey and subsequent reclamation effort give no indication that any vegetation was found on or removed from Enewetak. The few remaining photographs of the clean-up effort show only low scrub.

References

Alik, A. (2070) *Infinite in all Directions.* Palgrave Otomo.
Ballard, J.B. (1964). *The Terminal Beach*. Gollancz.
Haraway, D. (2015). Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin. *Environmental Humanities* 6, 159-165. https://doi.org/10.1215/22011919-3615934
Lovecraft, H.P. (1928) The Call of Cthulhu. *Weird Tales*, *11*(2), 159-178 (287).
Okung, Berman and Ling (2072) From Alik to Moreau, Questioning the giants of the Biological Age. *Biology and Culture*, *17*(2), 9-37.
Shelley, M. & Bowers, H.P. (2073) *Religion in the Chthulucene: Science, myth and the quest for meaning in an uncertain age.* University of New California Press.
Special Correspondence (1905, 15 October). Failure of a Womanless Eden in the Pacific – Strange Story from the South Seas *The New York Times*. https://www.nytimes.com/1905/10/15/archives/failure-of-a-womanless-eden-in-the-pacifica-strange-story-from-the.html

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Goodbye on the Seas: Rising Waters, Submerging Lives

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Abstract

This hybrid memoir begins and ends with a sea journey. Combining real-life story and dystopian imaginary, the author takes us to the Straits of Malacca off the coast of Peninsular Malaysia, to futures of submerged cities in 2050, and on a final journey into the South China Sea off the island of Borneo. This is a story of climate change and rising seas entwining tropical vignettes of pandemic lockdown, of a father's dying, and the author's future life submerged. It questions human survival in a world of demise, shaped by pandemic and surrounded by waters slowly but inexorably rising.

Keywords: sea level rise, submerged cities, climate change, dystopian imaginary, hybrid memoir, speculative fiction, pandemic, Malaysia, Borneo

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Goodbye on the Seas

The seas became quiet at the start of the pandemic in March 2020. From luxury cruise liners to tiny fishing boats and great cargo ships transporting goods from one part of the world to the other, vessels were grounded or stranded offshore. Since then, vaccinated or not, captains and their crews have resumed their work on the seas; they must, for it is essential. Some ninety percent of the world's goods are transported on water and the business of supply and demand has not allowed the coronavirus to bring this supply chain to a halt. But while our lives have been changed immeasurably and the human species fights to contain and render the virus harmless, trying to bring back some semblance of (new) normal, we are unable to halt an even more pressing catastrophe.

The seas on which these ships travel are rising. It is predicted that in 2050, Kuching, the capital city of Sarawak on Borneo will be an island metropolis, while other cities and towns on Peninsular Malaysia will be totally submerged: Alor Setar, Kuala Selangor, Muar, Pekan and Teluk Intan. Of course, there are the climate change naysayers just as there are the anti-vaxxers, but the science tells us that human activities such as burning fossil fuels have trapped heat in the earth's atmosphere, causing global warming. This heat results in the glaciers and ice sheets in Antarctica and Greenland melting and not being replenished in the increasingly warmer winters. Eventually, it is predicted that even the Arctic will be ice-free in the summer. All those great chunks of ice melting and staying melted means that the sea water levels will rise and many islands and coastal areas will disappear beneath the water. The Tropics is predicted to be one of the most severely affected regions of sea level rise. This is where Malaysia lies: its peninsula being the southern-most tip of continental Asia where it adjoins Singapore via a causeway constructed to facilitate commerce and travel to and from the island nation, while its eastern states share the megadiverse island of Borneo with Brunei and Indonesia.

Along with the warmer Earth and the disappearance of land beneath the seas will come a proliferation of diseases. Human actions may or may not have sparked the 21st century coronavirus pandemic, but it seems clear that we will be to blame for the rise in cases of dengue, malaria and cholera resulting from global warming, rising sea levels and subsequent flooding of sewers and poor sanitation.

But it is not these diseases that trouble me on this day. The Earth is bathed in the morning sun when we park the car and take a ticket from the booth. We are all masked, but I am not thinking of the coronavirus either. Later, I will think about Pangkor and Langkawi Islands where my father took us for holidays when we were children. Those islands may one day be submerged, just as this port we are entering, once known in

colonial times as Port Swettenham, may, too, no longer exist. But none of this is on my mind on the 14th July 2020.

The Straits of Malacca

We are seven people on a small chartered boat chugging out of what is now called Port Klang, some 25 kilometres from Damansara Jaya where my father had lived the past 40 years. Although this is one of the busiest container ports in the world, on this morning there is little movement on shore and hardly any disturbance on the water. A few cargo vessels and fishing boats sway to the gentle ripples our boat makes as we set out to sea on the Straits of Malacca as if towards the whitish grey clouds scattered across the sky, but which can never be reached.

The engine is loud in my ears. I see the water swirling, the jetty we've left and the wooden floorboards and slats and simple plastic covers of the seats in the chartered boat. I am thinking, but not thinking. This is an unthinkable, unbelievable journey. It has come to this so quickly. This final journey for my father has come too soon. Just two days ago, as I held his swollen, heavy hands, he had whispered to me hoarsely, "Stay with me." Those were his last words. He could speak no more as he struggled to breathe, a loud regular gasping was all we could hear. Later, I read about agonal breathing. But that was much later.

With us on this journey are the boatman and two men from the funeral services. They have probably made this trip many times and have witnessed many families taking the final journey with their loved ones. Maybe they are by now unaffected by the different displays of grief. Maybe not. But that is another thing that I don't think about till much later.

We sit in the cabin, masked. Katie and Yoshua are each holding a sheet of paper, messages to my father to follow him into the water. Later, Yoshua will hold his phone up to livestream the goodbye for Emily who is far away, alone, at the University of Iowa. For now, we just chug along.

When the engine stops and the boat is rocking gently, silently, on the waters, we get up and go on deck. Damian, the funeral director, comes over to me with the urn. It is large and white and smooth with no handles, and that worries me. Damian explains that the urn contains my father's ashes and that the solid bit at the top is part of his skull. This is what I am hearing. Then he tells me where to go and we step out over to the rail to the furthermost edge of the boat's bow.

Yesterday, my brother had spoken at the crematorium to the few mourners who had been allowed to say farewell personally to my father. These were the strange adapted rituals in the time of COVID-19 restrictions. My mother hadn't wanted to speak at the crematorium and she also hadn't wanted to cast my father's ashes into the sea. It is just as well. It would have been difficult for her to bend over the edge of the boat and empty the urn. As the boat rocks I worry I might drop the urn. It is heavy and I have to grip it at the top. When it has been emptied it into the sea, I hand the urn back to Damian who washes it out with water, shaking it out over the waters. My husband Melvin helps wash my hands over the boat's edge with disinfectant we had brought to stay safe.

I take flowers from the wreathes that had been sent to the house and throw them into the water after the ashes. My mother, brother, sister-in-law, husband and daughter Katie join me. Soon, the carnations and ferns bob and float on the water; the paper carrying messages to my father gently sink beneath the greenish white-flecked waters and I guess, my father's remains. So quickly, a life of 81 years lived on this earth expires, is cremated and scattered in the Straits of Malacca four days later. And we had waited an extra day for my husband Melvin to fly in from Kuching, Sarawak, to be with us for my father's final journey.

This could have happened the day after my father passed away. How can it happen so quickly? Why should it? Why do we hurry to dispose of the remains of our loved ones? And rush to go through their belongings and take care of the things that concerned them when they were alive? The mobile phone, the credit cards, the bills, the less important things like shopping centre cards…. These things once mattered. I want to call my father back, to tell him that I did care, that I do care, that I can't bear to read the emails and the text messages, the groups he once belonged to – the Ipoh Squash group, the Geological Survey group, Good Smoke Friday, Ipoh Mates, – but now no more. His friends have moved on and so they must. They were sad and for a few intense days they talked about my father, reminisced, gave me their memories of him so we could create a video about him, with their words. And then, somehow, they have all moved on.

We throw the last of the flowers and ferns into the sea. Yoshua videos it all for Emily in Iowa City, where later, she will place a rose at the Dancer's Garden where she hopes my father will watch her when she goes for classes and practice. She could not come home because of the chaos in international travel, cancelled flights, passengers stranded in obscure airports and the unfathomable behaviour of Americans who refuse to wear masks. Their rights trump the science.

The boatman turns the boat around and we head back to shore. So quickly this ceremony is over. There are no other rituals for us. Just the cleaning up of a life lived for 81 years. When I am 81 years old it will be 2046. According to respected scientists, four years after that, Port Klang will be completely submerged. This place that started out as a colonial outpost, a malaria infested swamp, once the eleventh busiest container port in the world, will be no more than a ghostly underwater thing of the past; visited only by underwater explorers.

According to the Malaysian-based research Centre for Governance and Political Studies, by 2050 nine of Malaysia's 13 states will be severely affected by rising sea levels. Malaysia is situated on a peninsular south of Thailand as well as comprising two states – Sarawak and Sabah – across the South China Sea on the island of Borneo. It is predicted that the state of Kedah will have many more islands in addition to the existing 99 in the Langkawi archipelago in the Straits of Malacca. As it is today, five these islands are only visible during low tide. The country is surrounded by water; global warming and rising sea levels should concern us. Yet, other than a few articles in 2019, no one seems overtly concerned.

When I think about the sea levels rising, I think about my father. He loved the ocean and he loved swimming. When my brother and I were little, he would take us for beach holidays: to Pangkor Island off Lumut in Perak; and Langkawi Island, the Jewel of Kedah. My mother had never learned to swim, but she loved to bounce along in the shallow waters where gentle waves would nudge her as she watched us snorkelling.

When my own children were growing up, my father started it again, taking us all to Pangkor Island during the school holidays at the end of the year. It hadn't mattered that this had been when the monsoon rains were scheduled; we were on the west coast, shielded from the worst of the deluge. I wonder how he would feel, knowing that the islands we once enjoyed might be gone forever; that we would be pushed further inland, higher up to the mountains, along with the newly delineated paddy fields, the transplanted 'rice bowl of Malaysia', in order to escape the hungry relentless saline waters that we had brought upon ourselves.

My father is gone and he will not see this. He had been through a battery of tests but there had been no diagnosis. Nothing could be concluded, but soon it became evident that eating was becoming a serious issue. That which comes naturally to all living things now had become anathema to him. He had been eating less and less, even his favourite rice porridge with salted fish and peanuts could not entice his appetite. At Chinese New Year in February 2020, the first year of the pandemic, he was still well enough to enjoy small portions of the delicacies Mum cooked. He still drank the tea at the Chinese tea ceremony on the first day and ate the traditional vegetarian breakfast.

But after Melvin and I had left to return to our home in Kuching, things grew worse. As the virus spread through the country and the government struggled to control our movements to contain it, my father was struggling with his own body. Cancerous cells that had invaded him were taking control, consuming him and rendering him so weak that he could no longer stand by himself, let alone walk.

In June, when inter-state travel was finally allowed again, Melvin and I took the first flight we could from Kuching back across the South China Sea to Kuala Lumpur. Wearing masks and face shields, equipped with hand sanitisers and wet wipes to clean the seats, arm rests and table tops, we sat stiffly through the one hour, forty minute flight across the waters. In the past, taking a flight had always meant the start of a new, exciting adventure. Now, I felt I was in a capsule, trapped with an invisible contagion lurking, waiting to pounce on random, hapless victims.

Arriving at Kuala Lumpur International Airport, we were met by Katie, our elder daughter who, having flown back from Glasgow where she was studying, had just emerged from a two-week quarantine in a hotel. Katie updated us on the drive from the airport just as my mother and my brother had over text messages, voice and video calls – my father was eating morsels and drinking little water or protein mixes; he was aching all over, needing constant massages to ease the pain. My brother had told my father to hold on, that I was on the way.

When I finally saw him – in the small room on the ground floor where he had taken himself after the stairs had become too difficult to manage – my father had transformed. His body which had enjoyed rugby, swimming, squash and golf, along with jungle treks mapping the geology of the new Malaysia, was failing him. When he agreed to go to the hospital, I knew it could only be because the pain was too terrible. He had always been the worst patient, refusing to visit doctors and preferring to self-medicate. Now he had to admit that his body would not heal on its own.

Eventually Melvin had to return Kuching to work – which more and more people were grateful to have – but my father and I still had six weeks together. I slept on the floor outside the room we had fashioned for him on the ground floor of the modest terrace house he had moved to from Ipoh all those years ago filled with vigour and hope. Now ensued dark, desperate days. I compartmentalised myself: my father; my mother; Katie who was helping in between studying, watching videos of veterinarian sciences beamed from Glasgow; my teaching; my marking; my doctoral thesis; my husband Melvin in Kuching; our daughter Emily so far away from us all, alone in a Republican State in a country where thousands were suffering and dying every day.

In and out of the Accident and Emergency ward, until eventually, my father was admitted to the University Hospital's oncology ward. He was hardly eating and could not stand without help. A week before, when Melvin was still here, and my father was still at home, we had propped him up and helped him to walk a few steps from the downstairs bedroom to the dining table where he could sit in the natural daylight. It had been a triumph. Now, it was impossible. Tests, brain scans, dialysis, teeth pulled in preparation for chemotherapy that did not take place because he never grew strong enough. Medication, pain killers, hallucinations, anything for some respite – but it never came. Yet when we sat with the whole team of specialists, we were told he could recover.

Trying to understand and to grasp what was happening, I asked directly: "on a scale of 1 to 10 with 10 being the best of health, what is my father's condition?" The specialist said my father rated at 5 or 6, so we had hope. They asked about a live-in nurse to help at home, telling us that we should have someone to take care of his basic needs so that we could spend quality time with him. So, we prepared for a live-in nurse through an agency, bought a wheelchair and a ramp for the split-level steps in the house, put in an air-conditioner and got a handyman to put up a curtain to close off the room we had converted on the ground floor.

Each day we were allowed to visit him at the oncology ward, one at a time: we talked to him through masks, we brought him food he hardly ate. With each passing day, he grew weaker and spoke less. When he did speak, he asked what we had eaten that day, if the banking had been done. Even then, he wanted to know we were all right, taken care of. But when asked about himself, he either withdrew into an angry silence or just closed his eyes, not wanting to talk, not wanting to be forced to eat or drink.

Once, when I was coaxing him to eat the food Mum had prepared and I had brought to the hospital, he whispered "Will it help?" I could not answer him straight away. It was a valid question; his condition was so terrible. Would it help if he forced himself to eat though his body told him not to? The doctors had put a feeding tube in for a few days, but in the end, they had taken it out because it could not continue indefinitely; he needed to eat on his own.

Then, strangely, we were told he could go home, and that we should bring him back to the hospital the next week for a follow-up check with the oncologist. We thought this was the start of a long treatment and convalescence, but it was an appointment he did not keep.

I know now that they knew he was dying, but the doctors and nurses couldn't or didn't want to tell us the truth. Those six weeks I had been watching my father die, but I had not known it. They had told us he had two years. He did not have two months.

My father came home in an ambulance while I was busy upstairs teaching online. When I came downstairs, he was there in the room we had prepared for him. He did not like the nurse we had employed. When she tried to help him, he growled, "Leave me alone." He could still get angry. So many things had been taken from him: his ability to clean himself, to walk, to feed himself, to take care of himself, to maintain his privacy and his dignity. All those years he had taken care of us, and now he was so reduced, diminished.

Yet by the afternoon, he could no longer keep the nurse from bothering him. My mother had asked her to shave him. Instead of just shaving his jaw and the wisps on his upper lip, the nurse shaved all that as well as what little he had left on his entire head. My father could offer no resistance. His eyes were wide open and his mouth gasping for breath.

After dinner that evening I went to sit with him. I held his heavy swollen hands and he breathed out, "Stay with me." I stayed with my father for as long as I could. He never spoke to me again. There was just the rasping agonal breathing, his eyes wide open, as he struggled to breathe air into his lungs. I stayed with him until 3 a.m. It was Saturday and I did not have to teach, but I knew I had to sleep at least a little to be able to function when the sun rose. So, I left him with the nurse. Just three hours later, I came downstairs to the little room. I had set my alarm to wake early before anyone else so I could spend some more quiet time with my father.

The nurse told me he hadn't slept at all. I told her to get some sleep and then I took his hands again and sat with him. His eyes were still wide open and his breathing as loud and rasping. My brother had told me that his father-in-law had had the same loud breathing but recovered. So, I thought I had more time. When the others woke, I left my father's side. We ate breakfast and the busyness of life started again; I thought it was safe to leave him.

And it was true that after breakfast, sometime between washing the dishes and doing the laundry, my father's loud gasps had stopped. He was breathing normally, and I thought what my brother had said was happening now. Our father would get better.

Just a few hours later – after trips to the self-service laundromat to use the dryers, after lunch and washing up, with Katie studying up in her room, Mum resting in the living room, my brother waiting for a call – I had settled down with my laptop to work

at the dining table near my father. The nurse walked up to me and asked me to come over to the little room.

My father had gone. I hadn't stayed right there with him. I had thought I had more time. I had work to do, and I thought I would have time to hold his hands again. But he didn't have time; he had had to go.

Maybe that is what is happening now. The pandemic continues to rage. It will never leave us as long as there are pockets in the world where people cannot be vaccinated or where new variants have taken hold. While we're busy with other things, the Earth really is warming, the polar ice caps are melting and the seas are rising. We are fighting a losing battle as the waves lap on our shores – over reclaimed land, slowly eroding our river banks, filling the monsoon drains, pushing us further inland to higher lands. I see this happening when I remember holding my father's hands on his last night with us on this desperate, despoiled Earth. How foolish I was to think he would recover when he gasped for every breath, when he asked me to stay with him, something unheard of just days earlier. Now, we have heard the scientists speak and we acknowledge the things that are happening with the relentless rising waters, yet we blithely carry on. While entire populations of island nations are negotiating with Australia and New Zealand for a new home once their lands are submerged, other people buy land and build seafront homes near Auckland. They have a beautiful view – for now.

I am waiting to go to the places we enjoyed with my father. One of them was a Japanese bookstore at the Kuala Lumpur Convention Centre, at the base of the world-renowned Petronas Twin Towers. A visit to that bookstore was a fun outing to the city. But perhaps it will no longer be housed at the KLCC. In 2050, the Petronas Twin Towers will likely no longer be among the tallest buildings in the world, for its lower floors will be submerged. Engineers will have converted the other floors and built an underground tunnel leading to the light rail transit that will operate safely underwater connecting to communities on higher ground. Other landmarks such as the law courts complex, the neo-Saracenic Kuala Lumpur Railway Station, and the Dataran Merdeka (Independence Square), may share that underwater world.

The Indonesian capital Jakarta is already sinking and like other major cities in Southeast Asia, is expected to be underwater by 2050, so the capital of that vast archipelago is being moved to Kalimantan on the island of Borneo. We will be neighbours, but perhaps only for a little while, because Kuching, the capital of Sarawak is a riverside city and the predictions are that by 2050, it too, will be heavily submerged. Perhaps the new Indonesian capital will also be submerging.

In these watery landscapes where will the semi-wild orang-utans at Semenggoh Wildlife Centre go? And their wild cousins along the Batang Ai river? The sun bears and the monitor lizards? The proboscis monkeys and the mousedeer? When vast areas of Sarawak's lands were flooded to build the dams in the 1980s and 1990s, humans had rescued the wildlife stranded on islands in the middle of the artificially constructed lakes. Today, we cannot rescue ourselves, much less the iconic wildlife that make us one of the most biologically diverse countries in the world.

Though we scattered his ashes and bits of his skull in the Straits of Malacca, my father stays with me now. At times his image fades, but like a Hogwarts headmaster in a picture frame, he comes back. Sometimes, I ask him questions, but he's mostly quiet. I wonder about many things, but most of all I would like to talk to him about the rising seas and the lands that will be left. My father studied and knew the geology of this country like few others. He was among the first Malaysians to head the Geological Survey; his name is on many maps and he knew our lands and their natures intimately. I wonder what he would have made of the changes that are taking place now. But my father doesn't give me any answers directly. I think he is telling me that there are no simple answers and that I will have to figure out what to do myself.

So, in return, I will tell him this story. It is the story of a future I might have lived. If I hadn't married. If I hadn't had two children. It is the story of someone who lives in this world that the pandemic has shaped. It's a story of the water that was once a refuge, but which now threatens us because we have destroyed the balance that nature had shaped so beautifully. This is the story of a person who lives alone in a world with no way out of a pandemic and no way to escape the rising seas; she has one choice left and she takes it while the sea is still warm and friendly and full of good memories of holidays and swimming, and of her father in his prime.

The South China Sea

My dog kicks her legs as she sleeps. Maybe she is dreaming of chasing the neighbour's cat. Maybe she is hunting that elusive mouse that has been nibbling on fruit peel and vegetable waste in the compost heap. Or maybe she is paddling in the shallow waters of Pasir Pandak. The dog is old, with white hairs on her muzzle and some on her hind legs, but when she had been young, working as a team with her sister, she had been a formidable hunter and an intrepid swimmer.

I bend and pat her head, gently stroking her long soft ears. I won't be able to take her with me. That is the one thing I'm sorry about. Leaving would not be a problem if it weren't for my old dog. She would love the car ride, her nose sticking out, the wind

blowing her long ears back. But I cannot leave her in the car when I reach the beach and I cannot take her with me into the sea.

And there is no way to explain to the police if I were stopped at a roadblock. This is not the time to take a dog for a joyride. So, I sit with my old dog a long while, stroking her soft head and ears, remembering the good times we'd had when we had both been young and strong. My mother had told me years ago that growing old is terrible. I will add to that. Growing old alone in a never-ending pandemic that has persisted for half a century when climate change is causing sea levels to rise is abominable – is intolerable.

If I spoke to her, my sister would tell me my thoughts were nonsense and that I should stop brooding, but I know my departure will take one more thing off her mind. She will no longer have to worry about me. And this is important since sustaining life in this pandemic-ridden water world is no easy task. She has her children and her husband, and she will look after my old dog.

I will not let my old dog struggle and kick, trying to follow me out to the South China Sea and it is this thought that propels me up and away, giving her a final pat. I pick up the car keys and quietly open the gate. She looks up at me and then settles down again. She knows my routine and thinks I will be back after picking up groceries. I look at her one last time. I never thought I would ever leave her behind, but I know my sister and her husband and children love the old dog.

My trusty Kembara is a dream. I love to feel the engine purring as I shift gears, making it all the way to fifth for the first time in so long. Never once, even at the traffic lights, do I see a police car or motorcycle. It is as if the police are like the rest of the population in this perpetual lockdown, staying home.

It is July 2051 and every month, the restrictions are extended. There is no end to this dystopian reality. New variants emerge and claim more victims, faster than any scientist or pharmaceutical company can unravel viral genetic codes and produce new vaccines. Countries that have released their populations from quarantine conditions quickly learn to regret their hasty decisions and have implemented stricter lockdowns. The police worldwide are militarized; inter-district, inter-state and international borders are closed.

But here I am, driving freely alone on the road, coasting along, singing to Peter, Paul and Mary, to Simon and Garfunkel, John Lennon, Joni Mitchell and Bob Dylan at the top of my lungs, with the windows down and my hair really blowing in the wind, all the way to Damai. How I have missed driving on the long road trips with my parents and

sister during the school holidays. Those had really been the days! Once we had driven all the way to the neighbouring state of Sabah and had visited the 130 million-year-old Danum Valley rainforest and gone island hopping in the Coral Sea off the coast of Borneo. Of course, that had been when I was little, before the Sulu pirates had started kidnapping people and before the islands had all submerged. But since COVID-19, life has been a misery. Everything and everyone is online. This is a real virtual reality that I cannot adapt to. I'm not the only one. A lot of people have found a way out, but those ways are not for me.

I find a spot to park the Kembara, a little out of the way where it cannot be easily seen, and walk slowly to the beach, enjoying the crunch of the sand and pebbles beneath my feet and the earthy smell of the trees and shrubs around me. The sea is calm, and the rush of the waves meeting the shore is like a balm to my tired body and soul. I sit under a tree, just watching and listening to the rhythm of the waves, breathing in the sea air. Once I see a little splash and dip about a hundred meters out. Maybe it is an otter or even a dolphin! I strain my eyes to see it again, but the waters are calm. Up above, the sun is relentless, but I think I see a pied hornbill and a raptor, a species I cannot recognize.

When the sun has peaked overhead and it is the hottest part of the day, I take off my jeans and t-shirt, stripping to my swimsuit. Then I step into the water. The waves are gentle and the water is warm, just like how I remember. When the water is waist high, I push off with my toes from the sandy sea bed. We never forget how to swim, and I, a school swimmer, know I can keep up the rhythm of arms and legs and breathing for hours. For this reason, I could not have brought the old dog. She would have struggled to keep up and it would have been agonizing to witness. I had watched too many relatives and friends struggling. I won't watch my old dog struggle and I know I won't struggle. With long smooth strokes, I reach out to the horizon where the sea never meets the sky. I am swimming in the South China Sea which is slowly rising in a world that will never be the same. It's not a world I belong in, so I will find my way in the rising seas.

Acknowledgments

This piece is dedicated to my father, Yin Ee Heng.

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