I love turtles!

A visual art practice-based exploration of the emergent endangered sea turtles of the KwaZulu-Natal coast

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August 2024

Submitted for the degree of PhD in Visual and Performing Arts

Faculty of Arts and Design

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Bad Run at King's Rest

Clanking past the crest of a dune:
in the foreground, a group of urchins
straighten up, yelling. They scatter and run.

The big loggerhead turtle lay
swimming among human footprints, beached;
shell split by an errant propeller-blade.

Its flippers bloody where some lout's
hacking had ripped nails for medicines
or trophies. Both its eyes stabbed or pecked out.

It raised its beak to scream or pant,
the exhalations making no sound.
Dumping my bottles on the heaving sand,

I moved – lifelong stand-in for thought –
avoiding the still dangerous beak,
asking pardon, cut the leathery throat.

Rinse off queasily. Circle wide,
back, past that inert, spread-eagled mound.
Call dumbly on gulls, on incoming tides.

Douglas Livingstone, *A Littoral Zone* (1991: 37)

Declaration

I declare that this is my own, unaided work. It is being submitted in partial fulfilment for the degree of *PhD in Visual and Performing Arts*, Durban, South Africa. It has not been submitted before for any degree or examination at any other university, nor has it been prepared with the assistance of any other body, organisation or person outside of the Durban University of Technology.

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12 August 2024

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Acknowledgements

I wish to thank Professor Michael Chapman for his ongoing supervision throughout this project and his willingness to share a wealth of knowledge and experience. Professor Jean Philippe Wade provided valuable insights and encouragement as the co-supervisor. Ms Francesca Verga for her assistance as the curator of the DUT Art Gallery in the exhibition of my artworks. I would, then, like to acknowledge Professor Tennyson Mgutshini and Doctor Philippa Kethro for their input in the earlier stages of the work, as well as the staff within the Faculty of Arts and Design and Research Office who kindly assisted me towards the processing of the various research documents. I am grateful, in particular, for Doctor Chris de Beer and Doctor Marí Peté's enthusiasm for the doctoral journey. Even before this was a research topic, Ann Kunz and Malini Pather at the South African Association for Marine Biological Research (SAAMBR) invested so much of their time to grant me access to the sea turtles and kindly shared their knowledge of these incredible lifeforms. I greatly appreciate the efforts from Johdi O'Brien and Ray Jackson at Kosi Bay Casitas that enabled me to experience sea turtle nesting and hatching in particularly remote areas. Lastly, this project would not have happened if it were not for the ongoing encouragement of my wife, Estelle, and my parents, Theo and Marietjie.

Abstract

The study aims to explore and portray awareness of the endangered sea turtles on the east coast of southern Africa. The approach proceeds by way of considering environmental contexts, both societal and artistic, against which I place my own paintings, together with my reflection on the motif of the sea turtle. I explore salient points of the social context, which may be broadly classified as the 'Anthropocene' debate. The discussion of the Anthropocene and the selective examination of activist ecological artworks may be described as qualitative in their assessment and evaluation of the academic literature in the field. Similarly, qualitative is the description of my field work in the intervention of scientists and practitioners in the lives of the east coast turtles. When I turn to my own paintings, the method is that of practice-based research: as a way of artistic production of an aesthetic object, the production accompanied by my placing of the paintings within a broad 'history' of the genre while, at the same time, I reflect upon my practice. How might my paintings question, or even attempt to bridge, an ontological division between the human and the non-human world, as associated with the Anthropocene?

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Introduction

Aims, scope, method

The study aims to explore and portray awareness of the endangered sea turtles on the east coast of southern Africa. The approach proceeds by way of considering environmental contexts, both societal and artistic, against which I place my own paintings, together with my reflection on the motif of the sea turtle. The paintings are not meant to be autotelic; that is, they do not ask to stand alone in their purpose but to function as a contribution to the awareness-raising intention of the study as a whole. Painting as a product, nonetheless, involves a process of creation. The final chapter of the study includes notes on the process.

Part 1, consists of three chapters. Chapter 1 explores salient points of the social context, which may be broadly classified as the 'Anthropocene' debate. If indeed humankind is the most important element of existence, what is its responsibility to the natural world? Chapter 2 sheds light on the current case of sea turtles through local insights in the field and in the literature. The purpose is to advance our understanding of how to protect turtles. This chapter concludes with a set of recommendations. Chapter 3 offers a context for my series of paintings, where I introduce my debt to other artists through examples of what I shall term activist ecological art. Here, I turn to the aesthetic principles that have motivated several specific art projects, such as Gablik's (1992: 2) "connective aesthetics" (whether in response to mining, garbage, or, closest to my own paintings, plastic ocean pollution). In referencing key commitments and artworks, Chapters 1 and 3 embody a literature review. By the end of these two chapters, the reader should have been introduced to the state of the debate, both social and artistic, salient to my own paintings.

Part 2 incorporates two chapters: Chapter 4 contains my interpretative descriptions and reflections on my paintings while drawing on the insights of the previous chapters. How might my paintings question, or even attempt to bridge, an ontological division between the human and the non-human world, as associated with the Anthropocene? However, a painting does not communicate its purpose as a statement in a debate but as a symbolic representation. Chapter 5 is a catalogue of process materials for each painting that is integral to the creation of the final artworks that comprise the series.

The study seeks, therefore, to integrate the artworks and the matter of ecological concern. Such an integration of context, work, and reflection complies with the intention of the PhD in Visual and Performing Arts, in which, to quote from the description of the SAQA (2021) registration webpage, "learners will need to complete a rigorous and peer-reviewed independent

practice-based empirical research project … self-reflection, knowledge, theory and research methods are applied creatively to complex practical and theoretical problems".

My method for pursuing the aims and scope underlies each chapter. The discussion of the Anthropocene (Chapter 1) and the selective examination of activist ecological artworks (Chapter 3) may be described as qualitative in their assessment and evaluation of the academic literature in the field. Similarly, qualitative is the description of my field work in the intervention of scientists and practitioners in the lives of the east coast turtles. My leading questions seek to incorporate responses that are not merely descriptive but also offer opinion on the main pursuit: how to intervene in the protection of these creatures. When I turn to my own paintings, the method is that of practice-based research: the trial and error, the modification, and so on, as a way of artistic production of an aesthetic object, the production accompanied by my placing of the paintings within a broad 'history' of the genre while, at the same time, I reflect upon my practice. More fundamental than what I aim to do and how I intend to proceed, of course, is why I am pursuing what I am pursuing. This involves my emotional attachment to the purpose of my study, captured in a phrase that I overheard at the uShaka Sea World in Durban. A young visitor to Sea World exclaimed, 'Oh, I love turtles!' I am indebted to that young visitor for the title of this study.

Context of the study; summary of the issues

I gained an interest in sea turtles through informal engagements with staff at uShaka Sea World. At first, I was visually attracted to the animals in the exhibits as painting subjects – their prehistoric-looking appearance and elegance of movement through the water. Since I was also examining painting and colour theories by James Gurney (2010), the underwater light and colour interactions interested me greatly. Yet, I discovered that most of the sea turtle species found in KwaZulu-Natal waters are threatened, even critically endangered, and are regarded as 'keystone species' because their depletion from a natural habitat significantly disrupts the health of the ecosystem (Seeturtles.org. 2022). Something felt amiss. How is it that a species that has survived and thrived for millions of years has been brought to the edge of extinction within recent decades by what seem to be human actions? This is despite sea turtles having characteristics geared towards survival, such as the ability to slow down blood flow to lower their energy output, which enables them to hold their breath underwater for hours at a time. I felt compelled to find out more and to explore the east coast sea turtles as a painting subject, with the aim of portraying their beauty in their natural surroundings. My principal concern, however, was their survival.

Allow me to introduce, then, a brief overview of the environmental concern. It is hypothesised that we are nearing a sixth mass extinction. Synergetic stressors on ecology caused by unusual events have resulted in five previous mass extinctions, creating a type of perfect storm (Barnosky *et al.* 2011; Young *et al.* 2016). Termed the 'big five', the mass disappearance of lifeforms occurred towards the end of the Ordovician, Devonian, Permian, Triassic, and Cretaceous Periods. Today's stressors include increasing atmospheric temperatures and CO_2 levels, fragmentation of habitat, excessive hunting and fishing, human population growth and pollution, as well as the impact of invasive species and pathogens (Barnosky *et al.* 2011). Ceballos, Ehrlich and Dirzo (2017) record that, from a sample of 27 600 vertebrate species, a population extinction in 177 mammal species occurred between 1900 and 2015, which is in relation to a decreased geographic range. The concern is not only for the loss of the species itself but also for the fundamental role that this species plays in ecosystems. In addition, according to a conservative estimate, if a species that is currently categorised as critically endangered becomes extinct, it would propel biodiversity loss into a sixth mass extinction, the previous five having occurred over a time scale of about 540 million years (Barnosky *et al.* 2011).

We thus witness an acute threat to lifeforms. But what are the major stressors on biodiversity? Tropical deforestation threatens global biodiversity (the loss was 1.1 million km^2 between 2000 and 2012), and climate conditions and carbon dioxide levels are increasing exponentially (Spracklen *et al*. 2015; Davin and Noblet-Ducoudré 2010). Here, fossil-fuel combustion contributes to rising carbon dioxide levels, which leads to ocean acidification, posing a global-scale threat to marine life ecosystems (Couce, Ridgwell and Hendy 2013; Di Santo 2015; Watson *et al.* 2012). In addition, over-exploitation and agriculture are large drivers of biodiversity loss. Over-exploitation means that various species are harvested from the wild at a rate that cannot be counteracted by reproduction or regrowth, while agriculture includes its own stressors of food and fuel crop production, aquafarming, forestation, and the farming of livestock (Maxwell *et al.* 2016). We also see that human pollution threatens drinking-water security and endangers life across the oceans. It is estimated that there are five trillion floating plastic pieces causing suffocation, entanglement, and absorption of toxicants. The literature presents these as key environmental crises that humanity currently faces (Eriksen *et al.* 2014; Laina 2018; Mekonnen and Hoekstra 2015; Schwarzenbach *et al*. 2010).

If a sixth mass extinction is being exacerbated by synergetic stressors, what pressures can be attributed to human actions? Human factors such as fragmentation of habitat, excessive hunting and fishing, human population growth and pollutants all contribute to ecological

stressors (Barnosky *et al.* 2011). We now find that extinction rates have significantly increased in the past century, as I indicated above, during which 200 vertebrate species have become extinct. This occurs naturally every 10 000 years (Ceballos, Ehrlich and Dirzo 2017). We could say that humans are regarded as the global apex predator of wild marine fish, largely due to technological fishing advancements (Halpern *et al.* 2012; Jackson *et al.* 2001). Naturally, fish stocks have seasonal variations, but a global review recognises that trawlers, as the dominant gear type, frequently exploit the same territories with high efficiency, regardless of seasonal rhythms.

Global extinctions only paint a partial picture, while local extinctions are more evident in specific habitats. The International Union for Conservation of Nature (IUCN) accounts for a marine life extinction rate of 15 in 514 years, but it is acknowledged that data deficiency may contribute to the low numbers (McCauley *et al*. 2015). At present, marine extinction rates still resemble those of the pre-industrial revolution but could soon follow the terrestrial extinction trajectory. In this regard, sea turtles are proportionately the most endangered. In the World Wildlife Fund's (WWF's) Living Planet Report 2016, the global Living Planet Index (LPI) indicates a 36% decline in marine vertebrates measured between 1976 and 2012. Four years prior, the LPI reported a 22% decline (WWF 2012). That this marked a decline within a four-year period raises a major concern and, for Guiet *et al.* (2019), it is societal and economic drivers that impact emergent fishing behaviour. In the next part, significant threats specific to sea turtles are highlighted.

As ocean-based reptiles, sea turtles in particular are vulnerable to plastic waste. They mistake debris for food or entangle themselves in it. This causes their suffering and death. Globally, it is estimated that 52% of sea turtles ingest plastic waste (Wilcox *et al.* 2018). The durable and buoyant properties render plastic waste an environmental concern (Eriksen *et al.* 2014; Gregory 2009; Kwon *et al.* 2017). Fragments of plastic (sized <4.75mm) are termed microplastic or nanoplastic and absorb toxicants, which become hazardous waste. Furthermore, photodegradation disperses these fragments into the ocean and, by now, this form of pollution stretches across all five gyres, with an estimate of over 250 000 tons of plastic floating in the ocean. In particular, we find that generation and accumulation occur in isolated gulfs and bays of populated coastlines (Eriksen *et al.* 2014; Gregory 2009). We find that small and large fauna (ranging from zooplankton to whales, dolphins, sea turtles and sea birds) are vulnerable to entanglement and ingestion of ocean debris. Once ingested, the debris transfers to organs and tissues. This happens because microplastic loses buoyancy through the fragmentation process, especially in its brittle pieces. Recent studies indicate that a larger number of organisms ingest

plastic particles than previously believed, either directly or indirectly, such as through their prey. The ingestion of microplastic by smaller marine organisms means that higher-level predators also ingest the particles, and this impacts health across the food chain (Eriksen *et al.* 2014; Setälä, Fleming-Lehtinen and Lehtiniemi 2014).

We see here that the plastic waste of humans in the ocean is a major contributor, and how plastic waste impacts ocean-based animals is widely studied in quantitative research (Clukey *et al.* 2018; Ng *et al.* 2016; Plot and Georges 2010; Schuyler *et al.* 2016). It is not, however, only that turtles are dying from plastic debris; but it is also *how* they suffer. Philipps (2017: 1153) reflects upon a marine scientist's necropsy:

> A turtle carcass, removed from the freezer and thawed, sits on a tray, is ready for assessment. External examination provides clues. The sunken eyes and UV damage on the carapace suggest dehydration and floating (from gas build-up due to decomposing, as opposed to digesting, matter). This may, but does not necessarily, indicate intestinal impaction from ingesting plastic. We move on to internal evaluation. With the plastron removed, we see just how emaciated and dehydrated this turtle was – shrunken muscles, almost absent fat stores. Attempting to convey the extreme transformation, Kathy explains, examining a big healthy one that got struck by a boat, it's like looking at a completely different species. Her feeling for turtles' suffering comes through clearly with repeated comments that, whether enduring a perforation or intestinal blockage because of eating plastic debris, these turtles die a very slow, horrible death.

The passage not only exemplifies the ecological challenge faced but also speaks to the pain that we as humans inflict *and* with which we can identify as an emotional connection through a shared existence.

Such a connection has potential for the arts (Bresler 2006). But first, I shall briefly introduce the emerging debate around the Anthropocene and related theories in an attempt to portray the greater social context of endangerment. It is the earth scientists, Crutzen and Stoermer (2000), who coined the term 'Anthropocene' because of the increasing impact of human activities on the earth. For them, the start of this era is concurrent with the invention of the steam engine by James Watt in 1784. Nowadays, Anthropocene has an established association with environmental crises, if not becoming a shorthand in more popular discussion (Davis and Turpin 2015; Gerhardt 2018; Knauß 2018; Koster 2020; Machin 2019; Skoglund 2020; WWF 2012; WWF 2018). Scholars both acknowledge and contest that we are living in the Anthropocene epoch and that humans impact the environment in geo-historical dimensions, with the cumulative impact representing a "geological force" (Machin 2019: 1). However, is the impact of the human race significant enough to account for a geological force? In a paper set within geography education, Ziegler (2019: 271) states that the origin of this epoch remains contested and that some maintain it originated because of the age of mammals, which led to the

homo genus two million years ago. The author further asks whether the familiar "anthropogenic" modifier (human pollution) is sufficient to warrant the Anthropocene.

Nevertheless, we see that the Anthropocene offers an attractive combination of science, philosophy and politics, linking "our deepest fears and utopian visions" (Koster 2020: 61). Anthropocene enthrals academic and public imagination by raising awareness, while its universalist approach is regarded as "capitalist-technocratic and dangerous" (Kaika 2018: 1714). The effect is that the term gains political relevance over scientific concerns about an actual geological phenomenon. Despite increased popularity and political currency, the term Anthropocene remains problematic. While it is designated to mark a period of environmental concern, it also aims at establishing mankind as the earth's dominant species and force – an exhilarating position of power, but within a "geological nanosecond" (Koster 2020: 59).

To turn from the general to the specific, I introduce the case of sea turtles living along the coast of KwaZulu-Natal (KZN). There are seven classified sea turtle species, of which five can be encountered in these waters: green (*Chelonia mydas*), loggerhead (*Caretta caretta*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), and olive ridley (*Lepidochelys olivacea*) (Hughes 1973; Van der Elst 2014). The leatherbacks and loggerheads nest on the northern KZN beaches. It is stated that sea turtles share a common ancestor from three million years ago. According to the IUCN Red List, all five of the species listed above are currently threatened, ranging between vulnerable and critically endangered, and showing decreasing numbers (IUCN 2021; Van der Elst 2014).

Despite sea turtles encountering natural predators, such as common genets and ghost crabs, especially during hatching, *Ugu Lwethu – Our Coast: A Profile of Coastal KwaZulu-Natal* reports the following six human-based threats to these iconic land-interacting reptiles, as well as to the greater coastal biodiversity (Van der Elst 2014). First, there is a decline in marine and beach ecosystems because of growing habitat loss, particularly through land cover change and coastal development (Goble and Van der Elst 2014). Such development includes human settlement, agriculture and trade for maritime purposes (Goble 2014). Second, we encounter pollution and litter through marine debris, toxicants in marine outfalls, oil spills and heavy metals. Even though the ocean has a remarkable ability to absorb waste, current quantities, concentrations and kinds of waste materials threaten to exceed this capacity. Pollution affects ecosystems and habitats, and the health of coastal communities is impacted economically and socially. We find that marine debris is regarded as either land-based or ocean-based depending on the point of entry into the ocean, and plastic is a major contributor because of its durability and its tendency to float. In addition, marine outfalls carry toxic insecticides such as

dichlorodiphenyltrichloroethane (DDT) and dieldrin, which are absorbed by marine life. Third, the two high-traffic ports, Durban and Richards Bay, may introduce invasive alien species through ballast water discharge (Tomalin and Goble 2014). Fourth, even though climate change was previously considered to be a topic on the periphery of the sciences, it has now become well documented and the human contribution through greenhouse gases (because of fossil fuel usage) is evident as a key driver (Van der Elst and Goble 2014). Fifth, it is found that coastal erosion is a necessary natural occurrence and is the result of rising sea levels, but this is exacerbated by inappropriate coastal development, which stands to threaten vulnerable coastal communities as well as tourism (Smith *et al.* 2014). Sixth, there is the mining of estuary sand. Estuaries are paramount as they contain a large variety of lifeforms and are nursing areas for sea life. However, estuaries are environmentally vulnerable. The construction industry is keen to remove and use the abundant supply of sand, but the sand is necessary to maintain healthy estuary ecosystems (Goble 2014).

Marine protected areas (MPAs) are established to counter such peril. An MPA protects subtidal and intertidal terrains together with their fauna, flora, cultural and historical characteristics. Since 1979, MPAs have been established to protect two bioregions intersecting with KZN: the northern Delagoa Bioregion, which overlaps the RSA/Mozambique border, and the southern Natal Bioregion which stretches into the Eastern Cape. It is in the northern bioregion that the sea turtles nest. To protect these bioregions, the following MPAs were created: the large St Lucia Marine Reserve, the small Trafalgar Marine Reserve, and the Maputaland Marine Reserve, the last being incorporated into the iSimangaliso Wetland Park, which in 2000 was proclaimed the first World Heritage Site in South Africa. On the South African side of the border, most of the loggerheads and leatherbacks nest within iSimangaliso. Yet, we find that many plans for the MPAs "exist only on paper", while existing areas are seldom effectively managed (Lagabrielle *et al.* 2018; Livingstone *et al.* 2018; Mann, Harris and Livingstone 2014: 175). To sum up, biodiversity loss and species endangerment require decisive action and paradigmatic shifts from various sectors.

What role can the arts play? Activist ecological art aims to effect ecological wellbeing. One could say that ecological art is a sub-genre of activist art. Therefore, in Chapter 3, I begin by introducing prominent examples of activist art that address a wider range of social concerns as a prelude to focusing more specifically on ecological art.

The impact of art is not always immediate. For Hawkins and Gioux (2012), art is cumulative and tends to impact society gradually. Since the 1970s, activist art has targeted socio-political issues by working towards social change through emotional connections

(Markussen 2013). A few prominent artists who explore this domain include David Wojnarowicz (Leggin 2014; Wharton, Engel and Taylor 2016), Suzanne Lacy (Helguera 2011; Fisher 1997; Bowers, Lacy and Buszek 2012; Smith 2006), the Guerrilla Girls (Stein 2011; Chave 2011; Johnson 2014), and Gran Fury (Takemoto 2016; DeLand 2018; Eichhorn 2015). Extensive bodies of work speak to feminism, gay and lesbian rights and HIV/AIDS awareness. Concept-based works utilise a range of media forms, including photography and film, performance, installations, video, poster design and typography, song, painting and public art. Since art activist intervention, we have seen significant policy changes for social justice. These include the Vienna Declaration in 1993; the Beijing Platform for Action of 1995, where over 180 countries renegotiated policies to improve women's social position (Weldon and Htun 2013); policy amendments towards more effective HIV/AIDS treatment (Willan 2004); and, in South Africa, art projects that raised awareness of HIV/AIDS (Allen 2009).

Today, the term "ecological art", or eco-art, is attributed to artworks that aim to raise consciousness of environmental issues, often by engaging the general public and politicians (Czegledy 2014: 492; Demos 2013; Kagan 2014; Lam *et al.* 2013). With interdisciplinarity as a core characteristic, the creative process of these projects tends to draw on the environmental sciences for its content. It is an art practice that aims to establish intellectual and emotional engagement (Curtis, Reid and Ballard 2012; Gerhardt 2018; Wallen 2012). Perhaps unlike previous activist art efforts, ecological art stems from ecological ethics rooted in theories concerned with interrelationships between culture, biology, politics, and the history of ecosystems. Eco art incorporates metaphors and storytelling to present innovative ways of drawing attention to ecological values (Philipps 2017; Wallen 2012). Bruno Latour's "purification and translation" theory, for example, features prominently in current debates on environmental concerns (1993: 11; Blank-Gomel 2017; Coupaye 2018; Dew 2016; Faik, Thompson and Walsham 2019; Ferrarese 2016; Van Krieken 2002). Latour's model employs the techniques of modernism to bridge a division between nature and society – between non-humans and humans – to greater public consciousness. Ecological artists explore anthropocentrism, eco-centrism, and eco-feminism as they engage in the ethical responsibility of eco-stewardship (Kagan 2014).

To reiterate the structure of the thesis, Part 1, Chapter 1, elaborates on the Anthropocene debate. This leads into Chapter 2: The case of sea turtles on the east coast of South Africa. Chapter 3 focuses on the aesthetics, principles and examples of ecological art. Part 2 turns to my art-making and my reflections, both of which speak to the previous three chapters and bring key concepts into a symbolic representation of the case of the sea turtles that I love.

PART 1

Chapter 1: The Anthropocene debate

This chapter summarises a multitude of literature that has emerged in recent years on the Anthropocene. Even though this chapter aims to provide a scope for the debate, it prioritises relevance to this study. In order to achieve such relevance, I discuss the following: Theme 1: The genesis of the Anthropocene and whether it was anticipated. Theme 2: Anthropocene's relation to Latour's purification and translation theory on a modern dichotomy between humans and nonhumans, as well as a conceptualisation of the 'animal'. Theme 3: The implications that Anthropocene bears on ways of being, which include process ontology, virus ontology and a proposed 'amodern' approach. Theme 4: Alternative epochal theories that critique the Anthropocene's limitations, such as Capitalocene, Chthulucene, and the humanosphere rooted in Japanese philosophy. Theme 5: The key challenges that the political and legal fields face through democratic state boundaries and the rights of nature or nonhumans. Theme 6: The Anthropocene's relationship to traditional and indigenous knowledge systems with the potential these systems pose for conservation efforts within this era, or epoch.

Scholars term the human-based activities that mark the origin of the Anthropocene as the "great acceleration" and the "golden spike" (Koster 2020: 60). According to Holdaway *et al.* (2019), the Anthropocene Working Group recommended that the golden spike be formalised as the Global Strato-type Section Point (GSSP). And, in order to establish a possible unit within the International Chronostratigraphic Chart, the following key levels were suggested in a boundary evaluation of a geological time interval of the Anthropocene: the Pleistocene and Holocene crossover coinciding with agriculture increases, approximately 7000 BP; the Orbis spike around 1610 CE; the first industrial revolution in the 19th century; as well as the carbon spike in 1964 from nuclear bomb testing (Holdaway *et al.* 2019; Zalasiewicz *et al.* 2015). In a subsequent paper, Koster concurs that the International Commission on Stratigraphy's constituent body, the Anthropocene Working Group, established the base of the Anthropocene as the atomic bomb testing in the mid-20th century. That consensus on the optimal golden spike, however, is still to be ratified by the International Union of Geological Sciences.

The International Geosphere-Biosphere Programme (IGBP), based in Sweden, was established in 1986 (Seitzinger *et al*. 2015). The programme developed in the context of growing environmental concerns in the early twentieth century and is intertwined with the development of earth system science and conceptualisations of Anthropocene and planetary limitations. It was within the second phase of the programme that 'human actions' became an intrinsic component of the earth system framework and the Anthropocene gained notable

attention. By the publishing of *Earth System Science Overview – A Programme For Global Change,* in 1986, NASA's objective was to gain a complete understanding of the entire earth system on a global scale, by explaining the evolution of relational component parts. The programme investigated how these parts behave and are expected to evolve. Through investigating climate change, land use, terrestrial ecosystems, pollutants, and CO_2, it became evident that humans play a primary role as "agents of change" (Seitzinger *et al.* 2015: 5). Through current computer-aided modelling, Hughes observes that deforestation at the hands of the ancient Roman empire significantly contributed to drier lands and a climate increase around the Mediterranean Sea, which attributed to major erosion in the north of Africa (2010). This poses an alternative to the view that climate change is primarily advanced by modern industrial emissions.

Sloterdijk (2015: 328; 327) regards the human as a "meta-biological agent". It is not the physical biomass of the human race that needs attention, as the actual human race (past and present) could be a reducible biomass that resembles an insignificant and fleeting mould-covering on the surface of the earth. Rather, human actions and 'human agency' need investigation. Sloterdijk raises the concern that the Anthropocene is like a "synthetic-semantic virus" that escaped the isolated laboratory doors of geology to spread into everyday life and is well-hosted in macro-sociology and alarmist ecological literature. Another analogy, within the context of law, is that Anthropocene as a term implies a gesture, and the anthropos should be branded as the accountable agent.

Was the Anthropocene anticipated? Can the Anthropocene be traced in the literature that preceded this theory? Abbot Antonio Stoppani was the co-founder of the Italian Society of Geology. He published *Corso di geologia* in three volumes between 1871 and 1873. In these works, he proposed the term "anthropozoic era" as a geological period and "man as an absolutely new and divine element in earth history" (qtd in Hamilton and Grinevald 2015: 4; 3; 5; 9). "Civilised man" challenges the earth's greatest forces. This realisation then influenced George Perkins Marsh's updated book, *The Earth as Modified by Human Actions*, in 1874, updated from the previous edition published in 1864 and titled, *Man and Nature*. Marsh cites Stoppani in saying that the actions of humans impact the globe's surface significantly more superior than those of "brute animals". We encountered, thus, similar key terms a century before they gained much popularity across multiple disciplines. For Hamilton and Grinevald, the most significant force responsible for the Anthropocene is neither reason, mind, spirit, nor consciousness, but rather the agency of a modern western civilisation. "Technological man", as a current geological force, interferes with the immense cycles that govern the earth's course.

For earth-system science, the earth now again has consciousness because the Anthropocene labels the explosive human population and its industrial metabolism as an accelerating natural force. In that way, human cultural history is no longer emancipated from natural history; rather, we are dealing with two converged histories that perhaps enable a type of hybrid Earth: Nature containing 'human will', regardless of responsible or irresponsible actions.

Within Anthropocene debates, a modern dichotomy between nature and culture is challenged (Knauß 2018; Simangan 2020; Skoglund 2020). Hard and fast ontological assumptions, as a hallmark of modernism, are questioned in light of "the ecologically destructive character of industrial capitalist societies" (Machin 2019: 2). Because of this, Bruno Latour's (1993) purification and translation theory features prominently again (Blank-Gomel 2017; Coupaye 2018; Dew 2016; Faik, Thompson and Walsham 2019; Ferrarese 2016; Van Krieken 2002). In Latour's seminal book, *We Have Never Been Modern*, the theorist argues that modernity in its many forms approximates to the passage of time; its attributes include the next regime, acceleration, revolution, or rupture in time. Modernity vies with a stable and archaic past; 'moderns' are typically different and better than 'ancients' as modernity denotes a break in time and, for Latour, a modern outlook holds double sets of practices that require distinction for 'effectiveness'.

First, a set of 'translation practices' recognises fusions and networks between 'nature' and 'culture' as ontological hybrids, which create links between separated fields or disciplines, such as politics and environmental sciences. Second, a set of 'purification practices' is a purified conception of nonhuman 'nature' and a purified human 'culture' that results in two dichotomous zones of ontology – the modern critical stance. The second set establishes a divide between the natural world, the stable and predictable interests of society, and a "discourse that is independent of both reference and society" (Latour 1993: 11; 6). In his purification and translation model, the first dichotomy is between nature and culture (nonhumans and humans) as the work of purification. The second dichotomy is between the "work of purification" *and* the "work of translation". For Latour, the two simultaneous dichotomies form the bedrock of true modernity, and by attending to the purification and hybridisation, the modern ideals dissolve and make way for alternative realisations about the future, present and past. In illustrating modern enclosed thinking of distinct disciplines, Latour introduces the theory through an example of a newspaper article on the growing hole in the ozone layer. Seemingly unrelated practices of chemists, chief executive officers, heads of state, ecologists, and meteorologists are all entangled in responding to this phenomenon. He further states that the

"ozone hole is too social and too narrated to be truly natural". Latour likens subsequent hybridised efforts to retying the Gordian knot.

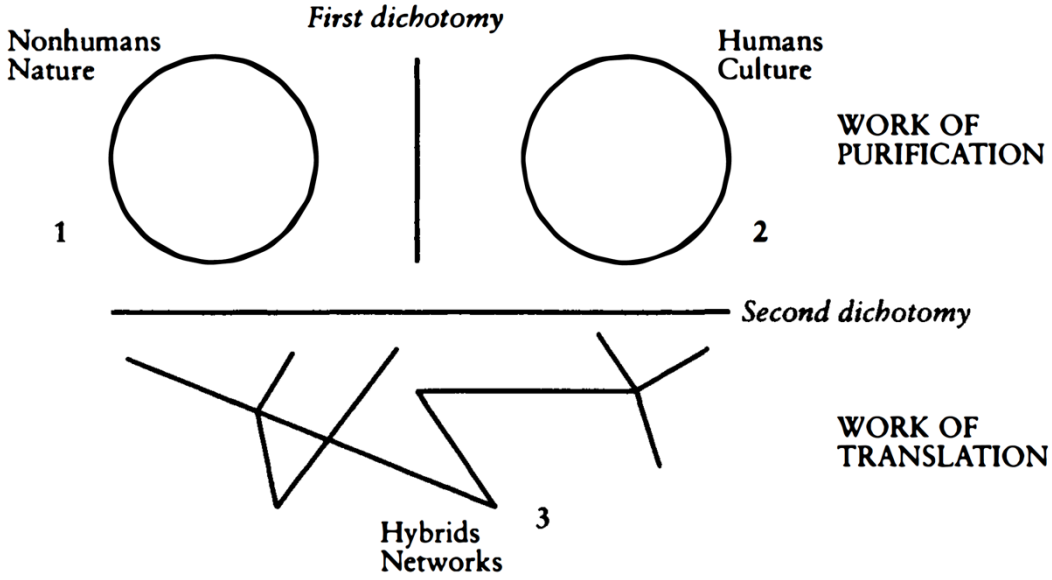


Figure 1.1 Purification and translation theory in *We Have Never Been Modern* (Bruno Latour 1993: 11).

There is a concern with efforts attempting to bridge the ontological gap that Latour presents. In addressing paradoxical positions in sociology, Van Krieken (2002: 256) asserts that scholars typically attempt either to embrace or synthesise sociological dichotomies. These efforts present ongoing indecision and recurring paradoxical contrasted thinking as opposed to real transformative thinking. Van Krieken cites Dawe in that the social sciences habitually contrast concepts such as "nature/society, reason/will, agency/structure, politics/science". He then proposes a synthesis that bridges the divide. The limitation of such an approach lies in the very nature of a bridge, which depends upon two separate entities that need to remain apart in order to perform its function. Thus, a conceptual dichotomy, as mentioned above, remains perfectly intact.

We find that Latour (1993: 94) discusses the position of anthropology in relation to modern dichotomies. He addresses anthropology's previous reluctance to study nature (in contrast to culture) as brought about by "establish(ing) no continuity between ethnoscience and scientific knowledge". For Chandler and Reid (2020: 488), furthermore, the 'indigenous' in anthropology is 'becoming' as opposed to 'belonging' to an underdeveloped history. They respond to Latour when stating that indigenous knowledge as a western construct is not pre-modern, but beyond modernity as a type of post- or after-modern. Through speculative

analytics, the authors propose to step away from an object of study towards regarding indigenous knowledge as a disciplinary starting point. The 'other' is no longer objectified or serves as the 'object' of knowledge but can become the 'subject' of fresh perspectives and, thus, the ontological position of the indigenous is reversed. This change is brought about by the repudiation of a modern rift between subjective 'culture' and objective 'nature'. For Chandler and Reid, theorists hold that indigenous methods enable them to transcend cultural framework analyses and, further to Latour's modern dichotomy, if the global ecological degradation associated with Anthropocene were brought about by humans, then the problematic construct of the human is what indigenous knowledge mobilises in counterpoint in that way, "becoming indigenous". The danger is, however, to view 'indigenous' as opposed to 'modern' as it is to view 'human' as opposed to 'earthbound'. The point is to recognise that the concepts co-exist in complex relations that cannot so clearly be separated anymore and perhaps could never have been separated, in that we have never truly been modern (Latour 1993).

Traces of John Dewey's great agitation with a dichotomised nature and the "human organism" is evident in Latour's purification and translation model (Torres Colón and Hobbs 2015: 147). This agitation with such a conceptual and historical dualism echoed throughout most of Dewey's career. We find that he commonly interchanged culture/nature with soul/matter and in his 1879 lecture on *Hegel's Philosophy of Spirit*, Dewey cites Hegel when he says that nature "is the presupposition, the basis of spirit, and spirit is the negation of nature". Similar to Kant's separation of the historical subject from the objective, Hegel divided his philosophy of 'spirit' into three areas, namely: the subjective, the objective and the absolute spirit. Dewey (2010: 122) continues…

> In strong opposition to this ancient view is the modern one which sets the soul over against nature. It makes a thing out of matter and another thing out of soul and then asks how it is possible that these two fixed and separate things should have any relation to each other. The question put is, by its very nature, insoluble, and thus we have from the persons who put this problem long dissertations upon the incomprehensibility, upon the mysteriousness of the relations of the soul to matter. The true solution is found when the problem is stated in its true terms. Matter is not one thing and soul another; it is the very nature of matter to come to itself out of its externality, and thus to feel itself, to become internal and ideal. Matter, in other words, is so far from being fixed, rigid opposition of soul that it must necessarily in its development manifest itself as soul. The soul, in other words, is the truth of matter; it is the real meaning of matter.

Dewey thus treats nature not as an object or thing but as the beginning and ending of matter, a temporal or temporary state of being, within which humans are embedded so as to be a part of and not distinguished from.

Further to this debate, we see vivid imaginings of a war-like conflict in James Lovelock's "Gaia hypothesis" (Mussgnug 2019: 117). This ancient Greek-referenced concept has inspired prominent theorists, such as Donna Haraway, Bruno Latour, and Isabella Stengers, for whom the earth as Gaia is a complex, evolving, and self-regulating system. Mussgnug (2019) advances that ecological thinking associated with the Anthropocene has ideological roots in German and British Romanticism, but within these debates, the ontological rift remains. Instead of viewing humans as forming part of an earth system, the earth is described as a system 'at war' with our species through a power struggle. For novelist William Golding, the anthropomorphic name, Gaia, is 'fighting back' with us as a "planetary super-agent" through an increasing malevolence as human actions push the earth system into imbalance (Mussgnug 2019: 119). Mussgnug explores, further, the conceptual 'animal' and human exceptionalism through the text of Jacques Derrida (Derrida and Wills 2002). In a conference essay, *The Animal That Therefore I Am*, Derrida points out that in the twenty-first century people are as dependent on animals as in the eighteenth century and that our utilisation (or exploitation) of animals expanded to an unmatched demographic level, as is evident in animal meat production, biomedical research, and continual advancements in genome editing for commercial markets. This form of animal industrialisation in laboratories and slaughterhouses is hidden from sight, with people only interacting with packaged meat or medical products in the marketplace. These two worlds cannot intersect, as the immense suffering will be unbearable and stands against our fundamental sense of a 'meaningful existence'. Derrida views this as an imagination failure: "Human exceptionalism – the belief that humans are essentially different from all other species" – advances unawareness and disregards 'biosocial kinship' (Mussgnug 2019: 122). Rooted in longstanding ideologies of the superior moral status of humans, this occlusive animal suffering prevents us from experiencing the reality of biosocial compassion and flourishing, spiritual peace, forgiveness, and reconciliation. The horror of exterminating specific species in abattoirs and genetic experimentation is likened to inhumane actions under the Nazi regime. Instead of relying on graphic depictions, attention is focused on pathos, while compassion needs to be re-experienced because of what has transpired in the past two centuries. Minor and marginalised voices prompt us to acknowledge our obligations towards life as a whole – to alter the very foundation of "the philosophical problematic of the animal" (Derrida and Wills 2002:395).

We observe discussions that fundamentally question ways of being (Montford 2020; Nandi 2020; Simangan 2020; Skoglund 2020). The Anthropocene pathed the way for various emerging ontological perspectives, and Koons (2008) emphasises a process whereby a systemic earth vision expresses nature and man's interconnection. Like all animate and inanimate matter

on this planet, the physical composition of human beings comprises the same elements as the 'originating stardust', and that matter on earth is not only made from the same elements but is "intimately related to a dance of interactions" (Koons 2008: 288). As argued in metaphysics, the type of matter from which life is formed has less significance than the process of matter formation; we have an ontology of process.

Nandi (2020: 131; 133) looks to a 'virus ontology' with human agency regarded as a viral agency. Within the context of the recent COVID-19 pandemic, Nandi offers a paper on a philosophical review that states that SARS-CoV-2 provides an anticipatory marker of an emerging ontology that necessitates anthropocentrism, and a different approach to being. For Nandi, a virus ontology begets virology. But how is the Anthropocene linked to an anthropologic virus ontology? Derrida's philosophy of 'trace' is referenced when stating that the virus' self-presence lacks immediacy. It can only present immediacy by means of the host's body that it infects, rendering a virus a "pure trace". The shift in the paradigm of being that remains invisible to the human gaze sets the stage for global contemporary culture and political transformation. The virus cannot be pinpointed but rather in the space between; therefore, "the virus is space". We look beyond pathology towards the socioeconomic, political and cultural significance of the virus as a metaphor. In a similar way, capital flows within the global market. Information technology, computerisation, global governing systems, a failure of communism, the internet and online social networking, all share a common fundamental operation in that knowledge and information are continually transmitted without a starting point or a defined end. For Nandi, the viral agency enables such governing, social and economic operations and "Anthropocene […] follows the function of the virus". Previous human-created systems have lost their centrality to the human subject of the Anthropocene by focusing on a 'viral' flow.

To address the concern of animal industrialisation, Montford (2020) sees the Anthropocene conception as challenging an order of life. It renders urgent the realignment of legal ontologies in consumer habits and animal-human relationships to address a deep-rooted ontological problem that lies within the notion of 'real food' as animal-based. Montford offers a literary discussion under food law where a series of recent lawsuits depicts efforts from the private sector to retain exclusive production of animal dairy and agriculture. We find that established law reflects the fake versus real food perspective, whereby normative orders of consumption are reproduced. These perspectives stem from a colonial legacy according to which territory is a passively ownable resource. Montford proposes an alternative order to life through indigenous thinking, which recognises that, in land, there is an ontological framework that enables relationship insights. From this vantage point of the material, all elements,

including people, form part of the land. The author cites a member of the *Royal Commission on Aboriginal Peoples*, who said land contains life and is a giver of sustaining life. 'Mother Earth' was deeply revered and respected, and there was a common relationship between people, animals, plants, water, wind, rocks and the land. This common relationship meant that all elements possessed spirit. For Montford (2020: 55; 56), to be imbued with such beliefs is to hold the notion that the land has both a physical and spiritual presence, as evident in the following extract:

> For the Blackfoot people the Creator entrusted them as stewards over their land, responsible for the wellbeing of all their relations. Notions of stewardship and responsibility, therefore, do not inevitably translate into a worldview in which land is owned or seen as a resource to be dominated.
>
> …
>
> This duty-based responsibility is not premised on the control of territory; rather, it is consistent with a metaphysical framework of interrelatedness.

This view opposes an anthropocentric capitalism where nature is regarded as a raw material and is uncultivated and untamed. A non-speciesist activism, in contrast, is non-discriminatory, does not recognise a hierarchy of species, and imagines the end of being human as "ahuman" (MacCormack qtd in Murphy 2021: 93). And yet for Anna L. Tsing, the unease is more with 'man' than 'human' (Haraway *et al.* 2016). Tsing advances that 'man' is a conceptualisation from enlightenment thought that was mobilised by modernisation and state regulation, and 'man', therefore, is a destructive force that, unrealistically, is expected to control nature.

A cultural critique lies in the "amodern" (Davidson 2015: 298; 303). Pre-, anti-, or post-modern ideals are questioned in transformative politics. An ontological inter-agency is enabled through the political differentiation and distribution of the agency of human-other-than-human wholes. Davidson holds that humanity's fear of an unconcerned universe has propelled modern emancipation through our dominance – seizing control over the natural – and that amodern strategies must confront mortal anxiety in order to live in the Anthropocene era without invoking an overshadowing authority: it is a case of avoiding the "hope of a human *home* beyond Earth".

Within modern dichotomous thinking lies the problematic of othering. A decolonial perspective utilises an ontology of "paradigm other" (De Figueiredo, Marquesan and Imas 2020: 409). For these authors, paradigm other is summarised as: 1. Anthropocene denotes a

critical and irreversible moment which negates diverse sustainable development; 2. Anthropocene calls into question the division in modern thinking of nature and humans in order to overcome a dualist ontology; 3. Domination and control of nature in modern science are challenged by a reconsideration of ontologies that underpin environmental ethics of an inclusive sustainable order; 4. A monolithic conception of Anthropocene should be set against socio-political problems to avoid dependence upon colonial power relations; 5. Anthropocene depicts the geography of consumption and extractivism in a way that in equitable ways encourages affluent countries and developing countries share accountability. Because of these considerations, the global north as theory-maker could be challenged by the global south on sustainable de-growth and circular economies through a collapsing of the 'other' (de Figueiredo, Marquesan and Imas 2020).

Concerns with the conceptual limitations of the Anthropocene have affected alternative epochal theories. Capitalocene recognises capitalism as the primary driver of ecological degradation as opposed to common humanity (Moore 2016). The Capitalocene theory emerged in 2014 with the purpose of connecting economic impacts to ecology and arguing that liberal capitalist economic growth lies behind planetary-scale destruction – a system utilising unlimited and cost-effective natural resources (Marcum 2021). It is Adelman (2021: 171) who proposes a joint term, "Anthropocene-Capitalocene", for the purpose of re-imagining human rights within climate justice. Anthropocene-Capitalocene aims to upend onto-epistemologies from which a eurocentric and liberal human-rights culture emerged. Adelman provides an example between 1990 and 2015 of over 50% of carbon dioxide emissions traceable to 1% of the world's wealthiest citizens, the 1% least affected by harmful climate change. His point is that Anthropocene-Capitalocene's spatialities and ecological thoughts are obliged to regard the interconnection of everything – that a species' wellbeing relies upon the wellbeing of all species – and that this is only possible through the widening of human rights.

It is, however, also held that the implementation of development policies for underdeveloped regions coincides with environmental degeneration on a global scale (de Figueiredo, Marquesan and Imas 2020). The economic growth of affluent countries gained rapidity around 1945 through electronic communications developments, the transportation of goods, a significant reduction in the cost of international travel, and economic globalisation. This period is said to have shaped consumerist lifestyle trends that resemble the synergetic stressors associated with a mass extinction. De Figueiredo, Marquesan and Imas maintain that the term 'great acceleration' refers to cultural interconnectedness, and also to imposing development agendas on less developed countries, and that this has exacerbated an economic

imbalance. By 2010, for instance, the *Organisation for Economic Co-operation and Development* (OECD) countries in North America, Europe and Australia accounted for a global gross domestic product (GDP) of 74%, while only 18% was reserved for the rest of the world's population. Even though the major share of consumption remains in OECD countries, there is a significant shift from the OECD to the five emerging economies of Brazil, Russia, India, China, and South Africa (BRICS). In stressing concerns over development, the authors propose that the term "Developmentocene" coexist with other propositions such as 'Plantationocene', 'Capitalocene' and 'Anglocene' (De Figueiredo, Marquesan and Imas 2020: 410).

The theorist, Donna Haraway, is troubled by the Anthropocene. Haraway, quoted in Haraway *et al.* (2016: 538), compares the current interpretation of the Anthropocene to "ecosystem services", authored by Jane Lubchenco in 1997. Even though Lubchenco's commitment was to visible marine conservation and the earth's ruin, her term ecosystem services, was incorporated into the framework of the *Ecological Society of America* in explaining the valuation of all living worlds on the earth. Ecosystem services thus became an invaluable term for monetising all things. Intending to fracture the nature and culture spheres, the term converted all matter into "circuits of monetarization and accounting" (Haraway *et al.* 2016: 538). Herein lies Haraway's problem. Just as an emphasis on 'anthropos' pushes aside other lifeforms and solidifies our species' dominance; ecosystem services now characterise the earth system as an accounting system that has evolved into an instrument for the planet's capitalisation. Despite the limitations of terminology, Haraway acknowledges that at least Anthropocene brings to the fore the destruction from human activities, but that multiple terms are needed (Haraway *et al.* 2016). She states, "right now, the earth is full of refugees, human and not, without refuge" (Haraway 2015: 160).

Haraway thus proposes a name specifically for the "dynamic ongoing sym-chthonic forces and powers of which people are a part". She visualises that an abundant multispecies collective is only possible through collaboration, committed work and play between earth's occupants. More than one term (the Anthropocene) is warranted, such as the existing 'Plantationocene' and 'Capitalocene'. The Anthropocene needs to be as brief as possible and in her concern over what would follow, Haraway proposes the term "Chthulucene – past, present, and to come". She says this should not be confused with H. P. Lovecraft's Cthulu monster (see spelling). Chthulucene is, rather, a diverse telluric existence of "tentacular powers and forces", which is a collective visualisation of an era (or a geological epoch) that is characterised by having multiple connections and relations between all lifeforms, including

humans. Similar 'entities' have already been termed Pachamama, Gaia, A'akuluujjusi, and Naga, to name a few.

Haraway (2015: 160; 161) continues:

> My Chthulucene, even burdened with its problematic Greek-ish tendrils, entangles myriad temporalities and spatialities and myriad intra-active entities-in-assemblages – including the more-than-human, other-than-human, inhuman, and human-as-humus […]. It matters which stories tell stories, which concepts think concepts. Mathematically, visually, and narratively, it matters which figures figure figures, which systems systematize systems. All the thousand names are too big and too small; all the stories are too big and too small. As Jim Clifford taught me, we need stories (and theories) that are just big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections.

Within Chthulucene, earth's lifeforms can live and die harmoniously as mortals through assemblages to restore refuges that recover, reconnect and recompose the biological, cultural, political, and technological. Within these efforts, there must be a grieving for the forever lost. For Haraway, "making kin" has great challenges but is the most pressing towards a multispecies ecojustice that can welcome a diversity of people. Drawing on her experience in feminism, she calls for a "leadership in imagination, theory, and action to unravel the ties of both genealogy and kin, and kin and species". Making kin is about making persons, which does not automatically mean as humans or individuals and fundamentally, all lifeforms on earth are kin. While kin, for Haraway, can relate to assembling "kinds-of-assemblages", which are about the relations of more than one species.

Within Japanese philosophy, we encounter a "humanosphere" that resembles the Anthropocene. Together with colleagues in 2007, Noboru Ishikawa began to work on the term humanosphere in relation to sustainability in Asia and Africa, prior to becoming aware of growing Anthropocene debates taking place in the West. The scholars visualise three spatial temporalities at a global scale, namely, the 'geosphere', the 'biosphere', and the 'humanosphere'. The geosphere emerged approximately 4.5 billion years ago, the biosphere approximately 4 billion years ago and the humanosphere roughly 200 000 years ago, the last of which has become the principal agency of change since the dawn of agriculture and industrialisation. For Ishikawa, the humanosphere has a similarity to the Anthropocene. However, humanosphere has a greater sensitivity to the fact that the planet's nature being non-unified and that the workings of the other spheres underpin the humanosphere. So, humanosphere conceptualisations incorporate the geosphere and the biosphere as well as human society. Ishikawa explains that the geosphere emerged first, then the biosphere, followed by the humanosphere in a more limited sense. This sequence is crucial for Ishikawa's theory,

as the existence of human society depends on the foregoing spheres. The humanosphere's structure, consequently, relies on factors such as water and material flows, biological agency in the oceans, rivers and terrestrial environments, including their interactive complexity. Ishikawa's research focuses on tropical zones "where material flows and biomass regeneration are most active", which enable multispecies existence that includes humans, apart from "land-based, productivity-driven capitalism" (Haraway *et al.* 2016: 542). We move from production focus to livelihood continuation. Positioned within an African and Asian humanosphere are societies that work towards their own "paths of endogenous development" instead of an increased income per capita, and this was typical of the majority of human societies until recent centuries. The humanosphere is neither a surface layer nor two-dimensional; it is not only a cultivating surface. Other agents are included that support the subsistence of multispecies sustainability. Ishikawa expresses that this visualisation of a 'sphere' is perhaps influenced by the Japanese "shinra bansho" that translates to "all things in the universe" or "all the creation between heaven and earth", of which humans form a limited part of the whole (Haraway *et al.* 2016: 543). Such a visualisation has philosophical importance; it contradicts the established divisions in western thought, in which entanglement is considered to encompass the whole.

We see here, within the Anthropocene debate, a critique of economic and political structures. How, then, does the problem of order through the proposed epochal theories impact legal representation? Contrasted thinking manifested in legal systems, more specifically the moral value of nature, troubles Koons (2008). There seems to be a gap between representation in constitutions and what is now scientifically known. The moral community has traditionally excluded nature for a wide range of reasons. Moral reasoning, consciousness, and souls were not attributed to animals, which were regarded as insentient. At present, however, theories are arising from the 'scientific method' that urge the re-interpretation of nature within a moral community. Koons (2008: 291; 294) acknowledges two influential principles of physics that intersect ethics, philosophy and science: namely, the interconnectedness of process ontology that we discussed earlier; and the principle of the "whole-part", which acknowledges that the parts in the structure of the universe have a relationship to the whole. There are, however, those who warn that this approach sacrifices individual good for that of the community. Koons, nonetheless, regards moral consideration as a matter of truth, in that "truth claims may be framed in terms of the 'moral considerableness' of natural systems, species, and individuals – humans and other-than-human – present and future". He proposes an obligatory normative shift from human-based to earth-based morality because existing human-centred approaches to morality, law and economics have a catastrophic impact on the planet.

Brown (2018), too, discusses nonhuman nature's democratic representation. We find that environmental theory often raises the question of who represents the interests of nature (Kopnina and Gjerris 2015). Who advocates for nature? Hobbes and Latour advance a constructivist theory where representation is a process that modifies itself according to what it represents (Brown 2018). Latour views this as involving translation and mediation between representatives that contain human and nonhuman hybrid associations. Hobbes advances that if a person or object is incapable of authorising its own representative, another person may authorise such and represent it "by fiction" (Brown 2018: 43; Hobbes and Missner 2016). Cases where nonhumans are legally represented usually depend on humans fulfilling a role as nature's 'trustee'. This typically relies on scientific research, empathetic comprehension, moral intuition, or indigenous culture. Brown (2018: 32) cites Goodwin, who states that humans can represent nonhumans in the best way by "discerning and internalising their interests and then acting with those interests in mind". Proxy-representatives can comprise experts who are tasked with evaluating the circumstances that will enable specified animals or habitats to flourish. In this way, accounts of stewardship over nature resemble the political inclusion of ethnic groups, women, and other socially excluded groups. Existing democratic institutions, however, tend to prioritise legal representation for short-term concerns and personal agendas as opposed to the representation of nature, future generations, or peoples across political borders.

Democratic boundaries are challenged within a universalist Anthropocene (Machin 2019: 2). A solitary sovereign state faces difficulty because Anthropocene, referring to a combined human race, surpasses political borders. Machin is concerned that state borders serve to exclude those mostly impacted by the Anthropocene through a continuation of existing social and political conventions, and yet, "in calling forth a globalised species identity, the Anthropocene seems to render the boundaries of the *demos* arbitrary and redundant". Current-day social scientists argue for the politicisation of the Anthropocene, concerned with the portrayal of an "undifferentiated global identity". By focusing on *demos* boundaries, the *anthropos* requires a continual reconsideration of exclusion, as in nation-bound democratic politics. Machin admits that it would be difficult for governments to unite on such matters, but that an immediate value lies in asking difficult questions.

How then might a legal system include previously excluded marginalised people, lifeforms, and nonhumans? Knauß (2018) reviews the lexicon of rights within agricultural and environmental ethics in two cases that explore nature's rights through the indigenous concept of *Pachamama*, which was introduced in the Ecuadorian constitution in 2008. Rights of nature are employed to address environmental ethics, which are increasingly utilised to undertake

stewardship over the earth. Rights of nature simultaneously pierce the 'double internality' described as "how capitalism works through nature and how nature works through capitalism" (Knauß 2018: 704; Moore 2015). The allocation of subjective rights could be seen as a prominent recognition of morality and judicial significance, framed within western law as being a 'legal entity' and having 'moral personality' (Knauß 2018). Despite the vocabulary of individual rights being dependent upon modern subjectivity and constitutionalism, rights of nature are regarded as a trans-cultural tool rationalising human stewardship in the Anthropocene. In an attempt to transcend the human interests of modernity, like Chandler and Reid (2020), Knauß states that indigenous worldviews enable increasingly recognised conceptualisations of the earth *and* a non-linear hybridised history, as presented by Latour (1993).

Indigenous knowledge offers the potential for institutional resilience. Lugo-Morin (2021) presents a case study that explores the values, beliefs, and traditions of indigenous peoples as a system towards institutional resilience. Indigenous societies are regarded as temporarily stable as opposed to the rapidly advancing western societies. For instance, while facing the COVID-19 pandemic, indigenous societies reconfigured food systems, which have proven to be resistant to a potential health crisis. It is estimated that 476 million indigenous people exist in more than 90 countries, and Lugo-Morin (2021: 2) adopts the following working definition for indigenous peoples:

> Indigenous communities, people, and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies currently prevailing on those territories, or elements of them.

Indigenous peoples construct worldviews from extensive observation of their surrounding environments. Rooted in a framework of indigenous knowledge systems, public policy implementation for Lugo-Morin has an array of possibilities for threatened territories. The close relationship between people and nature, in such a case, created a process of interdependence that is now regarded as socio-ecological. There are two interacting components: the first is that human beings are capable of values, beliefs, traditions and institutions, and the second is that nature is either biotic or abiotic. So, within the context of great environmental degradation, indigenous peoples, as the first inhabitants of a given territory, have 'configuring attributes', which can be seen through 'historical persistence'. One has to add that this would be prior to colonial marginalisation or even cases of colonial annihilation. We find that the individual is part of the collective community, which enables indigenous

cultural reproduction and identity. A case in point is that of an ancestral food system, as mentioned above. The food system provides insight into values, beliefs and traditions that create 'informal institutions' and is seen as the foundation through which indigenous people confront challenges. Thus, indigenous peoples play a defining role in the current globalised society by way of resilience, historical persistence and informal institutions (Lugo-Morin 2021).

Indigenous knowledge, furthermore, facilitates reflexive re-localisation (Leduc and Crate 2013). In this way, indigenous knowledge can respond to environmental concerns by connecting to local communities through a sensitised understanding and a reflexive re-localisation may enable the cultural transformation of a globalised system towards a more sustainable future. The debate is that a centralisation of systems moves towards regional self-sufficiency, such as developing renewable energy and sourcing local foods. A re-localised shift requires rethinking social relationships by means of community living, that is, physically reconnecting to available resources for survival as well as to surrounding life. It is said that place-based reflexivity may prove fundamental to countering a trajectory towards social, economic and environmental ruin.

The ethnographic fieldwork among Viliui Sakha breeders of cattle and horses based in north-eastern Siberia exemplifies a common theme in "too much technika" when referring to possible causes for climate change. An anonymous Sakha elder is quoted in Leduc and Crate (2013: 139; 140) saying:

> They go into the cosmos too much and are mixing up the sky – and from too many rockets and atomic bombs – when I was young, they didn't go into the cosmos – and we knew the weather, it rained when it was supposed to – now the climate is all mixed up.

In a research study on fossil-fuel consumer culture related to indigenous activism, the same critical voices in Nunavut, Canada, stated that "the planes coming from Europe to Canada fly over our area and it brings pollution to our area". One finds typically that, as climate research shows such place-focused expressions bring about an alternative to a globalised ideal. Leduc and Crate quote Arturo Escobar, an anthropologist who found that place plays a fundamental role in well-being. The authors continue that, even though downplayed by consumer societies, 'place' has societal importance if we mean an experience of a specific location through "groundedness" and through connecting to daily life with a sense of boundaries, even though the groundedness may seem unstable and the boundaries penetrable. For Keith Basso (1996), places offer wisdom and places enable worldly orientation. With reference to sustainability, place-based knowledge requires an integration of social equity, the economy and the

environment. Even though the terms may differ, place-based expressions often refer to the need to balance complex realities. It is such integration coupled with deeming all lifeforms as having worth that might lead to a "sustainable global response" (Leduc and Crate 2013: 140).

In relation to place-based groundedness, 'insider research' is effective. In the wake of objectified outsider perspectives in anthropology, a Māori scholar, Linda Tuhiwai Smith, researching Māori communities, offers an insider perspective. Termed "insider research", the methodology acknowledges that an insider researcher (linked to the community) is bound to experience the day-to-day vicissitudes of community life. Though most researchers do not necessarily share this same direct vantage point in relation to research dealing with environmental concerns, most are 'insiders' to a specific "technika culture" and often, at least to some degree, share the environment of concern within a contextualised study (Leduc and Crate 2013: 141).

At this point, the 'island figure' offers opportunities for the Anthropocene debate in that indigenous islanders and an island spatiality are connected to groundedness within bounds. If humans, in consequence, are required to adopt a more responsive and humbler role to learn better sense in harmony with the planet, there are relevant examples of indigenous knowledge that rely on nature's signs as 'bioindicators', as termed by Chandler and Pugh (2021). The height at which a bird species builds its nest indicates the rain season in Bolivia. Earthquakes and other natural disasters are sensed by animals before humans and observing the behaviour of these species can even assist in disaster warnings. We see that indigeneity regards everything as connected, offers an opportunity to sit at the foot of nature and, if respected, can form a generous part of an entire community. Furthermore, indigenous islanders are often characterised in relation to their coast. The ocean features prominently in their everyday lives through the tides, rhythms, and the continuous sound of breaking waves over reefs, likened to the contracting and expanding heartbeat of life. For instance, navigators can recognise specific islands beyond the horizon through cloud colouring and formation. Certain fish and bird species can sense the distance from land. Thus, we could learn from such island-life correlations. In this way, indigenous islanders often provide an inclusive conception that privileges not only people but other life forms, such as animals, trees, *and* the oceans (Chandler and Pugh 2021). For Larjosto (2020), island identity is characterised by smallness, boundedness, isolation, and pursuing spatial sensitivity. Boundless human expansion that enables global-scale environmental damage directly impacts small islands (less than 2 000km^2) as isolated ecosystems – both as man-made and as found geographical areas. Restrained living and resources form an integral part of island identity. Within this context of the Anthropocene, as

Larjosto sees it, small island spatiality offers opportunities for research on the complexity of human and nature's inter-relational systems in that physical boundaries mean small islands have no periphery, no room for expansion or relocation of industrial functions or societies. Impacts on ecosystems are proportionately major. The island exemplifies impoverished epistemic and ontological logics, which increasingly support the need to change approaches towards political transformation within Anthropocene discussions. Previously on the philosophical outskirts, the figure of the island is now at the heart of international debates and, beyond alarm-raising literature, recent studies are adopting islands as "powerful symbols of hope" (Chandler and Pugh 2021: 211).

In light of the foregoing consideration of Anthropocene debates, this study, which investigates endangered ocean-based turtles of the KwaZulu-Natal coast, adopts a theoretical frame that incorporates traditional indigenous knowledge with coastal ecological preservation. The following two approaches are integrated: first, a "traditional ecological knowledge" (TEK) is defined as "knowledge, practice, and belief, evolving by adaptive processes and handed down through generations by cultural transmission about the relationship of living beings, including humans, with one another and with their environment" (Wilder *et al*. 2016: 499). We find that TEK has assisted conservation planning, habitat protection and, pertinently, endangered marine life species protection, as with the Pacific herring (*Clupea pallasi*), bowhead whale (*Balaena mysticetus*), and green sea turtle (*Chelonia mydas*). Secondly, "coastal human ecology" (CHE) applies indigenous knowledge systems to partner natural scientists and local communities in contemporary conservation efforts (Aswani 2019: 223).

Furthermore, in 2022, the *Association for Commonwealth Literature and Language Studies* (ACLALS) adopted the conference theme of 'ruptured commons'. In a time of unsustainable ways, rupture raises important questions about the notion of consensus in politics, social and environmental matters around common truths and realities. Guided by these and related realisations, then, what is the current state of rupture for the east coast turtle?

Chapter 2: The case of the east coast sea turtle

The chapter turns from a wider consideration of the Anthropocene debate to the specific case of the endangered sea turtle on the Indian Ocean coast of KwaZulu-Natal. With our Anthropocenic age characterised by human beings upscaled to a geological force upon the health of the planet earth, a consequence for the sea turtle, as with other nonhuman species, is endangerment. I shall initially describe the several sea turtle species on the coast. This is because an eye for close description is a necessary component of my paintings and the practice-based contribution of this study.

After my description of the turtles, I shall consider aspects of endangerment as outlined both by experts in the field and by the more anecdotal observations and opinions of guides whose task it is to conserve the natural environment of the coast. (The fact that the guides are drawn mostly from surrounding communities has sensitised me to the 'community-aspects' of the Anthropocene debate, aspects with which I concluded the previous chapter.) Such a method of approach – expert opinion embodied in the format of a literature review together with qualitative interviews – leads to the chapter ending on several recommendations to counter the endangerment of the KwaZulu-Natal sea turtle. (Details of data collection are outlined as an endnote to this chapter.)

Five sea turtle species exist in the southern African region: the green, loggerhead, hawksbill, leatherback, and olive ridley (Hughes 1973; Le Gouvello *et al.* 2020; Nel *et al.* 2013). The loggerhead and leatherback turtles typically have rookeries on the northern east coast of South Africa, which overlaps with Mozambique. Nesting higher up the east African coast, the green and the hawksbill forage on the KZN coastal reefs, and the olive ridley is regarded as a vagrant species. The additional flatback sea turtle is found in the northern region of Australia, the Gulf of Carpentaria, and Kemp's ridley sea turtle primarily in the Gulf of Mexico (Robinson and Paladino 2013). Sea turtles are generally migratory across the oceans and can return to the same beaches to nest and, in the case of loggerheads, even remarkably close to where they were born. A female digs a nest that can be greater than 50cm deep and discharges roughly 100 white round eggs that resemble table tennis balls before she closes the nest with her hind flippers and returns to the water. Females nest and multiply in a season, and an estimated one in a thousand hatchlings is expected to reach maturity. The anatomical structure of these species is commonly accepted within the scientific literature with some variations in proposed subpopulations, and we find that the characteristics, distribution and behaviour of these five species vary significantly as vulnerable land-interacting marine life

(Choi *et al.* 2020; Hughes 1973; Ng *et al.* 2016; Van der Elst 2014). I shall present a brief outline of such characteristics for each species in the following sequence: 1, where the common English name is derived from; 2, the IUCN Red List classification; 3, the visual characteristics of the snout, head scales, neck, limbs, carapace patterns and colouration; 4, the curved carapace length; and, lastly, 5, the diet and distribution range together with nesting preference and behaviour.

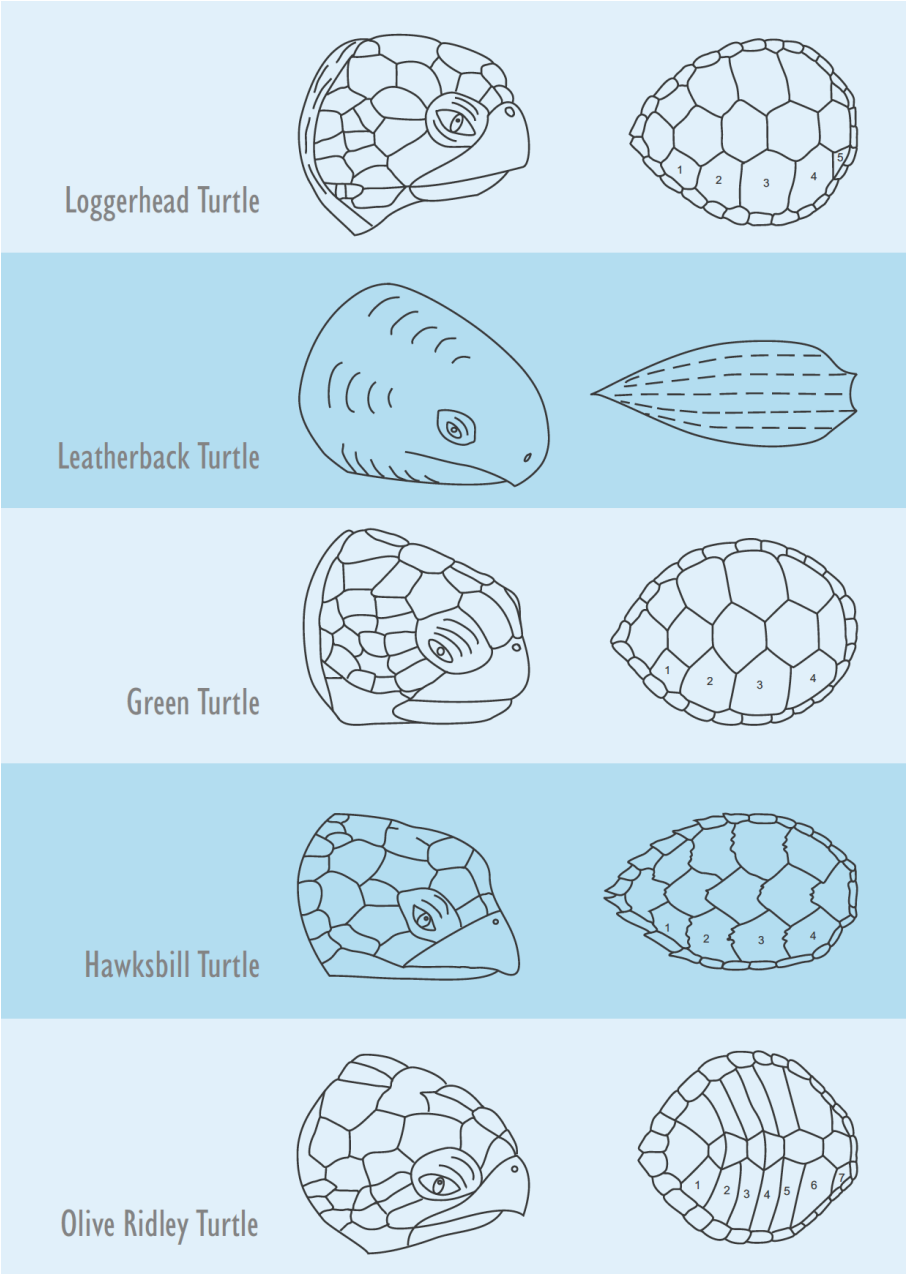


Figure 2.1 Sea turtle carapace and beak structure in *Ugu Lwethu – Our Coast: A Profile of Coastal KwaZulu-Natal* (Rudy van der Elst 2014: 60).

Green sea turtle

The common English name for *Chelonia mydas* is the green sea turtle. The reference to 'green' is because of the colour of a fat layer under the carapace. Green turtles are listed as endangered on the IUCN Red List. They have the following visual characteristics: the snout is short, with no cusps and not hooked (Hughes 1973; Wyneken 2001). The jaw has a smooth edge and the cutting edges of a horny sheath are serrated. On the head, the following patterns in the scales are visible: the prefrontal scales are in a single pair and elongated. From my observations, I have likened this rounded top front of the head to the design of the original Volkswagen Beetle bonnet. The frontoparietal scale is large, with two parietal scales. The supraocular scale is somewhat large and the postocular scales are almost always a set of four on each side of the head. In comparison to a loggerhead, the head size seems smaller than the body of a fully grown adult. On the forelimbs are scales that are moderately enlarged following the anterior edge, and further back are a number of rows of scales. The posterior edge has a range of enlarged scales. Each of the front and back limbs has one claw. A green turtle hatchling, however, has two. Males tend to have longer and more curved claws on the front flippers and a longer tail. The ovoid carapace in an adult is smooth and has a raised ridge in a juvenile, and the outer edge becomes less serrated as it increases in size. The carapace has four lateral scales. The dorsal shields are juxtaposed, with the front end of the plastron ending abruptly. There are significant colour changes from a hatchling to an adult green turtle. The colour of the carapace of a hatchling is mostly dark grey or brown, with a lighter bronze along the spine. The outer edge of the carapace is white. The plastron underneath is also white. The top and sides of the head and neck are dark, with a sudden shift to white underneath the jaw and throat. The top of the limbs is a similar dark colour with white along the edge and underneath, while towards the middle, the colour changes back to a grey or brown. The colouration of adult green turtles receives significant attention in the literature, so much so that carapace colouration was regarded as the foundation for the classification of a sub-species. The most common colouration of the top of the carapace is an overall pale red-brown that has yellow ochre and dark brown streaks, spreading outward from the middle rear of the shields. The top of the limbs has similar rich colours, and the plastron mostly ranges from off white to a light yellow, with an olive green underneath the limbs. The curved carapace length of a hatchling is roughly between 45 and 50mm long. For an adult, this tends to range between 80 and 130cm.

The diet of a green turtle changes dramatically throughout its life cycle. Juveniles are carnivores but adopt a herbivorous diet as they mature. They then mostly feed on seagrasses such as *Cymodocea ciliate* and *Zostera* sp. in sheltered undersea vegetation patches. The green sea turtle is the most common sea turtle species in the West Indian Ocean and nests on the Madagascar and East African coasts, as well as on remote islands. It is probable that this species used to nest lower on the south-east coast of Africa, but that human persecution depleted its numbers. On certain islands, nesting occurs throughout the year and reaches a peak during midsummer. A smooth or coarse sand texture does not seem to impact very much on nesting behaviour, and during low tides, green turtle females are able to use their front flippers to climb over exposed reefs to reach drier and elevated dunes to dig their nests (Hughes 1973; Robinson and Paladino 2013; Wilkinson *et al.* 2022).

Hawksbill sea turtle

The name of the hawksbill sea turtle (*Eretmochelys imbricata*) is derived from its hawk-like snout. Hawksbills are listed on the IUCN Red List as critically endangered, with decreasing numbers. The earlier mentioned snout is compressed at the sides, while being elongated with a pulled-out beak that does not have a hooked shape or cusps (Hughes 1973; Wyneken 2001). The edges of the jaw are smooth. The scales on the head have these patterns: the prefrontal scales are in two pairs but not elongated as with green turtles. The frontoparietal scale is large and semi-divided anteriorly. There are two parietal scales, which are transverse in juveniles and significantly elongated in adults. The supraocular scale is large, and the postocular scales are three in a pair. The front limbs have averagely enlarged scales following the anterior edge. Behind these, there are a number of scales in rows. The posterior edge contains a sequence of enlarged scales. The front and back limbs contain two claws. Similar to the other species, the tail of the female is shorter than that of the male. In adults, the carapace is oval and has a median ridge. On the carapace, the nape of the neck is short. The outer edge is serrated in juveniles and significantly more so in adults. This is another key characteristic of the hawksbill. The carapace has four lateral scales. Hatchlings have juxtaposed dorsal shields, but they begin to overlap backwards as they reach maturity. The plastron is rounded towards the front with two prominent keels on the left and right side. The carapace size for hatchlings ranges between 38 and 43mm, and the curved carapace length of an adult usually ranges between 63 and 73cm, even though a female hawksbill studied at the Durban aquarium reached a curved carapace length of 90cm. The most common colouration of juveniles is a dark brown carapace spotted with streaks and patches of gold and light brown. The carapace of adults and sub-adults tends to be darker, even

black containing yellow daubs. The plastron tends to be a consistent pale red-brown. The head and limbs are very deep brown, even black, with light brown or pale yellow outlining the outer edges of the individual scales. The visual feel, thus, is almost black-and-white chequered.

The diet of the hawksbill consists of invertebrates, such as jellyfish and sea sponges. The hawksbill exists in the western Atlantic Ocean and the western Indian Ocean regions, but also in other areas, mostly in the higher water temperatures around the equator. In the western Atlantic Ocean, scientific studies of hawksbill turtles were conducted in Brazil, the US Virgin Islands, and eastern Venezuela (Balladares, Gonzalez and Rodriguez 2020; Matley *et al*. 2020; Oliveira *et al*. 2020). In the western Indian Ocean, they nest primarily on the Seychelles Islands with the highest distribution range of the hawksbill in western and northern Madagascar, where they are at times found to share nesting beaches with green turtles. In these areas, they are, however, mostly exploited for their attractive tortoiseshell patterned carapace as decorative jewellery. Hawksbills are also found on the northern coast of Mozambique and then lower down on the South African coast. They very seldom nest on southern African beaches; thus, there is a data deficiency on their nesting behaviour in this region. There is, however, a scientific record of hawksbills nesting in north-eastern Brazil on sand beaches (isolated between cliffs) consisting of a fine grain and a normal tidal range of 2m (Hughes 1973; Oliveira *et al*. 2020; Van der Elst 2014).

Olive ridley sea turtle

The olive ridley sea turtle (*Lepidochelys olivacea*) receives its name from its olive-coloured carapace. On the IUCN Red List, it is classified as vulnerable with decreasing numbers. The following visual characteristics are attributed to the species: the snout is somewhat short, uncompressed, and marginally hooked to a single point (Hughes 1973; Wyneken 2001). The jaw edge is smooth, and the prefrontal scales on the head are in two pairs. The frontoparietal scale is large, wider than long and partially divided. The parietal scales are extended and typically they have three postocular scales on both sides of the head. On each flipper, the olive ridley has two claws, and the males also have a longer tail. Their carapace is oval-shaped with a similar width to length; a distinctive visual characteristic of the carapace for me is that, when viewed from the front, the sides descend acutely, which then gradually curve outward towards the far end of both sides and rear. The nuchal shield is short, and the marginal shields are somewhat serrated in juveniles but smooth out as they mature. This species has six or more vertebral scutes and lateral scutes on each side, with four (occasionally three) inframarginal scutes on both sides of the plastron that contain a distinctive Rathke's pore on each of these.

Juveniles have two prominent keels on the plastron that usually become significantly less visible as they reach maturity. The colouration of hatchlings is typically olive black with lighter specks underneath. As they mature, from a carapace length of 10cm, the overall colouring grows lighter. A mature olive ridley has a simple olive-grey carapace with grey-brown scales on the head that are outlined by a pale yellow, and the top parts of the skin and flippers are a deep grey. The plastron is a yellow ochre colour with paler areas. The skin on the underside is an off-white leaning towards pale grey and ochre. The shields on both sides of the head are grey-brown at the centre and pale-yellow ochre on the edges of the scales. The jaw area is a similar pale colour to off-white. On the leading edge of the flipper is a gradient from grey-brown to yellow ochre. In the southern Africa study region, from vagrant nesting, the curved carapace length of olive ridley hatchlings ranges mostly between 43 and 45mm. The low sample numbers in this area are not enough to provide a general size, but the adults tend to be smaller than the other sea turtle species, with the curved carapace length of mature nesting females from other regions ranging between 62cm and 75cm.

The diet of an olive ridley tends to consist of crustaceans such as shrimp, crabs and lobsters that might occur in mangrove systems (Van der Elst 2014). Regarded as the most ubiquitous of the seven sea turtles, olive ridleys occur in the tropical parts of the Atlantic, Indian, and Pacific Oceans – in the coastal and oceanic waters of more than 80 countries (Cáceres-Farias *et al.* 2022). Their numbers, however, have significantly decreased over the decades, and with a universal decline between 30% and 50%, they are at risk. This species is well-known for mass nesting events in distinct locations in Costa Rica, India and Mexico where great numbers of females emerge onto the beaches in a ‘synchronised’ manner. This phenomenon is termed ‘arribadas’ which means ‘arrivals’ in Spanish. Yet, in other regions, they have solitary nesting behaviour, and it is unknown exactly why they have such divergent nesting habits (Martínez-Vargas *et al.* 2022; Pinou *et al.* 2018). In the next part, I outline the two species that specifically nest on South African beaches: the leatherback and the loggerhead.

Leatherback sea turtle

The leatherback sea turtle (*Dermochelys coriacea*) receives its name, as suggested, from its carapace, which is covered by a leathery skin over the flesh (Van der Elst 2014). It is the only remaining species of the *Dermochelys* family. Leatherbacks are listed on the IUCN Red List as vulnerable with decreasing numbers, and they have the following visual characteristics: The front area of the snout is bicuspid and has a deep score in the middle (Hughes 1973; Wyneken 2001). The jaw edge has fine teeth. The snout of leatherback hatchlings is partially elongated

and appears more so because of an egg tooth. On the top of the head are six divided prefrontal shields, and the frontoparietal shield is large. The rest of the skin consists of a myriad of small scales. The flippers have no claws and also contain fine scales that become larger on the anterior edges of each flipper. The scales become less defined as they reach maturity. Unlike the bony carapace of other sea turtle species, the leatherback's carapace is bendable and contains seven clearly defined ridges following the spine. Compared to the other sea turtle species, the carapace is significantly longer than wide, with a conspicuous caudal point at the rear. The leatherback hatchling has a pale grey carapace that appears black when wet. The pronounced ridges tend to be lighter. The top of the head is mostly black, with occasional white on the scales. The upper and lower parts of the jaw are mainly white, with black on the front and the edge of the upper part. The throat and chin are white. The upper part of each flipper is black with a white border, and the shoulders have white specks. The undersides of the flippers are pale grey on the inside, changing to black on the outer parts. The plastron is dark with five white longitude ridges. Adult leatherbacks are mostly a rich, reflective black, containing lighter grey or blue specks. On the top of the head is a spot of strong or pale pink that might appear like scarred skin. The top of the limbs is also dark but seems more matt than the surface of the carapace. The appearance might be because of the dispersed light on the many small scales. The plastron is a variable combination of white, black, and pink. According to Hughes (1973), the carapace length of the Tongaland leatherback hatchlings of this region ranges from 54 to 63mm, and the nesting females are recorded to have a carapace length between 133 and 177cm. Since then, Le Gouvello *et al.* (2020) found that the mean curved carapace length of new and repeated nesting females remained stable at about 160cm.

Leatherbacks prefer to eat jellyfish as gelatinous zooplankton and migrate for this purpose (Nordstrom, James and Worm 2020). They are one of the larger reptiles and the largest of the existing sea turtle species. Satellite-tracking records migrations spanning across whole ocean basins, and study locations on leatherback turtle conservation include the central equatorial west Africa, the western Pacific at Malaysia, the eastern Pacific at Mexico, the north and northwest Atlantic at Canada, the US Virgin Islands, Australia and Japan, as well as the western Indian Ocean at South Africa (Avens *et al.* 2020; Holtz, Stewart and Piniak 2021; Nordstrom, James and Worm 2020; Scott *et al.* 2017). , nowadays, ocean models provide insight into the migratory movements of juvenile leatherbacks during what was termed the 'lost years'. That is, after hatchlings enter the ocean. Previous data on the ocean movements of juveniles could only be collected through fishery bycatch because a tracker is too big to mount

onto a new-born sea turtle. We see that leatherbacks cover great distances; thus, scientists are reluctant to estimate how many exist on the south-east African coast.

Four and a half decades of continuous monitoring have resulted in a remarkable volume of nesting and hatching data, with Nel, Punt, and Hughes (2013) reporting 13320 nesting leatherbacks since 1970. At the outset of this period, leatherback nests increased from about 10 to 70 per season, but then reached a plateau in the following years. Unlike the loggerheads, leatherback females seldom return to the same beaches. Of the 86% of leatherback females that nest for only one season in this region, only 8.5% return the next season, with only 2.9% returning for a third season. As one of the world's first turtle monitoring programmes, the Maputaland programme began monitoring in 1965 and enabled annual nesting and hatching season reports. In 1973 the reporting area expanded to set up permanent markers between 3.2 and 56km south of the Mozambican border, with data collection between mid-October and mid-March. The programme expansion in 1973 has ensured consistent monitoring ever since. Most nesting is typically between November and January, while the hatching season is usually between December and March, with hatchlings emerging roughly 70 days after the eggs were laid (Van der Elst 2014). There is some nesting in October and hatching in April, but far fewer in numbers (2022, pers. comm. 17 February). The turtles also tend to nest and hatch between dusk and dawn, when the summer temperatures are cooler. Leatherbacks, as well as loggerheads, utilise a 150km stretch of beach that is much wider than the reporting area, with an additional uninterrupted strip across the Mozambican border. The leatherback nests are known to be widely distributed across this area, indicating weak spatial preference and a fairly broad variation in vegetation, dune properties, and temperature. For Nel, Punt and Hughes (2013), possible causes of relative success may be attributed to intrinsic biological differences, incubation environment alterations, or pressures and opportunities in adjacent areas. The weak spatial preference was also confirmed by the tour guides of the Cape Vidal area (2022, pers. comm. 9 February). The guides from the Bhanga Nek area said that they mostly encounter leatherbacks from the south of Bhanga Nek to Mabibi on the shorter beaches, as leatherbacks, compared to loggerheads, cannot climb the longer and higher dunes (2022, pers. comm. 17 February). The literature confirms some concentrated leatherback nesting areas at about 50km below the Kosi estuary mouth (Nel, Punt and Hughes 2013). Even though scientists in other study regions raise the issue of interspecific competition in sea turtle nesting, as well as as the fact that there are distinct, concentrated nesting sites for both leatherbacks and loggerheads, there are significant overlaps in this region that suggest otherwise. It is, though, still acknowledged that such competition may develop with a population increase (Hughes 1973).

In a discussion on leatherbacks, Hughes concludes that the Tongaland leatherback turtle prefers beaches with a minimum temperature of 25ºC and beaches that have an entry that is free from obstructions such as reef that could affect significant bodily damage to this large species. The tour guide's opinions concur with this by informing me that the front flippers of leatherbacks are large but not strong enough to carry their weight over the exposed rocks in order to reach the dry and softer sands (2022, pers. comm. 9 February). It is noted that the Tongaland nesting grounds consist mostly of gentle slopes, with less localised steep slopes, such as the widest 5.6km stretch directly south of Black Rock. The coarseness of the sand does not significantly impact the turtles in this region (Hughes 1973). Nel, Punt and Hughes (2013) compare the sets of female tracks on the sand against the number of nests and report that 91% of emerging leatherback turtles have nested, which is significantly higher than the loggerheads at 55%. Without specifying the species, the tour guides consistently maintained that sea turtles, even those that emerge, would typically not nest during rain or strong winds. They believe the wet sand is too hard for the turtles to dig a nest (2022, pers. comm. 9 February; 2022, pers. comm. 17 February). The guides also shared with me that during the 2021–2022 season, from Cape Vidal north for 8km, they saw a marked increase in leatherbacks. For the first time, they saw leatherback females seven nights in a row, and on one evening they encountered six. The guides maintained that in this region the nesting sites shift from season to season; for instance, in the next season they expect the more concentrated area to move 2km to 4km northward (2022, pers. comm. 9 February). In training, they have been advised to avoid using a bright yellow or white light on the tours because the light could disorientate the female turtles. Instead, they are expected to use a red light. In their experience, however, the red light startles the nesting females, and the guides suspect it may be because red in nature typically means danger. Because of this, they experimented and found better success using an orange light (2022, pers. comm. 9 February). Even though leatherbacks typically nest in northern KZN, staff at the aquarium encounter odd nests. In 2021, many leatherback hatchlings washed up on the Bluff, south of Durban. They were newly born and unharmed, which suggests that they most probably hatched in that region (2022, pers. comm. 25 August). The next section provides a summary of the loggerhead sea turtle from the same region.

Loggerhead sea turtle

Caretta caretta, the common name of loggerhead, stems from its large head that supports strong muscles in the jaw, with which a loggerhead can break the hard shells of molluscs. This species is classified on the IUCN Red List as vulnerable with decreasing numbers. The snout of the

loggerhead is comparatively short and at times compressed with a distinct hook to the single cusp. The edges of the jaws are also smooth. The scales on the top of the head have the following patterns: there are two pairs of prefrontals, and the frontoparietal is as broad as it is long, typically semi-divided anteriorly and posteriorly. The parietal scales are split with a large supraocular scale, and there are typically three postoculars on each side of the head. The front flippers have somewhat large scales following the anterior edge, with many smaller scales behind these. The posterior edge has a few recognisable large scales. Loggerheads are born with two claws on each of the front and rear limbs, but the second outside claw becomes less visible with maturity. Both sexes of hatchlings have short tails. The tails of the males become longer as they mature, but the females' tails remain short as they gain maturity. The carapace generally has an ovoid shape. These turtles are born with three keels on the carapace following a posterior to anterior direction, of which the outer two reduce with age, while the central ridge develops sharp points on the vertebral scutes. With a carapace length of 30cm, these usually also begin to flatten out. There is mostly one compressed nuchal scale ahead of the first vertebral scute, and the nuchal usually also connects with the first of five lateral scutes on each side of the vertebrae. The marginal scutes around these vertebrae are usually in 12 pairs, while the supracaudals at the rear are in a single pair. The leading edge of the plastron is rounded, and the scales are juxtaposed, with the inframarginal scutes having no pores and are usually in three pairs. In describing the colouration of loggerhead turtles, Hughes (1973: 37) refers to terms such as "rich golden yellow" and "red-brown", but from my own observations, I feel yellow ochre, red ochre and burnt sienna might be more apt descriptions for a painter. It is also possible that the sheen of the plastron, when wet, may resemble a metallic colour, such as gold, but the pigment colour would still be fairly close to a yellow ochre. Loggerhead hatchlings appear grey-brown when they are dry and a soft reddish ochre when wet (I have also observed a subtle purple tint). The skin, above and underneath, is deep brown to black, while the middle of the plastral scutes is of a lighter tonal value. Surrounding the eyes and beak are black or deep brown patches. Soon after hatching, the beak and the central flipper scales begin to lighten, and when these reach a carapace straight length of 10cm, the predominant colours at the top are red ochre and burnt sienna containing lighter or darker streaks. As a juvenile loggerhead matures, the under surfaces lighten and range between a cream-white and a more saturated yellow ochre. This extends to the underside and sides of the neck and head, as well as under the flippers. The upper parts of the body remain a deeper colouration. The carapace becomes a more saturated reddish ochre that is either uniform or contains deeper streaks, or the carapace could appear as a streaked deep brown. When a loggerhead reaches maturity, the carapace is typically streaked

rather than plain. The plastron of an adult loggerhead varies from an off-white, a saturated yellow, a pale yellow, to a pinkish yellow. As when these turtles are younger, the yellowy colour continues under the throat and at the sides of the neck and head. The middle of the scales on the head are typically deeper sienna and red ochre, but some females detected in this region have much deeper black on the upper surfaces. The curved carapace length of the Tongaland hatchlings ranges mostly between 39 and 49mm. Hughes (1973) records a curved carapace length of mature nesting females ranging from 92 to 97cm, with an exceptional length of 107cm. Le Gouvello *et al.* (2020) have, subsequently, recorded a significant decrease in mean curved carapace length of 3.6 and 3.7cm in loggerhead females of this region. The decrease in size may be because of an environmental change.

As stated at the outset of this section, the jaw of a loggerhead enables a diet that consists of a range of reef-bound marine invertebrates, such as shellfish, snails and octopus (Van der Elst 2014). Fairly widely distributed across the planet, the loggerhead sea turtle is the subject of numerous conservation projects, such as the microbiota of hatchlings and reproductive activities monitoring along the coastal Mediterranean Sea (Girard *et al.* 2021; Vecchioni *et al.* 2022); the managing of sea turtle buoyancy disorder along the Florida coast, of the United States of America (Liguori *et al.* 2021); a morphological description of the species of the Yellow Sea of Korea (Lee *et al.* 2014); the need for conserving habitat areas as foraging grounds in the North Pacific Ocean and the East China Sea with nesting grounds in Japan (Okuyama *et al.* 2022); as well as a case of septicaemic listeriosis, and their indication of chemical pollutants on the Adriatic coast (Di Renzo *et al.* 2022).

Alongside the leatherbacks, since 1965 in the Maputaland programme, the nesting and hatching of the loggerheads have been continually monitored on the east coast of South Africa (Nel, Punt and Hughes 2013). The programme recorded a 108 878 loggerhead emergent rate, of which 60 946 nested, while 47 932 were recorded as non-nesting tracks. As stated in the leatherback section, the loggerhead turtles of this region, therefore, only nested 55% of the total emergence. From the tag information of 12 774 individual turtles, 78.7% (10 053) nested for one season in this region, while the numbers tapered down to 15.1% (1935) for a second season and 4.2% (533) for a third season. There are, therefore, about five times more loggerhead nests than leatherback nests in this region. Nel, Punt and Hughes report that since 1990 there has been a significant increase in loggerhead nesting as opposed to leatherback nesting. This may be because of changes in offshore pressures and foraging habitat quality. The spatial distribution of loggerheads is more concentrated than that of the leatherbacks and reaches a peak between 10km and 16km south of Kosi mouth. The guides from the Bhanga Nek area

mostly encounter loggerheads between beacons 1 and 32 (2022, pers. comm. 17 February). A loggerhead female nests 3 to 5 times per season with 15-day intervals, and this differs from the leatherback, which nests 6 to 8 times per season with mean nesting interval of 9.5 days. A typical reproductive lifespan for a loggerhead is 18 years and 16 years for a leatherback. The programme also recorded that a loggerhead female produces on average 389 eggs with 302 emerging hatchlings per season, while for a leatherback female, the seasonal mean is 699 eggs with 480 surfacing hatchlings (Nel, Punt and Hughes 2013). Hughes (1973) found that loggerheads favour nesting near temperate waters between 25ºC and 28ºC and on silica beaches, but the sand-particle size appears insignificant to nesting behaviour. These beaches mostly have offshore reefs and, at times, contain visible rocks that lead to vegetation behind the dunes. It is theorised that the dark horizon band created by the vegetation, typically in lower light, might assist nesting orientation. Unlike the leatherback, the front flippers of the loggerhead are strong enough to carry them over exposed reefs in order to reach the nesting dunes above the highwater mark. To nest before the vegetation, loggerheads can climb dunes up to 30m high and at a distance of almost 300m (Hughes 1973; 2022, pers. comm. 9 February).

Challenges and opportunities

I present, in the following passage, the conservation challenges and opportunities that exist for the sea turtles of this region, which are regarded as a keystone species to the ecology (Bjorndal and Bolten 2003). These animals were originally protected by the Natal Ordinance in 1916, but actual protection only commenced in 1963, when the conservation programme was brought into being with continual monitoring (Le Gouvello *et al.* 2020). My introduction refers to the establishment of subsequent Marine Protected Areas (MPAs), and these remain key to conservation efforts. The turtles are, however, highly mobile and their protection may be slight if their lifecycle is partially within MPAs. They face a set of threats, such as the targeted harvesting of nesting females and eggs; 'incidental death' brought about by fisheries' activities; and the loss and degradation of habitat. The nesting grounds are perhaps a point of vulnerability because they intersect multiple life phases in concentrated areas, such as eggs, hatchlings, sub-adults in the coastal waters, and breeding migratory adults, where the turtles can fall prey to predators and harvesters. Because of these vulnerabilities, conservation efforts can be effective in coastal areas if human-based threats are removed where concentrated numbers of turtles occur in these sensitive life stages. Conservation, thus, usually restricts human access and protects nesting and inter-nesting areas by implementing nest protection programmes and MPAs (Nel, Punt and Hughes 2013). Le Gouvello *et al.* (2020: 1), nevertheless, state that the

"conservation of marine turtles is difficult due to their wide geographical distribution spanning multiple jurisdictions and legislative systems with different conservation targets". In this case, it is particularly relevant as the rookeries span across the South African-Mozambican border. These grounds, moreover, intersect different cultures and traditions, such as those of the Tsonga- and isiZulu-speaking peoples. This is why I include firsthand encounters with local tour guides and aquarium staff who work with turtles on a day-to-day basis and who have the interest of the turtles at heart. Further to my introduction and outline of human-based threats to these animals, I now discuss concerns raised by research participants.

Perhaps the most alarming is a new gravel road to Bhanga Nek. At the time of the interviews, the road had no access control. The guides admit that they do not know the greater plan for the development, but in the 2021–2022 season, there were great crowds of people on the nesting beaches who littered and played loud music at night where the turtles would typically nest, especially between beacons 1 and 3. Coupled with this, there is an increase in the number of fishermen who set up spotlights on these beaches at night. The guides believe that these bright lights disorientate and startle the emerging females. In my own experience, I observed a significant difference in the state of the beaches at Bhanga Nek between my first visit in January 2020 and my last visit in February 2022. I saw a number of fully loaded vehicles travelling towards and from Bhanga Nek, as well as these 'blinding' lights, with more household waste on the beaches. Apart from distracting the turtles, the guides also fear that the beachgoers are damaging the vegetation dunes that, apart from other ecological purposes, are believed to guide the females to an appropriate nesting site. They also encountered exposed eggs that they attributed to the damaged vegetation dunes. There were days during the December vacation period when the guides could not reach the beaches to conduct their tours because the road to Bhanga Nek was too congested. One of the guides said that they experienced a similar situation in Mozambique when guest houses were built near the nesting grounds and the turtles stopped nesting on those beaches (2022, pers. comm. 17 February).

The aquarium staff and the guides further raised concerns over illegal poaching, habitat destruction, longline fishing, mussel and oyster harvesting, motor vehicles on the beaches, turtles caught as bycatch through trawling, waste pollution, entanglement, and how climate change impacts the male-female ratio in nests (2022, pers. comm. 9 February; 2022, pers. comm. 17 February; 2022, pers. comm. 25 August). At the aquarium quarantine facility in 2022, staff found significantly more plastic and fishing line in the animals through necropsies, and stated, "there are just more in the turtles that died" (2022, pers. comm. 25 August). The aquarium is able to categorise the different types of plastics and single-use plastics through

faecal analysis, and the aquarium recently obtained the skills to conduct gut content analysis to provide suitable diets for the different conditions of the turtles received at the facility.

I focus next on the illegal poaching of nesting females and the poaching of eggs from their nests. Poaching is a layered problem that converges on economic challenges and traditional beliefs, such as the longstanding practice of crafting turtle shells to be sold as decoration or jewellery. The aquarium staff are also concerned that economic challenges faced in the region, especially job losses during the COVID-19 pandemic, may necessitate poaching to feed families. All the guides from the Cape Vidal and Bhanga Nek regions discussed the poaching of turtle eggs. There is a belief in local communities that if one cooks turtle eggs and feeds the eggs to chickens, the chickens will lay more eggs, as turtles are known to lay more eggs. As a result, local community members contact the guides to inquire about supplying sea turtle eggs. This belief has been held for at least 30 years. Egg poachers appear as fishermen on the beaches and use cooler boxes to store the harvested eggs. The tour guides recognise that it is also their responsibility to look out for such activities, and local people living inside the park have also identified poachers. The villages are small, and it was said that the local people recognise the sudden appearance of an 'outsider' (2022, pers. comm. 9 February; 2022, pers. comm. 17 February; 2022, pers. comm. 25 August).

Continuing on local tradition, the isiZulu-speaking guides expressed that, historically, the Zulus seldom sourced food from the ocean, as do the Tsonga people further north. There is, nonetheless, a deep-rooted respect for nature that was instilled by King Shaka, and this is why many Zulu surnames often refer to an animal, bird, or tree. The Tsonga-speaking guides, furthermore, mentioned how they used to live in Maputaland until a borderline divided the region and families. One can have a situation today where a brother lives in South Africa and a sister in Mozambique. A guide stated that they were born inside the iSimangaliso Park but that their family had to move because it became a protected park. There were, however, people from Bhanga Nek and Black Rock who appealed on two grounds: one, they cannot leave the graves of their ancestors; and two, if they leave, they are no longer protected by their ancestors. The park authorities approved the appeal, and they are the local people who currently reside inside the park. Over the years, people from these villages were selectively recruited as tour guides and monitors for that region. I have encountered expressions from the guides that intertwine scientific and traditional knowledge. I paraphrase an example in the following story that relates to the dunes:

Annually, in February and after the marula festival, the seas are expected to be rough. When it rains for consecutive days, the freshwater flows into the saltwater, but they cannot stay

> together. The sea becomes angry and releases waves of two metres or higher that wash the dunes away, 'ulwandle lulukandle', the wild sea. This is why the sandbanks change that time of the year, and why there were exposed rocks between Beacon 2 and Beacon 3, which caused a number of eggs to become exposed on those beaches (2022, pers. comm. 17 February).

I encountered a story of a game that fishermen played by climbing onto the back of a leatherback sea turtle as she returned to the sea. The fishermen typically used a small, sharp device to poke her on the side when they reached a distance that they felt was still safe enough to swim back to shore. These are a few of the local traditions and stories of which I became aware from these regions together with conservation efforts that involve local communities. It is important for rapport to be sensitised to such tales and interchange (2022, pers. comm. 9 February; 2022, pers. comm. 17 February).

I formulate next the recommendations proposed by participants in my research. They wish to address ecological concerns about the sea turtles of the KZN coast in the following way: to install, firstly, access control for the gravel road at Bhanga Nek. The participants continually referred to this point, and they suggested that the same enforced access control as is currently underway in other parts of the iSimangaliso Wetland Park would be sufficient. The entry points typically allow access from 06h00 to 18h00 for the general public, with no alcohol permitted on the beaches. Secondly, the matter of education (or the sharing of information) was also a prominent issue. The guides felt that local schools are ideal to encourage environmental preservation and imbue a nature ethos from an early age, and that representatives from these communities are best suited to facilitate information sessions and dialogue. Information boards can be designed and strategically placed within the park to inform beachgoers of the importance of the nesting grounds and delicate dune vegetation. The participants felt that the knowledge would assist in affecting positive behaviour towards the turtles and their greater habitat. Some lodges already have information leaflets and posters, and such media can be more widely distributed in the greater area, such as in Manguzi, which is the closest town to Bhanga Nek. In the absence of information boards, it is possible that the local people do not know that it is illegal to poach the turtles or their eggs. Thirdly, the aquarium staff felt that positive messages in a communicative style can be an effective strategy for dealing with ocean pollution that is usually communicated in a 'doom and gloom' manner. They found that aquarium visitors tend to experience an emotional connection to the turtles; therefore, there is potential to promote change. Fourthly, environmental concerns, for instance, ocean pollution, climate change, and longline fishing can appear too great and unrelated to the everyday lives of people. In order to achieve a sense of relevance and achievability, members of the general public can be informed that a simple household habit change, like reducing the usage of single-use plastics, can have a

significant impact. Such public awareness can accompany initiatives that deal with retarding household waste flowing from the rivers into the ocean and the SAAMBR innovation of a trawler design that contains a turtle escape device. There is, nevertheless, a general concern among the participants that the recycling drop-off sites in Durban are either not accessible enough or that it is not communicated clearly enough where the sites are situated. Information on drop-off sites, therefore, would need to form part of any widespread drive for recycling. Fifthly, there were, recommendations for the policing of illegal fishing, particularly methods that are known to create large-scale marine life bycatch. Sixthly, the tour guides requested that findings from the scientific communities be shared with them so that they are able to communicate accurate and relevant information to visitors at the coast. Beyond the recommendations, the aquarium staff praised the swift-mobilising networks that have saved the lives of turtles and other sea life. As an example, a member of the public allowed a rescued turtle to stay in a home gym facility during the Durban floods of 2022, when travelling was regarded dangerous. This example is no doubt commendable; nevertheless, from an economic perspective, poaching by impoverished communities may be a matter of necessity (2022, pers. comm. 9 February; 2022, pers. comm. 17 February; 2022, pers. comm. 25 August). The next chapter (Chapter 3) offers an artistic context of practices and theories on activist ecological art that then concludes Part 1 of the thesis.

Note

With regard to the research methods applied, a paper-based literature review of current and relevant academic articles intersects with in-depth, semi-structured interviews that are conducted with targeted individuals through purposive sampling (Ayres 2008; Palys 2008). The aquarium interviewees are selected because they work with turtles at the SAAMBR, where turtles from the KZN waters are studied, quarantined, and rehabilitated. The turtle tour guides are recruited from the nesting grounds at Cape Vidal and Bhanga Nek. The guides serve as a valuable source because of their day-to-day dealings with the animals and tourists during the nesting and hatching seasons. The guides are typically recruited from local villages and provide insight into traditional Zulu and Tsonga knowledge of the coastal area. This is aligned with the traditional ecological knowledge (TEK) and coastal human ecology (CHE) that were mentioned at the end of the previous chapter (Aswani 2019; Wilder *et al*. 2016). In order to safeguard the interviewees, the researcher, and the institution, full ethical clearance was received for the data collection by the DUT Institutional Research Ethics Committee (IREC). SAAMBR and the tour guide companies provided gatekeeper permissions, and each participant received an

information letter accompanied by a letter of consent that they signed before partaking in the research. Their participation was entirely voluntary and identities were concealed within the thesis. The possible English language limitations of the turtle tour guides were considered upon ethical approval and the interviews. The sea turtle nesting grounds are indeed in areas where the local people's home languages are typically isiZulu or Tsonga, but the guides engage with tourists in English and, thus, it was decided that their English language skills should most probably be sufficient to contribute meaningfully towards this study. Nonetheless, at the outset of each interview with a tour guide, I enquired whether they felt comfortable engaging with the content in English, and the interview only proceeded if they agreed.

Chapter 3: Activist ecological art

We find various instances of aesthetics entering Anthropocene debates (Rousell et al. 2021; Knauß 2018; Gasparin, Green and Schinckus 2020). Yet the term, aesthetics, has an established tradition dating back to the seventeenth century and is usually conceptualised as a form of beauty but also as a "way of knowing and experiencing the world" (Bresler and Latta 2008: 11). Philosophy scholars dispute whether 'experience' can be anything other than an 'aesthetic experience' and whether an analysis based on an individual's feelings towards an object can contribute to knowledge in any meaningful way (Petts 2000). The term, experience, came to be the philosopher's stone in modern thinking but led to unease within the natural sciences, such as the role of the human factor in research (Berleant 1995). Aesthetics also caused unease within the sciences, for instance, in theory selection and the neurological mapping of an aesthetic experience (Cupchik *et al*. 2009; O'Loughlin and McCallum 2019; Steenberg 2007). For relevance to this study, however, the discussion maintains a focus on aesthetic considerations within the greater Anthropocene debates; therefore, I move ahead to unpack such aesthetic imaginings.

For Amitav Ghosh (2016: 11), novelist and literary scholar, the Anthropocene poses a challenge for our understanding and expressions of culture. Ghosh ascribes "the great derangement," the title of his book, to a future scenario where environmental change, and more specifically rising sea levels associated with climate change, render great cities uninhabitable with no clear warning signs within popular literature or art that one can label it a great failure where art becomes a space of concealment by withholding from people a recognition of immanent realities. Ghosh continues that a case in point is a carbon economy's capitalist motive, which lies in the advertising of a 'paradise' of white-picket fences on green lawns in otherwise drought-stricken lands. How, then, can the aesthetics of art provide real alternatives? Earth scientist, Naomi Oreskes, and science and technology historian, Erik M. Conway (2013), raise concern over scientific rigour delaying the communication of climate change to the majority of people until too much damage was done, suggesting that perhaps the arts had recognised earlier the severity of the situation while scientists grappled with the difficulties of communicating their findings effectively. Dipesh Chakrabarty (2021) cites Oreskes in an influential book, *The Climate of History in a Planetary Age*, in which he confirms that the voices and the production of artists are important because, while science might broadly agree on the consequences of global warming, the messages of the science community are too often obscure and technical and, in consequence, poor in communication to a non-scientific audience.

Here, an artist has a role to play by bringing matters of scientific solicitude into the public sphere, such as the matter of endangered species.

This constitutes the rationale for the following chapter. By considering philosophical underpinnings and contentions associated with the emergent Anthropocene epoch, as well as scientific detail and local expert views of the sea turtle as a vulnerable species, I shift focus to artistic expressions of ecological preservation. The chapter provides a discussion of aesthetics associated with the Anthropocene, sometimes termed connective aesthetics, Anthropocene nostalgia aesthetics, possibility aesthetics, Chthulucene aesthetics, indigenous aesthetics, incidental aesthetics, and garbage aesthetics. I then continue to discuss key ecological art examples by contemporary artists that serve as an artistic context for a reflection upon my own body of work in the chapter that follows.

Since the 1960s, a number of artists have begun systemically addressing environmental concerns through their work. Ant Farm, Joseph Beuys and Alan Kaprow, for instance, talked about "eco aesthetics" through ground-breaking artworks while addressing modern environmental issues (Deck 2020: 7). By the 1990s, "ecological art" had emerged with the aim of adopting principles explored by this earlier activist art movement, and during this period, it was Suzi Gablik in *The Reenchantment of Art* (1991) who attributed three characteristics of the emerging movement (Kagan 2014: 1). For Gablik, ecological art is 'connective', 'reconstructive', and has an ethical responsibility for "communities of life" that are both human and nonhuman (2). In *The Practice of Ecological Art*, Sacha Kagan interprets key points in the following way: ecological art consists of connective practices that nurture empathetic and responsible relations between humans and nonhumans, and this opposes a prevalent focus on the self in society. It is said that ecological art directly draws on eco-feminist philosophy from the 1980s to transcend entrenched dualisms, the likes of "nature vs. culture, developed world vs. underdeveloped world, man vs. woman, reason vs. emotions, etc.", and such dualisms have has received renewed attention as "collaborative, participatory and socially engaged" art practices. A reconstructive practice critiques the familiar postmodern deconstructive perspective and aims for a positive representation of transformation. In this way, ecological art is neither truly independent as 'art for art's sake' nor purely utilitarian in its pre-defined functions. Ecological art practices, in addition, tend to have an ethical responsibility regarding shared communities of life for humans and nonhumans (Kagan 2014: 1; 2; 12).

Kagan continues that the group of artists, *ecoartnetwork*, began in 1999 and, in later years, to define ecological art as embracing an "ecological ethic in both its content and form/materials". Even though there are diverse artistic practices, the movement is united by

"social-ecological modes of engagement", and identifies that the practitioners tend to ascribe to at least one of the following principles: firstly, focusing on the inter-relational web of the environment and systems, such as the biological, physical, cultural, political and historical; secondly, applying natural materials and forces in the creation of works like water, wind, and sunlight; thirdly, remediating harmed environments through reclaiming and restoring; fourthly, educating and involving the public on ecological dynamics and problems; and fifthly, re-envisioning relational ecology by advancing co-existing possibilities towards healing and sustainability.

Kagan is concerned with a single problematic characteristic of unsustainable contemporary cultures: modernity's dominant modes of understanding reality, that is, "how we know the world around us to be the way we think it is – and how we act upon such knowledge". These habits, social norms, and "mental infrastructures" need to be dislodged by experimenting with and experiencing alternatives, and it is the work of ecological artists to link, typically, multi-dimensional issues that use art to intersect ecology, culture, politics and the economy (Kagan 2012: 18). For Kagan, Shelley Sacks's *Exchange Values: Images of Invisible Lives,* a project in 2002, does exactly this. Sacks explores the interdependence in the banana industry between the fruit, the workers, and the consumers. Sacks acquired many bananas, dried them, and then stitched them into darkened sheets. These sheets were then labelled with the banana crate-grower's identification number and became an art installation in a number of art museums, where she conducted interviews with consumers and the farmers of those very bananas. Fair trade and interdependence were common themes in the uneasy relationship between an exploitative working environment and the backdrop of the sweet-smelling sheets of banana skins. Here Sacks (qtd in Kagan, 18) reflects upon the transformative value of the installation:

> Although the consumer listening to the voice of the invisible producer is not, in that moment, involved in changing the status quo in any concrete way, responses suggest that the experience of absence is so tangible – of a producer whose 'skin' is stretched before us, whose voice is inside us – that it stirs one imaginatively, provoking an inward movement that we carry outwards into the world.

In a literary review on how climate change is visualised in art, Kathleen Deck (2020: 2) cites Timothy Morton's (2013) theory of "hyperobjects". Hyperobjects are phenomena where, despite much available data and facts, people are unable to comprehend the full extent of their size, scale, and impact. For Morton, examples of hyperobjects are plastic bags, polystyrene, and uranium – key objects utilised in industrial capitalist systems and intrusive in climate change.

Similar to Oreskes, both Deck (2020) and Julien Knebusch (2007) believe that most people find it difficult to envisage a future based solely on facts, data, and evidence. As a multifaceted phenomenon comprising our understanding of nature, culture, geography, history, and the symbolic and imaginary, the totality of climate seems inconceivably complex, as it fluctuates, varies in terrain and has different meanings for different cultures. It is held, accordingly, that climate cannot have a single interpretation. In an attempt to expand such understandings, Deck turns to Brian Holmes's *The Affectivist Manifesto* (2008) of expressive techniques in activist art, termed "affectivism" (Deck 2020: 3). Art's affective features allow the senses to be activated in order to trigger an emotional response. Thus, art has the ability to extend our understanding while evoking an emotional connection. Affect is, for Deck, intrinsic to art but not necessarily to science, and the communications on climate concerns need interdisciplinarity that not only presents facts but evokes emotional responses.

Rousell *et al.* (2021), for their part, relate the Anthropocene to aesthetics in a concern that an Anthropocenic conception advances a deceptive view of a universal humanity: it underplays social inequalities and violent histories. In seeking to disrupt a complacent view of the relationship between the Anthropocene and human nature, the authors turn back to surrealism as an art movement that experimented with the unconscious powers of subjectivity in times of great upheaval (for example, the two World Wars). Can surrealism, they ask, offer potential for stirring an eco-activist consciousness?

Earlier in the chapter, I introduced Gablik's (1992: 2) term "connective aesthetics", as providing a vehicle for visualising ecological relationships. This shift aims to break down the dominant consciousness of the artist as an individual, value-free, isolated and detached agent. An 'individualistic' conception of modern art has been brought about by the competitive nature of capitalism, in which most people, especially those in big cities, have not experienced the close-knit character of community. For Gablik, this is embodied in a claim by the artist, Georg Baselitz, that "the artist is not responsible to anyone. His social role is asocial […]. There is no communication with any public whatsoever" (qtd in Gablik, 2). Yet this paradigm is reaching its limit as an art approach that almost celebrates obliviousness to real-world matters. The approach begs the question: can art today speak to a collective social consciousness? Gablik takes the view that art grounded in listening focuses on communal interaction and repels isolationist thinking, such as how art activists like Suzanne Lacy advocate "interconnectiveness" and "intersubjectivity" when addressing social concerns (qtd in Gablik, 4).

The division of nature and art in Western thinking manifests itself in the language we use, as Andrew Yang (2017: 126) points out in his book *Naturalcultural Wonders to Anthropocene Disasters: A Bibliography for Possibility Aesthetics*. He echoes Pell's concern with a language of engineering used in biology that the Latin origin for 'artificial', *artificialis*, translates to "of, or belonging to, art". In this way, language enables culture to distance itself, as an exclusively human domain, from the nonhuman matrix of matter and the natural world, which form "a physical backdrop for human autonomy and agency". For Yang, art cannot take advantage of a neutral human concept, and the human and nonhuman depictions through the arts and design are manifestations of "possibility aesthetics". Such aesthetic models provide future imaginaries as possibilities where the earth and cultural histories are intertwined, and as a distinctive epoch, the Anthropocene requires us to think no longer in terms of single lifetimes but rather in terms of a deep time of multi-generations. Yang's possibility aesthetics thus visualises a "creaturely mutuality" as opposed to a human autonomy, which also resonates with Donna Haraway's Chthulucene theory (Haraway 2015; Yang 2017: 126).

Haraway's Chthulucene theory has, for Martha Kenney (2017), an aesthetic sensibility in its tentacular visualisation. Kenny explains that Haraway challenges a specific type of dualistic thinking in current Western thought on environmental discourse. On the one hand, there is a rapidly growing environmental optimism underpinned by a misguided confidence in technology and a simplistic belief in growing awareness without actually conserving anything. On the other hand, we face denial about the disappearance of species and the environmental violence usually affecting poorer communities. Haraway expresses, furthermore, that we are encountering a prevalent "eco-apocalyptic cynicism" fuelled by a sense of game-over in that we cannot change anything anymore (Kenney 2017: 73). Despite seemingly opposing views, both views lead to inaction that largely perpetuates existing social norms of continual environmental damage. For Haraway, if we desire change, we cannot turn away or opt out. In referencing the title of Haraway's book, *Staying with the Trouble*, we need to "stay with the trouble, and get our hands dirty" as opposed to practising "purity politics" (Kenney, 73). Through tentacular interconnection, it is a drive away from complacency while appreciating the complexities and paradoxes of an era distinguished by environmental violence and unequal wealth distribution. Kenney explains that Haraway's theory, in its tentacular sensibility has no bottom line or bedrock, and that this is by design. Anecdotal stories are presented that may not seem to have a clear point but have authoritative "response-abilities". Kenney explains that Haraway encourages the seeking of personal curiosities and experimenting in storytelling and

if narrative is capable of meliorating the devastations of the Capitalocene (that is, the condition of capitalism), such narratives should be encouraged and not suppressed.

As a specific and 'popular' manifestation of the Capitalocene, Alicja Relidzyńska (2021: 233) focuses on "Anthropocene nostalgia" in the Netflix series, *Stranger Things*. The series utilises a 1980s aesthetic for the socio-political context of an America during that period, and instead of endorsing a sentimental version of nostalgia, the aesthetic has a critical articulation that uncovers the many wrongdoings of "Reagan's America". Such wrongdoings, Relidzyńska argues, are largely brought about by the widespread acceptance of the Anthropocene. She views this America as contributing to the current state of the biosphere. Not only does America provide a critical lens for that era of political and business operations, but it also illuminates "climate anxiety" or "ecoanxiety" as an emerging socio-psychological phenomenon observed mostly in young people today, an anxiety that is typically associated with an increased fear of climate change and other environmental concerns (Relidzyńska, 235; Wu, Snell and Samji 2020). The consumerist appeal and candy-coloured visual depictions of the Starcourt Mall assist us in imagining its popularity. It is a popularity that results in the failure of small businesses in the surrounding area. Though *Stranger Things* does not directly reference the Anthropocene or awareness of ecological concerns, it offers an interesting visualisation of anxiety stimulated by the concerns of climate change. Relidzyńska (2021: 243) continues:

> The show's criticism of the previously glorified political and social practices (such as excessive anti-communism, reckless consumerism and capitalism or dangerous nuclear arms race) is wrapped in a distinctive type of nostalgia showing the 1980s filtered through contemporary culture codes. Similarly to the dubious environmental decision-making, political (greenwashing) strategies and a multifaceted character of today's nostalgia modes, the Duffers' production is an ambiguous, conflicted text reflecting our subconscious contemplation of the Anthropocene-induced mechanisms and complex attitudes towards the common, growing awareness of an impending catastrophe.

If Relidzyńska seeks a critical aesthetic of the consumerism of urban life, Laura Hall (2015: 283) invokes an "indigenous aesthetics" in cultural communities. For Hall, such communities have entangled responsibilities for living well within ancestral ecologies. Hall's perspective draws on a broad view of indigenous aesthetics by scholar, Steven Leuthold (1996), in which an indigenous art practice is framed in decolonising myths of religion and nature, relationships that enable community responsibility and accountability. As an example, Hall discusses the garden of her Haudenosaunee-French mother, which simultaneously surrounds their home and forms part of a greater Anishinaabe territory where soil and water stream into the Great Lakes

and thus sustain the Haudenosaunee and Anishinaabe nations. Within a daily aesthetic and spiritual practice, Hall views this garden as a microcosm of the Haudenosaunee Creation story. As studied in anthropology, aesthetic expressions of indigenous cultures apply to facets of everyday life, for example, in spiritual rituals, craft, and clothing. To then connect such expressions to a narrowly theorised 'art' seems problematic. For Leuthold, however, it is not about the lack of art in indigenous aesthetics, but rather the concern lies with connecting indigenous aesthetics to an impoverished view of art that, in the modern West, has become separated from spirituality, religion and craft. Leuthold discusses, further, the transformation qualities of indigenous expressions, such as moving from a conscious awareness to a trans-like state and from human to animal. This begs the question of whether the transformative potential of art can be linked to a spiritual realm outside of scientific explanation. The theme of part/whole continues in a discussion on indigenous aesthetics by Kimberli M. Stafford (2013). In figuring land, Stafford quotes Geary Hobson (1979) in saying that "land is people" and that, in Native American vernacular, the terms 'people' and 'land' are indistinguishable (qtd in Stafford, 90). Focusing on figurations of landscape within contemporary American Indian poetry by poets such as Luci Tapahonso and Simon Ortis, Stafford sees stories of the people as stories of the land, and vice versa. He connects this to Leuthold's argument, for whom a sense of place is at the core of indigenous aesthetics, a way of being that interrelates art, language, religious beliefs, social practices, and perceptions of nature. Through a "native lens" the poets Luci Tapahonso and Simon Ortis traverse place, memory and narrative with intricacy (Stafford, 91).

In *Life & Death in the Anthropocene: A Short History of Plastic*, Heather Davis (2015: 348) presents "incidental aesthetics" as a distinctive feature of the Anthropocene. She refers to an incident in 2007 in which the open-air Ivanhoe Reservoir in Los Angeles was filled by thousands of floating black plastic balls, the purpose being to block out sunlight and avoid a harmful chemical reaction. (The visuals of the process of pouring the balls were reminiscent of the work of contemporary artists such as Maya Lin and Olafur Eliasson.) The occurrence raises questions about "environmental aesthetics" (Davis, 348). Can the Anthropocene, even if unintended, inspire an aesthetic of brilliant colours? The imagination had been stirred almost against its best intentions, for example, by the tar-based blazing colours of the Great London Exposition of 1862 or the smog-filled London that inspired impressionist painter, Claude Monet between 1899 and 1904, or Honglin Li's floating skyscraper design for the 2019 eVolo Skyscraper Competition, or by the generation of energy from waste in the Great Pacific Garbage Patch. Synthetic polymer, or plastic, re-orders our sensory experience of the environment.

Davis (2015: 348) maintains that the Ivanhoe Reservoir indicates a key characteristic of plastic, which is to isolate or bar an object from its immediate surroundings, to avoid mixing or contamination by creating a "monadic identity separated from its environment". But we are left in a moral quandary. Is this a valuable aesthetic in that it warns us of the harmful presence of plastic, or do we ignore such an interpretation and, hedonistically, revel in the visual effects?

To continue with the difficulty, Joni Hayward Marcum (2021) looks closely at the aesthetics of garbage in *Waste Land*, a 2010 documentary film. Directed by Lucy Walker, the film tells the story of the visual art process of Vik Muniz, who created a photographic series focusing on trash from the Jardim Gramacho landfill near Rio de Janeiro. This massive landfill, amidst the favela slums of Brazil, had the effect of emphasising the poverty and insignificance of the human community, if community is the appropriate word. We see workers who sort recyclable material from the waste for income, and perhaps unsure of the 'message' of his own work, Muniz went on to create room-sized photographic displays of thousands of discarded items sourced from the landfill.

The term "aesthetics of garbage" began in a radical cinema movement called Brazilian Marginal Cinema, from 1967 through to the early 1970s, in the Sao Paulo slums (St-Hilaire 2016). The movement was born within a unique context of socio-politics and was concerned with marginality and resistance. The use of garbage for the sub-genre was typically associated with 'poor taste' and while Marcum's *Waste Land* portrays lives in the slums, it also depicts actual waste garbage. What exactly defines Brazilian Marginal Cinema is unclear, but it shares nihilism and a defiance of the accepted or 'good taste'. Progressive and continually altering, the aesthetics of garbage question economic structures that are typically associated with the Capitalocene and reflect an economic system of exclusion and deprivation as characteristic of those who live and work among the waste. We can view such 'garbage aesthetics' as a powerful way of addressing the social inequality experienced by the workers as well as the magnitude of discarded waste created by a consumerist culture, as Marcum (2021: 36) does in relating this form of aesthetics to theories of the Anthropocene, Capitalocene and Chthulucene (Haraway 2015). Or we can interpret the exercise as voyeuristic, as 'pictures' of people's misery. It is a dilemma of transforming the Anthropocene into art. Marcum (2021: 36), in any case, captures the precariousness of the practice:

> The distant and aerial perspective of Anthropocene visuality, the politically oriented Capitalocene aesthetic that reveals exploitation and violence, and a Chthulucene aesthetic oriented toward materiality, entanglement, and survival.

With material waste given the predominant focus both in Walker's film and the artworks by Muniz, the use of garbage aesthetics must be taken seriously. It summarises the discussion of aesthetics in this chapter in that 'eco-art' is indissolubly a part of political contestation. To return to what Haraway calls the 'Capitalocene' , for example, we must connect economic impact to ecology. In her view – a view that currently holds sway in academic debate – liberal capitalist economic growth is the primary cause of planetary-scale destruction. It is a system that utilises unlimited and cost-effective natural resources. The lens of consumerism and consumer waste is, in agreement, is central to the sub-genre of garbage aesthetics. Nonetheless, Haraway's 'Chthulucene' – an aesthetic angle – offers a unique perspective on how to react to ecological changes and concerns as opposed to how to delineate the cause behind the changes. It is a perspective adopted by Marcum's filmic technique: multi-relational and perhaps tentacular.

Having described several examples of what has been catalogued as 'eco-art', I conclude by turning to forms that are particularly relevant to my own series of paintings. The forms can be grouped as photography, sculpture, and representational painting.

Cynthia Veloric (2021) reviews photographic work by Justin Brice Guariglia and Edward Burtynsky on industrial mining sites. Veloric cites art historian, Amanda Boetzkes, on the redundant conception of the earth being the 'original ark', and claims there is a need to readjust our sense systems to compensate for catastrophe, contradiction and environmental instability at the hands of human activities. For Veloric, the works of Guariglia and Burtynsky challenge established perceptions of a man-made landscape. The photographers disturb and connect conceptions of mining to an aesthetic that compels us to acknowledge damage, loss, possible disease, and dangers associated with mining activities. Veloric, furthermore, references Kathryn Yusoff (2010) in that our consciousness of environmental violence and loss may affect our sensibility of how we advance to or breakaway from the detrimental reasoning of an industrialised modern system. These photographers prompt questioning, admiration, shock and disorientation through a particular aesthetic and philosophical ingress to landscape. Their artistic strategy makes use of majestic beauty, uncertain realism, abstraction, and unusual materials, all of which delay the typical inclination of viewers to process familiar information, thus prompting viewers ethically to question the use of land for material profit. The body of work enables prolonged observation of the dissonant consequences of mining that are largely invisible to people apart from those directly affected communities. Burtynsky aims at revealing the truth in mining and quarrying landscapes that are simultaneously, and uneasily, compelling

and horrific. This echoes throughout the creative process, as in the refusal to use digital manipulation.

Burtynsky's work is also revealing in another way. *Nickel Tailings #30* at first may appear delightful, but as the subject unfolds, stronger conflicting emotions of wonder, awe and a dread of magnitude – described as a "toxic sublime" – emerge (Veloric 2021: 30). What appears at first as a natural venation design through balanced and dynamic composition is in fact dispersing a flow of man-made toxins. Guariglia, in turn, is motivated by eco-philosophy and experimentation with print media and renders the notion of mines into "photo-based objects". We are reminded that, even though mining is a human activity, humans do not command the entity of the mine. Guariglia's *Mining Landscape No. 132/Cu* employs copper as a metaphor that enhances the aesthetic effect, the material reality being copper mining. As Veloric notes, the aesthetics in this collection is not neutral: Burtynsky's depiction of mining sites apprehends both awe and threat, while Guariglia's work suggests a hyperobject abstraction, opaque but inviting contemplation. The exhibition of works by both artists provides the onlookers with a space to contemplate their complicity in the exploitation of resources.

My paintings do not depict mines or mining. However, my subject, the threatened sea turtle, invites, I hope, a similar response to that granted to the work of Guariglia and Burtynsky: namely, a sharp re-adjustment of viewing perspective, in their case to the dangers associated with mining, in my case to the dangers associated with the lives of sea turtles. To continue such analogies, if Guariglia and Burtynsky apply an unexpected, thought-provoking aesthetic to mining – awe (or we might say, an ugly beauty) and danger (including human exploitation), then Wolfgang Tillmans's 2003 exhibition at London's Tate Gallery, *If one thing matters, everything matters,* offers an alternative angle on Arctic landscapes. As Yazdani (2021: 127; 129) puts it, there are elaborate relations as opposed to "monumental depth". Tillman does not aestheticise toxic landscapes but offers vantagepoints "where individuation occurs on Earth between nature and technologies, bodies and matter, and where the emergent capacities of images and matter evolve". Or, as Haraway (2015: 160) might say, Tillman's multiple approaches and stories are "big enough to gather up the complexities and keep the edges open and greedy for surprising new and old connections".

Simon A. Mould's (2019) *Relief* repurposes aerial photographs of landscapes and their past as three-dimensional experiences. The series comprises composite artworks created from aerial survey photographs of locations throughout New South Wales (NSW) in Australia, sourced from the archives of Macquarie University and the National Library of Australia. The modification process results in composite anaglyphs, or overlaying stereo images filtered as

cyan and red channels. When viewed through red/cyan 3D glasses, the image appears in three-dimensions. Mould reflects on the aesthetics of the images as 3D 'portraits' of landscapes that focus on the agency of humans and nonhumans by inviting the viewer to observe these landscapes with empathy. The collection offers alternative ways of reflecting upon and acting in relation to the landscapes. An innovative quality is that the aerial photograph 'snapshots' are transformed into critical explorations of time and agency in a changing environment. Mould articulates the work as having two lenses in an act of "seeing double" through art and science, where cross-pollination and critique between disciplines happen simultaneously. This has the potential to renegotiate the social and political in a place-based context. The aim is to prevent the "social death" that strikes nonhuman lifeforms regarded "as dispensable or inconsequential, a process that enables the ecocide associated with the Anthropocene" (Mould 2019: 98). And, because *Relief* relates to the geosphere, Mould proposes "geo-cide" as the term for the occurrence. Certain qualities in the aesthetic of *Relief* allow for a reflective bearing of witness to landscapes lost. My paintings, to seascapes lost, is a recognition of the responsibility of humans in a nonhuman environment.

Midway: Message from the Gyre, by Chris Jordan, is a photography series portraying the far-reaching devastation of ocean pollution (Gerhardt 2018; Meisner 2010). The works depict plastic pieces found in dead albatross chicks that were photographed on Midway Atoll, which is more than 3 000 kilometres from the closest continental landmass. The title of the series alludes to the "Great Pacific Garbage Patch" identified in the North Pacific Gyre. The location, however, is the northwest Pacific Ocean, with plastic reaching Midway Atoll from both Asia and North America. This second garbage patch found in the northwest Pacific Ocean is estimated to cover three times the land mass of France. Various albatross species are based on this atoll, a ring of coral reef. The adults fly out to sea in search of food for their young and often mistake bright-coloured floating plastic as food. As a result, on the atoll, thousands of baby albatrosses die because they choke, starve, are poisoned, or bleed internally from the debris. The photographs show the bird remains, such as bones and feathers, in greyscale, while the plastic pieces in their stomachs are depicted in full colour. Even though the solid plastic pieces are worrying, it is the broken-up and unseen microplastic that impacts the entire food chain of marine life. Jordan's collection raises key questions for Gerhardt (2018: 137): should the required solutions be local or global acts, or a combination of both? Are the economic solutions at the production or consumption ends of the scale? And these also "open up onto larger questions of historical inequities, their legacies, and/or present-day inequities". Moved by this series, Meisner (2010: 7) feels that the beautiful wildlife and nature photographs

typically seen in popular media are a misrepresentation of reality – a type of "ecoporn" – and that Jordan's project is closer to the actual state of nature.

The actual state of nature might be an apt description of Andy Goldsworthy's installations (Kaufman 2018; Kemp 1998; Smith 2017). Goldsworthy explores recurring forms in the natural world in a variety of media that include sand, snow, leaves, stones, twigs and thorns. Each artwork is photographed in situ after its completion and then left to allow "nature to take its course, interacting with and changing the work" (Bradshaw 2016: 110). The artworks have been labelled as environmental art or land art, and even though much of his oeuvre was produced prior to a conception of ecological art having entered discussion, his work provides a sense of fragility, growth, decay and cyclical occurrence within nature. The work has also been described as a "meditation on the impermanence of everything", thus having relevance to broader philosophical consideration (Kaufman 2018: 80). His work is the subject of two documentaries by director Thomas Riedelsheimer, *Rivers and Tides* (2001) and *Leaning into the Wind* (2017), while the book *Andy Goldsworthy: Projects* (2017) offers a chronicle of 44 related art projects of this kind. Goldsworthy's work has also featured in middle-school where it draws on empathy to integrate visual art culture into other curricular areas.

Process rather than product is also an apt description of Jason deCaires Taylor's work, which focuses on the need to relieve pressure on coral reefs (Anon 2014; Gocova 2013; McCarthy 2023). Taylor creates sculptures that are submerged and seem to take on a new life under the ocean's surface. The works are made of pH-neutral cement, which, together with deliberately rougher-finished areas, become hospitable biomes for coral, immature fish and crustacean species. The sculptures are located at numerous underwater sites across the globe. A hurricane in 2004, however, destroyed a large part of the reef network that surrounds Grenada, and as a result, too many tourists turned their visits to the remaining reef. Taylor, in consequence, created an underwater park of sculptures as an alternative attraction in order to protect the remaining delicate and natural reef system. As the first of its kind, this Molinere Bay Underwater Sculpture Park is said to resemble an apocalyptic future but also invites a sense of recovery. Numerous marine life species flourish in this artificial reef, while recordings of the 'sculpture park' reference matters of social concern, which include business exploits, oil mining and climate refugees. As I suggested earlier on in quoting Oreskes, people are usually unable to connect themselves to threats that are communicated in scientific terminology. Anezka Gocova (2013: 35) quotes Taylor, who says:

Taking art off of the white walls of a gallery offers the viewer a sense of discovery, a sense of participation and the opportunity to detach your imagination from the confines of the terrestrial world.

Taylor feels that his work, as environmental activist art, has the potential to engage people emotionally and change their attitudes (Anon 2014; McCarthy 2023). I wish to achieve a similar purpose in my own work.

It is a purpose that has affinities with the work of Matt Black, a South African realist painter who, in 2021, at the Rust en Vrede gallery, exhibited a series of paintings depicting amputated human hands together with seafood products. Black explores the unease between humans and the food industry in a possible reminder of the two worlds that cannot meet, as in Derrida's *The Animal That Therefore I Am* (Derrida and Wills 2002; Mussgnug 2019). By emphasising our perceived gap between nonhuman nature and human exceptionalism, the artist alludes to a field that could include the relationship or non-relationship between that of commercial meat products and the large-scale death of animal industrialisation, slaughterhouses, or the mass catching of fish by the trawler method. In 2023, also at Rust en Vrede, Black exhibited a painting series on forest conservation that deals directly with the impact of human presence on the destruction of forests.

If Black returns us forcefully to the Anthropocene debate, so does Alexis Rockman, who gained a reputation as an environmental art activist in his paintings on the sustainability of the natural world in relation to human consumption (Art Works for Change n.d. Potter 2006). The complex compositions suggest dystopic surrealism but are, in fact, combinations of actual occurrences. A little exaggerated at times, but undeniably convincing. Rockman's oeuvre typically references climate change, extinctions, genetic manipulation, agricultural exploitation, selective breeding and ocean toxication. In the painting *Battle Royale* (2011), in particular, the style and compositional approach draw from the naturalist painting movement that gained popularity as a result of the purchasing power of the aristocracy in the 1600s. Prominent painters of this genre include Peter Paul Rubens, Jan Brueghel, and Jan van Kessel the Elder, and their natural depictions were idealised in the Rococo period (Pinault 1991). In contrast, Rockman's paintings display a struggle for survival between multiple indigenous and invasive species, specifically within the context of Louisiana's wetland ecosystem and the introduction of new animals and plants. A few of his works show worlds above and below the water's surface. *Newton Creek* (2014) is such an example where urban waste flows into the ocean against a backdrop of a human-isolated city skyline with building rubble and motorcar wreckages in the foreground. What remains are a whale carcass, discarded man-made objects,

a mutated seabird, a feral cat and other lifeforms in a type of post-human environment. *Manifest Destiny* (2004) is a large mural and another example of sea-life concerns. The painting portrays a future scenario of a Brooklyn waterfront submerged beneath a rising sea level. In paradoxical contrast, warm colours suggest global warming. The painting *The Farm* visualises bio-engineering in domestic selective breeding. We view grotesque outcomes, such as a rooster with three wings on its right side. Somewhat hidden at the bottom, there is a mouse with an ear on its back, which became an unforgettable symbol when the ethics of genetic manipulation gained public attention (Art Works for Change n.d.). Polyxeni Potter (2006: 716), who writes on infectious diseases, describes Rockman's "haunting vision of the future" as being "rife with cultural and evolutionary undertones". The detailed renderings of mutants connect to disease-control predicaments because the evolutionary potential of microbes, drugs and pesticides can lead to the widespread evolution of viruses. Potter feels, nevertheless, that the future of "humans, animals, and the natural environment is inextricably interlinked".

What I have offered here represents only a few examples of a genre that is gaining momentum. The social media hashtags "ecoart" and "ecological art" indicate a growing awareness of the potential of the genres in a world increasingly aware of environmental crises. In the next chapter, my aim – through my paintings – is to contribute to such an awareness. I hope that the context that I have provided in the preceding chapters will add an intellectual frame to the creative endeavour.

PART 2

Chapter 4: My paintings: Reflections

Preamble

I now reflect upon a painting series of sea turtles on the coast of KwaZulu-Natal. The series consists of nine large paintings, which I term 'impact pieces'. These are titled *Surveying*, *I love Turtles*, *Second Chance*, *Mother*, *Power*, *Primitief*, *Green*, *Wonder*, and *Shared.* There are preliminary sketches and photographic references for each of these paintings.

Embedded within the works are scientific and conceptual explorations of the theme. I unpack the body of work as a whole and then each painting in the sequence of their creation. For every artwork, I present: the scientific depictions and conceptual significance; the visual references and preliminary works; and the painting process, technique and compositional considerations. I adopt this creation sequence because of the exploratory nature of this research paradigm and because I believe there is a gradual intensification of the concepts that reaches a philosophical depth in the last painting, *Shared*. I experience the art-making process on this topic as a combination of informed and intuitive decision-making. I made the paintings while I was reading, thinking and writing in the conceptual and contextual frame, not afterwards, which means the series of paintings is an artefactual consequence of a creative process of discovery. From the outset, I employed an expressive painting technique that 'felt' appropriate. If one looks more closely at each of the pieces, one should notice a seeping of colour, a seeping of light, a seeping of symbols and a seeping of the threatened lifeforms within the context of environmental threat.

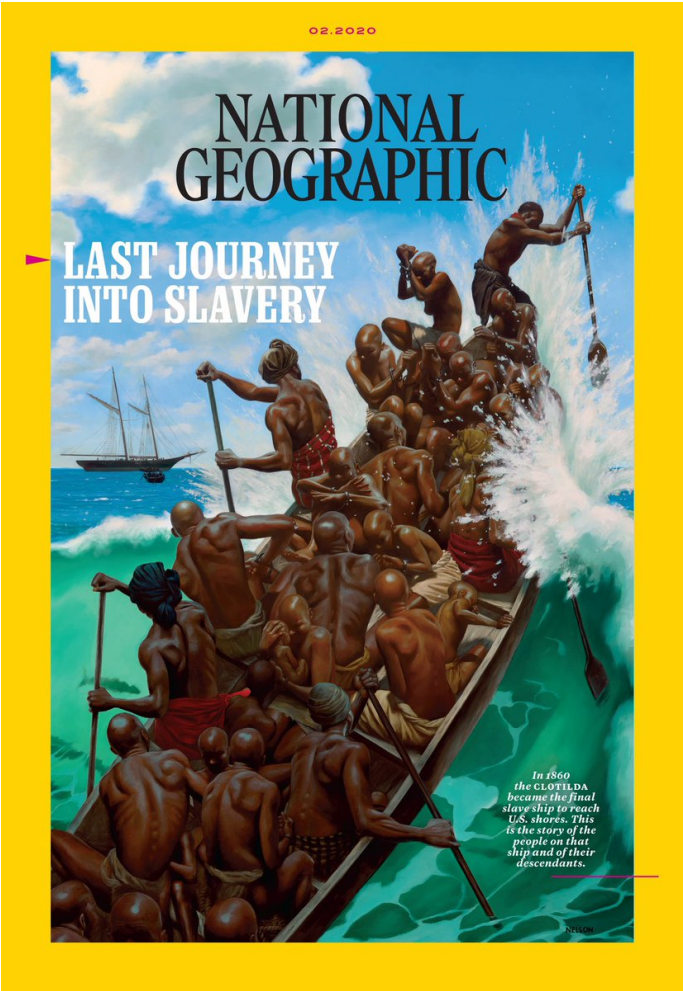


Figure 4.1 Kadir Nelson (2020). *Flight of the Clotilda*

I am aware of what I have created but also conscious of what I have not yet created. What other types of artwork could this research lead to? I focused on the pictorial quality of the work, whereas I find in the painter, Kadir Nelson, a depiction of the multi-faceted history of African American life. *Flight of the Clotilda,* which featured on the cover of the February 2020 *National Geographic*, 'canvasses' two experiences: the physical size of the painting, which would typically be exhibited, and the reproduction in print, which has the potential of reaching the public sphere. Similar to Nelson, I employ a realist painting tradition that is associated with the field of illustration. James Gurney's two books, *Imaginative Realism* (2009) and *Color and Light* (2010), provide an overview of this painting tradition and align the tradition with contemporary colour and realist painting theories, such as gamut mapping, atmospheric perspective, and the caustic light effects of glass or water. Moreover, within natural history illustration, there is a tradition of depicting the 'natural' world in a scientifically analytical and objectified manner. Madeleine Pinault (1991) terms this the "painter as naturalist" from the title

of her book. Within imaginative realism there is the potential to combine unexpected visual references as metaphors for layers of meaning. In my introduction, I explained that ecological art can use metaphors as a means of communication and that the interdisciplinarity of ecological art draws on environmental sciences for its content (Demos 2013; Kagan 2014; Philipps 2017). My body of work conforms to such an 'interdisciplinary' style.

To capture the sea turtles in the process of the environment, I needed to experience the actual context of the scenes. I heard the waves breaking, smelled and tasted the salty air, and at times was humbled by where I was and what I witnessed. A significant moment was when I walked alone with a tour guide on the outstretched beach at Bhanga Nek in search of hatchlings. We walked for kilometres under the moonlight, mostly in quietness. He walked at the top of the soft dunes, scanning with a torch, while I walked mostly in darkness on the wet sand. Eventually, we came across a full nest of hatching loggerheads, the subject of the painting, *Primitief*. While walking, I took low-light photographs with a camera setting on a high ISO, but the camera, in the darkness, was unable to focus with stability.

So, I made notes of the lighting and colours that I saw. These observations later influenced the painting, *Mother*. Through this approach, I gained a sense of place and 'groundedness' within the context, and even though I am not an 'insider' to the region as the tour guides are, I could work with reverence as an insider to a "technika culture", as discussed in Chapter 1 (Leduc and Crate 2013: 141). The project as a whole relates to Haraway's (2015) Chthulucene theory, which explores multiple angles of the sea turtle as a motif. I provide visualisations of these vulnerable land-interacting marine life species on the themes of nesting, hatching, ocean pollution, coastal development threats, rehabilitation, and an ontology of a shared existence. It is not an exhibition of beauty or ugliness, but both, as there are both very beautiful and very disturbing aspects of the sea turtles' condition. In the initial phase of the practical work, I began to sketch sequence frames for an illustrative story of a hatchling's struggle to survive. (Pages of these preliminary drawings are listed in Chapter 5.1.1.) Even though the illustrative form has considerable storytelling potential, especially for a younger audience, the larger canvases felt more appropriate for encounters with threats to survival. On these canvases, I could work with texture for a tactile experience of the physical artwork. Within literature, ecological matters such as climate change are seldom encountered in the narratives of fiction (Ghosh 2016). Painting, however, has potential in the arts because it does not necessarily rely on human characters to advance a narrative, as we mostly see in literary works and films.

I used two sketchbooks. One was a pocket-sized 14 by 9cm Moleskine hardcover notebook containing thin, smooth pale-cream pages. It worked well for pen and graphite pencil sketches. I created the drawings in the front of the book and wrote the notes at the end of the book. The drawings were fairly detailed because I viewed them as small compositions of observation. The pocket-sized format meant that I often carried the notebook with me in my day-to-day life as well as when travelling. Most of the preliminary work, however, was created in another larger 36 by 28cm hardcover, ring-bound sketchbook. The pages of this book have tooth-serrated edges, which unexpectedly contributed to the 'process' character of the sketches: provisional rather than completed 'product'. Ideas were developed from bankcard-sized thumbnails to larger compositional drawings. This notebook is messy with coffee-cup stains, but I felt the messiness and unorganised nature offered an artistic 'space' for questioning, doubt, imperfection, experimenting, attempting ideas, and developing compositions without an expectation of professional display. It was this preliminary planning and preparation that enabled a direct and swift technique when painting. With this level of planning, in addition, I found the actual painting process to be less wasteful of materials and thus more cost-effective. From these drawings, I had enough clarity to visualise most of the final paintings.

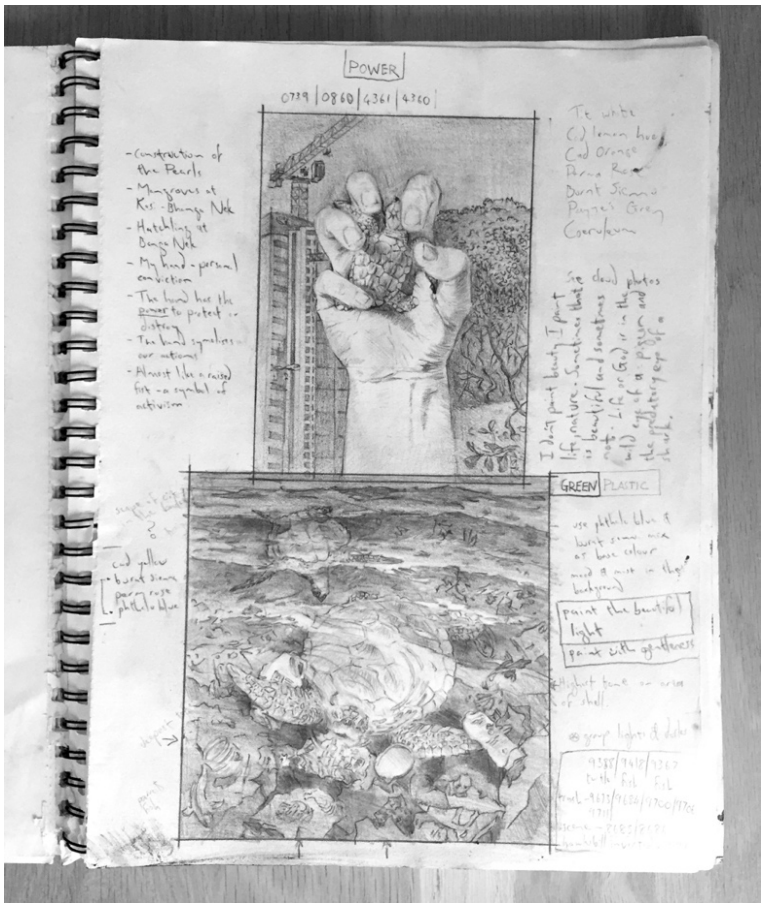


Figure 4.2 Preliminary sketches for *Power* and *Green*

Figure 4.3 Preliminary pen drawing for *Power*

Generic characteristics of technique and application

With minor variations, common materials and techniques were used across the series of paintings. The canvases were cotton with medium tooth stretched over a wooden frame of 3cm to 5cm thickness. The canvases were primed with three coats of white gesso. After it dried, the texture of the final coat was created by applying the gesso more thickly and loosely using a large palette knife. The strokes were mostly vertically applied to create spontaneous and curved vertical bands of thick gesso and together with a thicker application of oil paint, the impasto effect was enhanced. The gesso-textured marks were mostly larger than the marks in oil paint; this created a sense of unity in mark-making across the entire canvas. Thereafter came a phase of canvas 'activation', where I used acrylic paints that mainly consisted of primary colours. Activation aims at enhancing spontaneity and perhaps helping to break the commonly associated 'mental block' that painters have when they begin working on a stark white or blank canvas. I encountered this approach in a painting workshop facilitated by a Durban-based artist,

Dee Donaldson, and it assisted me in these artworks that were larger than I had painted before. In this phase, I applied strips of masking tape to block out certain areas that had resulted in hard edges and associated oil-colour palette knife marks. Even though painting depictions were planned, the activation phase took on its own life. There was a contrast between the thicker impasto marks and the 'raw' canvas, for an organic, imperfect, and textured visual experience. (A photo of an activated canvas is shown in Chapter 5.1.2.)

After the activation phase, the canvas drawing was prepared. A final comprehensive drawing in the sketchbook was photographed and placed on an artboard using Adobe Illustrator. A digital artboard was positioned at the same height and width as the canvas. The photograph was then resized to fit onto the digital artboard. I drew 150- to 200-mm-square blocks in vector over the digital artboard containing the photo. The blocks had no fill and the stroke width was sufficiently wide (5 points) to see the entire artboard on screen. I then drew corresponding squares using a water-soluble colour pencil and metal ruler on the actual canvas. Once the drawing was completed, the water-soluble lines were softened using water and a cloth. The comprehensive drawing was displayed on a laptop screen so that I could copy the key lines onto the canvas. I have noticed that some portrait artists draw significantly smaller blocks more carefully to capture accuracy and likeness in the drawing. For me, however, the wide blocks at 150mm (or wider) meant that the marks were applied fairly loosely through extended arm and wrist movements using a 5mm-wide flat synthetic bristle brush that had a long handle. This required a physical balance in order to put the stroke down in a swift single movement, not unlike the precision in the bow movements of a violinist. For the canvas drawing, I used burnt umber acrylic paint. Such expressive drawing and direct mark-making were my interpretations of an impressionist technique. Within a philosophical context of 'uncertainty' and 'urgency' in communication, an interpreted impressionist technique felt appropriate for depicting threatened lifeforms. The broken colour theory, associated with French impressionism, constitutes two or three colour strokes placed adjacent to each other so that, when viewed from a distance, they create a colour 'vibration' of combined colour experience. This formed part of my technique throughout the series. The shifting in the works between recognising what was shown, abstracted, and stylised spoke to the question of how we perceive the 'real'. The paintings, therefore, became a symbolic representation of what is real.

My oil-paint colour palette was a combination of the following colours: titanium white, lemon yellow, cadmium yellow, cadmium orange, burnt sienna, cadmium red, carmine red, French ultramarine, phthalo blue, and phthalo green. I found the colour palette versatile enough to mix warm and cool greys using these high chroma colours, as well as to reach colour accents

or ‘pure’ colours where needed. I would often premix the colours on the palette before applying them to the canvas. Gurney’s (2010) practical theories on hue, chroma and value relationships were pivotal in creating convincing depictions of the sea turtles in their environments, as illustrated in the placement of paint tube colours on a ‘pigment wheel’. The wheel puts high-chromatic colours on the outside while the colours fade to neutral greys towards the middle.

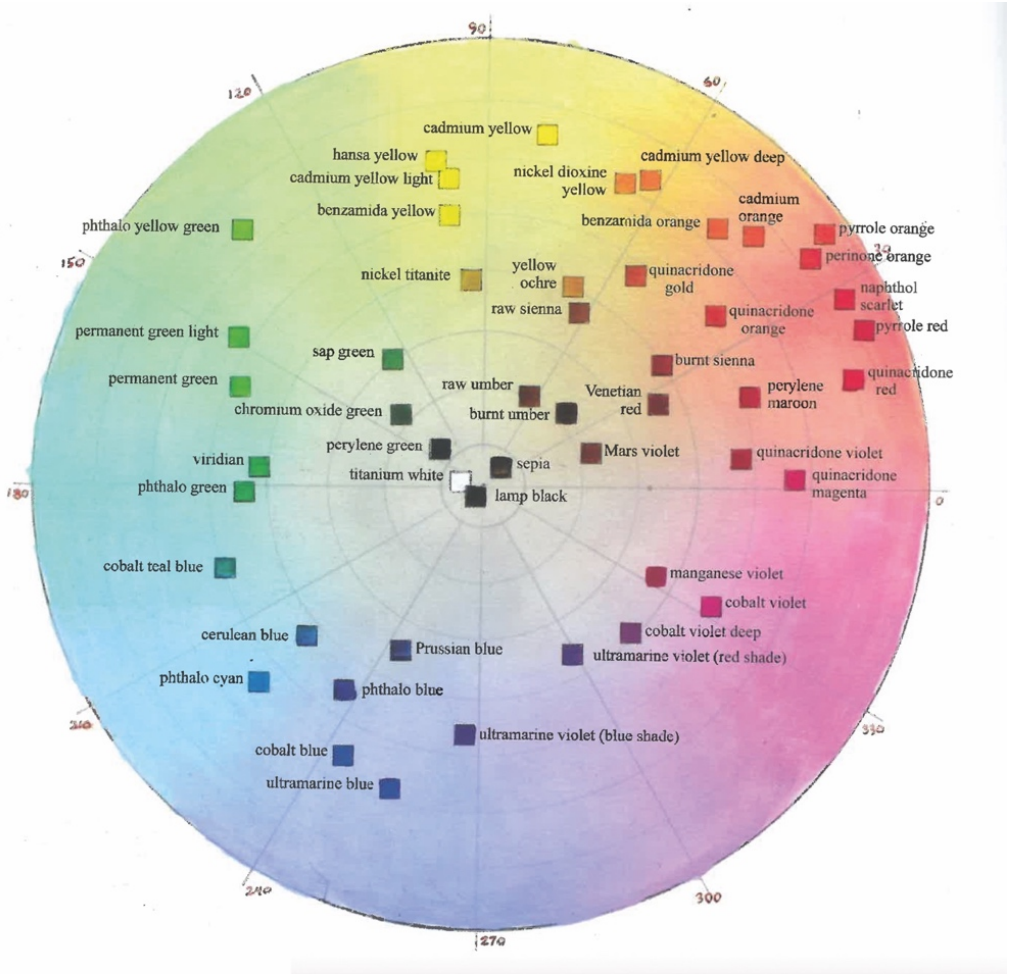


Figure 4.4 Pigment Wheel in *Color and Light* (James Gurney 2010).

Because oil paint from the tube is usually quite concentrated and thick, I created a diluted mixture of distilled gum turpentine, linseed oil, and Damar resin. This dilution enabled a type of sketching technique when working with a thin brush in the detailed passages. I have found, however, that the Damar resin can be omitted and a painting can afterwards be matt-varnished for a more consistent sheen across the entire surface. In the later paintings, I used a premixed impasto medium when applying the paint through a palette knife to stretch the colour while keeping the consistency. The width of my brushes ranged from 25mm to less than 5mm. Initially, I blocked in the colours in a translucent mixture using the wider brushes, and then the

thinner brushes for the detail. (The brushes used are shown in Chapter 5.1.3.) The same logic applied to the various sizes of palette knives at 60mm, 43mm and 27mm. (Chapter 5.1.4 shows these palette knives.) I used two brushes at each width: one for lighter colours and one for darker colours. A direct technique in painting required me to visualise the stroke before I applied it, thus preserving the feel of energy in the marks. Photographs of a canvas activation, brushes, palette, and palette knives are also included in the appendix.

Three of the five sea turtle species on the KZN coast are depicted in the series. The majority of the paintings show the loggerhead, while the green and hawksbill also feature. The loggerhead turtle is the most common on the coast and the species that I most frequently encountered. I had paid much attention to the visual characteristics of these species, as presented in Chapter 2, in order to paint them. The final paintings, however, do not include the olive ridley and leatherback species. Early on in the process, I made a composite drawing of an olive ridley to analyse the anatomical structure. My reference photographs were of poor quality, and I did not develop them further in a painting. (This sketch is in Chapter 5.1.5.) I was also unable to photograph a leatherback sea turtle. I did, however, photograph an emerging female's large tracks on the beach, but not the actual animal. This resulted in a little painting where the tracks are in the foreground while the imagined leatherback returns to the sea. (Chapter 5.1.6. displays this painting study.) I now proceed to discuss the process of creation for each painting.

Individual paintings

Figure 4.5 *Surveying* (2018)

The composition of *Surveying* consists of a side profile and close-up of an adult loggerhead sea turtle (*Caretta caretta*), together with large-spot pompanos that are also known as wave garricks (*Trachinotus botla*), and small impressions of blue-streak cleaner wrasse (*Labroides dimidiatus*) on the left of the pompanos. A section of a reef is shown in the lower-left corner, which contributes to the flow of lines in the composition. It is an oil painting with dimensions of 100cm by 100cm by 3cm. The three kinds of lifeforms are typical of the biodiversity around a coral reef in KwaZulu-Natal waters. The loggerhead sea turtles, as adults, feed on these reefs. Similar to other open-ocean predatory fish, the pompanos are sheltered by the reef in their

juvenile state. The cleaner wrasse has a symbiotic relationship with a number of fish species in that the wrasse eats parasites on their gills and scales. In the reef exhibit at the uShaka aquarium, there are areas that the staff members have informally termed ‘cleaning stations’ because certain fish species in that exhibit have learned that if they stop in that area, the cleaner wrasse will clean them.

The significance of this painting is that it is the first large-scale portrait that I have painted of a sea turtle. I treated it as a portrait painting by paying close attention to detail, such as the snout, head scales and plastron patterns. Even though the composition is fairly simple, I began to explore a change in graphic representation through the abstract lines and fish symbols in the bottom right corner. Already in this painting, I felt an unease with a purely ‘natural’ portrayal, as evident in the thick expressive marks throughout the painting. My aim was to create a life-size experience of this species and to feel its presence through the paint surface.

The photographic references for this painting (see Chapter 5.2.1) were taken at the uShaka aquarium (Durban) in the turtle lagoon and the rocky reef displays. The reference photograph shows an edge on the turtle highlighted by both direct and reflective light. In the photograph of the pompanos, the highlights are also seen at the top planes of the fish and, at times, transmitted through the dorsal and tail fins. Both of these references were photographed using a Canon EOS 700D at an action pre-set, which enabled a high shutter speed with a wide aperture. This means that the focus area was shallow, but the photographs carried enough detail of the main subject for a painting of this scale. Leading up to the artwork, I drew a number of pen and graphite sketches of fish, sharks, and rays in motion while considering compositional possibilities. Through the sketches, I familiarised myself with the form and visual characteristics of these lifeforms, as well as exploring a few tonal value ranges and the placement of focal points. (The sketches are in Chapter 5.2.2.) I created, simultaneously, gouache studies of composed scenes at roughly A5 size. In these small studies, I subtly introduced more expressive marks and experimented with how light and colour interact underwater, both on the surfaces of the turtles and on the inverted water surface. (Chapter 5.2.3 shows these gouache studies.)

A transparent red underpainting served as the initial block-in of the colours by using broad one-inch-wide flat brushes. This meant that the red was still significantly visible through this layer and created a sense of warmth from the direct sunlight in the shallow water. Most of the paint, thereafter, was applied using a palette knife for expressive mark-making, giving a sense of texture to the scales of the sea turtle. The backdrop consists of a gradation of light at the top fading to a darker bottom, as less light penetrates the water. The lightest area has the

highest chroma, with a pale mixture of lemon yellow, phthalo green, and white. The gradation becomes bluer and duller lower down (less pure colours and chroma). This gradation I observed through painting small colour studies at the uShaka aquarium, where I could directly interpret the colours that I saw in the displays, especially those displays with natural light. (Four pages from these studies are included in Chapter 5.2.4 and Chapter 5.2.5.) The loggerhead has a warm (orange) edge light on the top surfaces, with a pale blue-green light that reflects from the reef onto the under surfaces of the turtle. This creates a sense of volume and is most obvious in the furthest front flipper. As found in Gurney (2010) and confirmed through my personal observation, objects underwater undergo a type of atmospheric perspective where the light significantly drops away, more so than is typically found in landscapes. Deep shadows underwater tend to be cool and mostly blue-purple, as opposed to a warm brown in most natural landscapes. As an object moves further away, it becomes bluer, and from a certain distance, the shadows disappear entirely. The highlighted areas, however, are still reasonably well defined. These principles were applied in this painting and assisted in creating an illusion of scale for the turtle because the flipper on the far side is significantly bluer than the one in the foreground. After the palette knife work, I added defining detail around the eyes, the beak, the scales on the front flippers, the pompanos and the wrasse. When I created this painting, our son was two years old, and he scribbled over some of my drawings in my workbook. Though initially frustrated, I began to embrace this more spontaneous mark-making and experimented by incorporating lines that resembled his drawings. These constitute some of the abstract and stylised markings in the painting, where I began to shift the visual language to questions of realism and representation. (Chapter 5.2.6 contains details of the final painting.)

Figure 4.6 *I Love Turtles* (2019)

It was from a position of disquiet that I then painted *I love turtles.* The artwork is an oil painting on a stretched canvas that measures 100cm by 100cm by 3cm. In the introduction, I mentioned a situation in which I overheard a child exclaim at the uShaka aquarium, “Oh! I love turtles”. Her exclamation is the genesis of this piece. Having gained a fascination for painting sea turtles, I became increasingly aware of how their numbers have depleted, particularly because of the threat of ocean pollution, plastics, and microplastics (Wilcox *et al.* 2018). Central to the composition is an adaption of the renowned *I Love NY* graphic. It is set in the American Typewriter font and was originally designed by Milton Glaser in 1976, whom I interviewed for my Master’s degree. The ‘I’ in the logo echoes an individualist society. Behind the graphic is a concentrated pile of polluted waste that was photographed by Heidi Killian during a beach

clean-up in September 2018, near the Umgeni River mouth. Killian presented her photographs at a marine ecology short course that I attended at the South African Association for Marine Biological Research (SAAMBR). I was horrified. I did not realise how polluted the river mouth was. In these photographs, I saw potential for a painting, and Killian agreed that I could use her photographs as painting references. (The photographs from Killian that I referenced are in Chapter 5.3.1.) One of her photographs shows the recognisable arch of the Moses Mabhida Stadium. By depicting this prominent example of Durban architecture, I was able to contextualise the work and achieve a compositional juxtaposition of beach pollution, the urban skyline, and a great city icon. The juxtaposition could allude to a critique of consumerism: the Capitalocene (Marcum 2021; Moore 2016). Such is the primary 'meaning' of this painting. There are, in addition, secondary references. The dark band of beach vegetation is in contrast to the built environment. I had photographed a stray dog on the beach during a trip to Réunion Island. (See Chapter 5.3.2.) It felt appropriate to add the stray dog scavenging among the waste as some 'evidence of life' to the painting. I then added a bank of thick clouds to enhance the mood of a threatening storm while also creating a darker backdrop for the high-key graphic.

In the photographs of pollution, I identified and isolated packaging pieces that could contribute to the composition. My decisions were based on colours and shapes. To give the scene impact I ensured that the sun, as the main source of light, fell on the pieces in a parallel direction. The painting was initially conceived as a small pencil contour drawing of the main elements. Thereafter, I made compositional thumbnail sketches until I found balance: a prominent foreground led the eye to the picture with the skyline in the background. (Two pages of the graphite sketches are in Chapter 5.3.3.) The flat-colour graphic was drawn in vector using Adobe Illustrator. I then printed the graphic according to the size of the final drawing. From such a process, I created the detailed compositional drawing for the exact placement of elements and values in the painting. I kept in mind that the areas with the highest contrast in values would be the main focus areas, and the lower value range would serve as the backdrop. (The printed graphic and the composition drawing are in Chapter 5.3.4 and Chapter 5.3.5.)

It was the expressive mark-making of the earlier *Surveying* that inspired the expressive approach in this painting. It is detailed enough to describe the elements, but my aim was to visually interpret an internal conflict in the subject. The colours breaking the edges of the forms continue the theme of the dissolving of certainty. In the foreground, the high chroma colours on the products, such as blues, greens, yellows and reds, symbolise man-made artificial colours. Of these, the 'bleeding' reds are the most prominent and could represent passion or violence. The colours in the remaining areas were retained as neutral (low-chroma) colours or 'greys' to

emphasise the pollution and graphic in the foreground. (Close-up details of the final painting are in Chapter 5.3.6.)

Figure 4.7 *Second Chance* (2019)

Second Chance is a painting of hope. It is an oil painting on a stretched canvas that measures 80cm by 80cm by 3cm. A simple composition, the work depicts a two-month-old loggerhead sea turtle (*Caretta caretta*) that I photographed in the quarantine facility of uShaka Sea World. The hands are those of Malini Pather, the senior aquarist overseeing the sea turtles at the aquarium. She briefly held this loggerhead for me to photograph. Two months prior to taking the photograph, this little body would have hatched on the northern coast of KwaZulu-Natal,

as discussed in Chapter 2. After hatching, the young swim out to sea and enter the rapid Agulhas current that flows southward past Durban. Baby turtles that are injured or weakened can wash up on the Durban beaches, usually around March or April. If they are rescued, they are brought to the quarantine facility at the aquarium. Which is what happened to the turtle in the painting above. If the sea turtle recovers and becomes strong enough, it is then released back into the ocean at about twelve kilometres off the coast. It is given a 'second chance'. In the painting, the hands cup the forward-facing turtle, with the extended front flippers symbolising the moment of release. By then in this project, I had been confronted by literature on the Anthropocene, and the hand became a symbol of human actions (Barnosky *et al.* 2011; Seitzinger *et al.* 2015). Instead of portraying the negative impact, however, the hands in this piece have a positive connotation: the important work of rehabilitation by marine scientists.

I worked from a few reference photographs in order to have sufficient detail in all the areas of the turtle and the hands. I needed to understand the visual characteristics and structure, as I discussed in the loggerhead part of Chapter 2 (Hughes 1973; Wyneken 2001). Upon looking closer, I was amazed by the appearance of solidity in the protective scales on the head, carapace and flippers at such a young age. The features looked prehistoric and primitive. (Chapter 5.4.1 shows some of these photographs.) For the final painting, I created a few preliminary sketches that explored different angles. I then settled on an eye-level and forward-facing balanced angle. (The sketches are in Chapter 5.4.2.)

The paint application is thinner than in the previous two paintings; this allowed for more defined edges and detail. The 'running' paint effect was achieved by diluting the paint mixture. The theme of leaking colour and light continued here, and by this time, I felt it had become a defining characteristic of the whole body of work. The reds are also important, but they are softer than in the previous painting. The background is a simple and abstract vignette of dark-to-light that attains a brighter, cool red behind the turtle. The lack of a 'natural setting' contributed to the focus on the baby turtle, awaiting its 'second chance'. (Close-up photographs of this painting are in Chapter 5.4.3.)

Figure 4.8 *Mother* (2020)

Mother is the largest oil painting in the series at 150cm by 200cm by 5cm. I created it after witnessing sea turtles nesting and hatching at Bhanga Nek, as I described earlier in the chapter. The aim of the work was to create a natural environment that one could encounter on the nesting grounds. The following details are shown: a female loggerhead (*Caretta caretta*) as she leaves the water to nest, positioned with some foreshortening of perspective to give a sense that she is close to the viewer. There are two more sea turtles in the background between the waves, as a few specimens can simultaneously emerge in a single night (Nel, Punt and Hughes 2013). The size of the painting meant that I could add much more detail to the main sea turtle. The head scales are clearly defined and show the pair of prefrontals, the large frontoparietal, the split parietal scales behind it, the large supraocular scales, and the three postoculars at the side of the head. The patterns of the front flipper scales are also outlined the anterior edge while the smaller scales in the middle have recognisably large posterior scales folding into each other next to the body. The individual scales on the front of the carapace are visible. The keels on the carapace of an adult loggerhead usually flatten out as the turtle matures, but in this case, the middle keel remained fairly prominent with the red-brown colouration that is attributed to the species by both Hughes (1973) and Wyneken (2001). I observed how the moonlight fell on the various

surfaces while walking on the beach at night at Bhanga Nek, especially how it reflects on the water and is absorbed by the broken waves. I took reference photographs, but they did not capture the real impression. In the foreground, we have exposed rocks that are common from the Cape Vidal region northward, and such rocks are found in the nesting grounds of the loggerheads. In Chapter 2, I described that the front limbs of the loggerhead sea turtle are strong enough to carry the turtle's weight over open reefs in order to reach the slopes. That action is shown here. A few sea sponges are on the rocks and ghost crabs are also shown on the water's edge. These crabs are known to hunt for hatchlings; my intention was to add foreboding to the painting.

Composing this picture required me to work from a number of my photographic references. (See Chapter 5.5.1.) Most of the references were photographed during the day; I changed in the painting to darker, subdued colours to capture the night scene. The main photograph of the emerging loggerhead was taken at the uShaka aquarium during a feeding session and the night scene of the waves was photographed at Bhanga Nek. The workbook pages indicate that I made a number of compositional sketches before settling on the final iteration, as shown in Chapters 5.5.2 and 5.5.3. Even after the final drawing, I had to correct some details in the final painting, such as extending the distance and height of the rock on the left-hand side. I familiarised myself with painting the visual characteristics of ghost crabs in two small painting studies, presented in Chapter 5.5.4. The leatherback painting mentioned earlier was a colour study in which I explored the deeper colours of a night scene.

Because the human eye is unable to see high chroma colours in low light, in the final painting I settled on a limited colour palette of titanium white, lemon yellow, burnt sienna, French ultramarine, and phthalo green. The mixture of burnt sienna and phthalo green created the deepest darks and warmest greys when mixed with white or used transparently. The pale moonlight consists mostly of white and lemon yellow. The dispersed light of the broken waves appears as a purple-blue grey and I applied some French ultramarine to achieve this. Burnt sienna and French ultramarine together can create neutral (and cool) greys that assisted in creating the ocean surface in the distance. It is a composition with a few focal areas, and my aim was to have the eye travel through the picture towards the horizon. In summary, I set out to create a painting as a physical presence with the key loggerhead somewhat larger than her actual size. (The close-up photographs of this painting are in Chapter 5.5.5.)

Figure 4.9 *Power* (2020)

Power depicts the threat of coastal development to biodiversity (Goble and Van der Elst 2014; Seitzinger *et al.* 2015). The artwork is an oil painting on stretched canvas that measures 120cm by 90cm by 3cm. Similar to *Second Chance*, I used a hand to symbolise human actions. I referenced my own hand in this piece because one's hand relates to one's own choice of power, either to crush or protect life. In contrast, the fragility of a baby turtle represents the fragility of life. The male hand is also a metaphor for the actions of 'civilised man' that were discussed in Chapter 1 (Hamilton and Grinevald 2015: 4). There is also the power of man-made heavy machinery that intrudes in this piece. The vertical hand and wrist divide the image into two halves. The left side shows architectural construction, and the right side depicts the natural beach vegetation of the KZN coast. The choice is between developing and conserving. Because

the loggerhead hatchling was painted so large in the composition, I had to focus on the defining details of a hatchling. A subtle detail, for instance, is in the folding of the soft carapace, which becomes harder as the turtle matures. The fold lines are shown in front of my little finger, the lowest part of the carapace. In an understated manner, this suggests the delicacy of the young lifeform. The angle of the hand also somewhat represents the familiar symbol of the raised hand used in activism.

For the visual references, I photographed my hand from several angles. I held a toy sea turtle that is approximately the size of an actual hatchling, which assisted me in determining how the shadows fell on and around the turtle. The light source was from the top-left corner. The subject, the actual baby sea turtle, was taken at Bhanga Nek in a photograph that revealed enough of the visual characteristics from which to work. The dune vegetation was also photographed there. For an example of coastal development, I then photographed cranes and scaffolding during the construction of the high-rise apartment block, The Pearls, in Umhlanga, near Durban. (These photographic references are in Chapter 5.6.1.) From these photographs, I created a few preliminary drawings for this painting. At first, I only explored the theme of the hand and hatchling in the artwork and then looked at incorporating the logo marks of construction companies, but I decided on the current backdrop. My intention was to create a hand under strain, and that is what I explored through the various drawings and angles. I also sketched the hatchling as I photographed it on the beach to familiarise myself with the key details. These aspects were then combined into the final composition drawing. (The preliminary drawings feature in Chapters 5.6.2 and 5.6.3.)

This painting began with a bright activation layer that is shown earlier in Chapter 5.1.2. As in, *I Love Turtles*, I visualised a high-key foreground and a darker backdrop. The hand was intended to create a silhouette against the darker tonal value range of the construction, vegetation, and clouds. The purpose was to create simplicity in a composition of a range of imagined elements.

Figure 4.10 *Primitief* (2021)

For me, experiencing the scene that I painted in *Primitief* was a defining moment: seeing, for the first time, the 'origins of life' in a bucket full of vibrating little bodies. The experience was both primal and spiritual. I was reminded that turtles are prehistoric reptiles with characteristics unlike those of humans or 'newer' mammals. This painting has an Afrikaans title. Because of the deep experience, I titled the work in my mother tongue as it is phonically close to the English word 'primitive'. After kilometres of walking at night, the guide and I found a nest full of loggerhead hatchlings. When it has cooled enough after sunset, the hatchlings leave the nest at roughly the same time, climbing on top of each other to ascend the nest's edge. They start off in all directions but then gradually orientate themselves to head down the slope towards the ocean. This is the moment that I wanted to capture. Because of the vivid experience, the purpose

of this painting was to visually explore an interaction between the physical and the spiritual, as discussed in Chapter 1. We encounter Hegel's 'philosophy of spirit'. with 'soul' being the truth of 'matter', the concepts not in rigid opposition to each other (Dewey 2010). We may also be reminded of Montford's (2020) discussion of indigenous knowledge systems that integrate the physical and the spiritual towards an inter-relational stewardship. Chandler and Reid (2020) advocate becoming indigenous by being earthbound. These notions led me to further exploration of seemingly unrelated mark-making in the perception of reality. I found inspiration in our, then, five-year- old-son's childlike drawings of sea turtles and marine life. His drawings showed an honest and immediate visual response. After sketching on a few pages of my notebook, I chose drawings that I then copied into the painting by using a thin, long-handled brush. (Two of these pages are included in Chapter 5.7.1.) The symbolic and abstract markings were scattered throughout the painting with two contour drawings in the bottom-left position. The orange graphic is an organic-shaped turtle, unlike my 'realistic' renderings, and the green tentacles, or burst, or jellyfish, reminds me of Haraway's (2015) Chthulucene in her theory of the 'tentacular'.

It was technically challenging to capture these reference photographs. The low light meant that the ISO setting had to be high, but not too high to produce images that are too grainy. I prioritised shutter speed to avoid camera shake. With the wide aperture, the depth of focus was shallow. The guide had shone a fairly white light, but the hand-held light kept moving, and I had to respond quickly to the changing light conditions. Fortunately, I had taken a few photographs that were clear enough to paint from, though they lacked the vividness and sense of movement of the actual experience. (These photographs can be seen in Chapter 5.7.2.). I began by sketching details in graphite and ink from a few of these references. I then planned a more complicated composition for the larger canvas, on which I wanted to portray the feeling 'busy-ness' that the event had impressed upon me. There were, therefore, several composition-sketch iterations. The final composition consisted of elements from various reference photographs, and therefore, in the painting, I had to ensure that the light remained intruding from the same direction. (Chapters 5.7.3 and 5.7.4 display preliminary sketches and the final composition drawing.) The photographs revealed little colour, so I used brighter colours and a broken colour technique to create a sense of energy. The paint studies, included in Chapter 5.7.5, assisted me in deciding on the colours for the final painting. Close-up details of the final painting are in Chapter 5.7.6.

Figure 4.11 *Green* (2021)

Green depicts the horror of ocean pollution. It was painted in oils on a stretched canvas that measures 100cm by 100cm by 3cm. I depicted the following lifeforms: a green sea turtle (*Chelonia mydas*) in the foreground, a hawksbill sea turtle (*Eretmochelys imbricata*) in the background, and a blue-barred parrotfish (*Scarus ghobban*) viewed from above in the lower-left corner. There were three references to 'green'. The turtle in the foreground is a green sea turtle. Secondly, 'greening' is a term in environmental sustainability and is often linked to waste management. Thirdly, the sea water was painted using phthalo blue and burnt sienna to create a warm green tone. This colour combination created an uneasy effect that is unlike a more harmonious turquoise green typically associated with sunny and pleasant seascapes. The purpose was to illustrate how common household plastic waste could result in the death of

marine life, such as sea turtles. This is in response to Eriksen *et al.'s* (2014) publication on the volume of plastic in the oceans, as well as the breaking down of microplastic particles. The idea of microplastics provoked the 'bleeding' of colour technique in the depiction of the plastic pieces. I recall Kwon *et al.* (2017) speak of the durable and buoyant properties of plastic waste in the ocean. In the painting, I inserted floating pieces that overlap the front turtle and, in the foreground, added a cluster of waste underneath the water surface but visible from the angle that the viewer sees the front wave. I found that a water surface that faces the onlooker will appear transparent while a water surface that is angled away from the onlooker will reflect the light of, for instance, the sky. To depict the dead turtle, I inverted a reference photograph I had taken of a hawksbill, thus revealing the plastron. To reinforce this idea, I then created a serrated hind flipper and painted swollen limbs as a typical occurrence of a floating turtle exposed to the prolonged heat of the sun, which depicts how ingesting plastic causes these turtles to suffer as the marine scientist explained in Philipps' (2017) article. For the green turtle, I chose a reference photograph that I had taken at Kélonia on Réunion Island, where it appears as if the turtle is looking at the viewer. This may seem confrontational. For both the green and the hawksbill turtles, I paid careful attention to their visual characteristics, as described by Hughes (1973) and Wyneken (2001). The hawksbill, for instance, has high-contrast black-and-white scales with deep keels on the plastron and jagged edges on the outer side. For the pieces of packaging, I used common South African brand products, which I photographed in a swimming pool to reveal colour contours in the water and to incorporate the visual effect of floating pieces. In this way, the painting embodies a 'garbage aesthetic', to return to previous commentary, particularly by Marcum (2021).

I worked from a few of my reference photographs to achieve the final composition, which included the following references: Durban harbour on an overcast day to capture the water surface; the hawksbill that was photographed in the quarantine facility at the uShaka aquarium; the parrotfish at Kélonia; household waste in a public pool at the Bluff in Durban; and a few frames from an illustrative venture (touched upon previously) in which I sketched a young turtle 'swallowed' by a plastic bag. Implicitly, there is a conceptual relationship between a toy turtle and a young loggerhead: that is, between the plastic of consumerism and the natural environment. (The reference photographs, preliminary works, and the close-up details of the final painting are included from Chapters 5.8.1 to 5.8.8.)

Figure 4.12 *Wonder* (2022)

In contrast to the intensity of the previous work, my aim wasto paint a scene of natural beauty, in a sense of ‘wonder’. It was painted in oils on a stretched canvas that measures 91cm by 110cm by 5cm. By this time, I had noticed a significant increase in pollution on the beaches in the Bhanga Nek region, as I discussed in Chapter 2, and therefore, I painted an ecological balance that we might lose due to pollution and coastal development. Nesting, in particular, is discussed in the literature as a vulnerable life stage of the sea turtles, and therefore, the work depicts a nesting loggerhead sea turtle (*Caretta caretta*) and, somewhat hidden in the nearby plants, a common genet (*Genetta genetta*). The genet is known to feed on the hatchlings. Embedded within the composition are some scientific details, such as the nest that the female digs with her front and hind flippers. The s-shaped tracks of a loggerhead, shown in the foreground, are different from the larger tractor-like tracks of a leatherback that I worked into a painting shown in Chapter 5.1.6. The typical dunes and vegetation of these nesting grounds are also in the painting. (The reference photographs, preliminary works and close-up details of the final painting are displayed from Chapters 5.9.1 to 5.9.4.)

Figure 4.13 *Shared* (2022)

The last painting in the series, *Shared*, is about ontology. It was painted in oils on a stretched canvas that measures 117cm by 96cm by 3cm. The purpose is to challenge human exceptionalism in a human and nonhuman dichotomy by depicting a green sea turtle skeleton (*Chelonia mydas)* together with a human skeleton (*Homo sapiens*) (Derrida and Wills 2002; Latour 1993). At least visually, we creatures all share a similar skeletal structure. Hence, the title. The idea of 'shared' can be extended in that we also share a time and place. We share the same beaches, and unless we address the crisis of pollution, our social waste, particularly our plastic waste, will remain as skeletal remains. The painting differs from the others because no visible life is shown in the piece except for an imagined point of connection between a right

hand and the fore flipper. This symbolises a faint hope of remediating actions, as was explored in *Second Chance*. A "process ontology" is visualised through the interlinked circles throughout the composition (Koons 2008: 288).

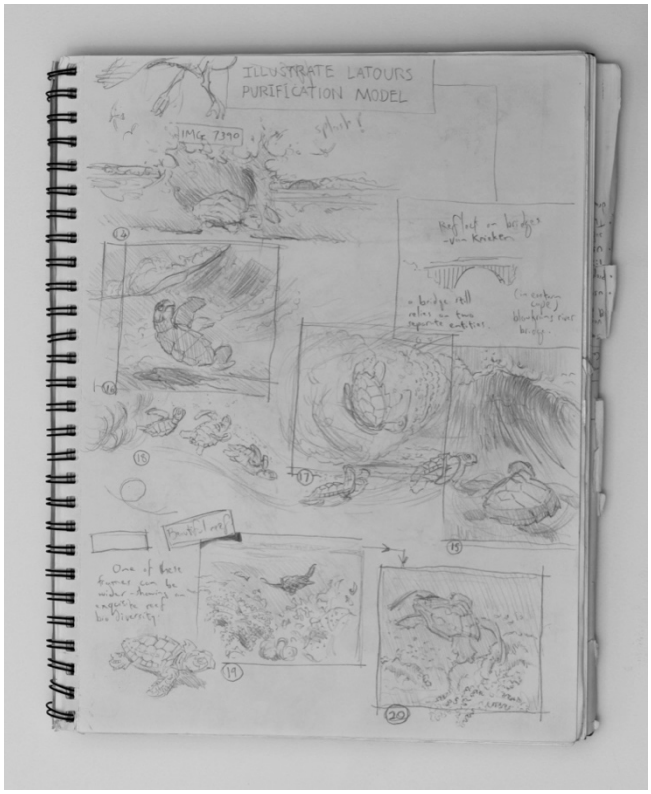
The origin of the painting began as a small graphite drawing in my Moleskine sketchbook. For this drawing, I combined two references: the skeleton of a turtle that I had photographed at the Two Oceans aquarium and a digital 3D visualisation of a human skeleton that I generated by using the Proko Skelly mobile application. (These references can be seen in Chapters 5.10.1 and 5.10.2.) Unlike the previous works, I created here a digital composite of my references in Adobe Illustrator. For all the previous paintings, the final composition was achieved through a detailed drawing in my workbook. A concept drawing – shown in Chapter 5.10.3 – assisted me in thinking through the tonal values, but the digital composite meant I could carefully adjust the various sizes and transparencies of the references and golden circles until there was some compositional balance. (Chapter 5.10.4 displays the digital composite.) The photographs of the polluted beach were taken during a beach clean-up session near Bike 'n Bean, north of the Bay of Plenty. At the time, the clean-up was in response to the Durban floods earlier in 2022. The inclusion of SpongeBob SquarePants was somewhat incidental. I did not initially realise that the character was in my reference photographs but only saw it when I sketched the individual waste pieces. Adding this character, who has an association with ocean conservation, struck me as a lighter sub-motif to an otherwise serious theme. (These references are also in Chapter 5.10.1.)

A night photograph that I took in the nesting grounds served as the dark backdrop of the beach and waves behind the skeletons, which are intricate and require an uncomplicated background for accentuation. By this time, the 'night' had gained significance as a time when species emerge to nest and hatch while also representing a metaphysical 'darkness' of uncertainty – an uncertainty that hovers over the entire subject of environmental concern in our anthropocenic and anthropogenic times.

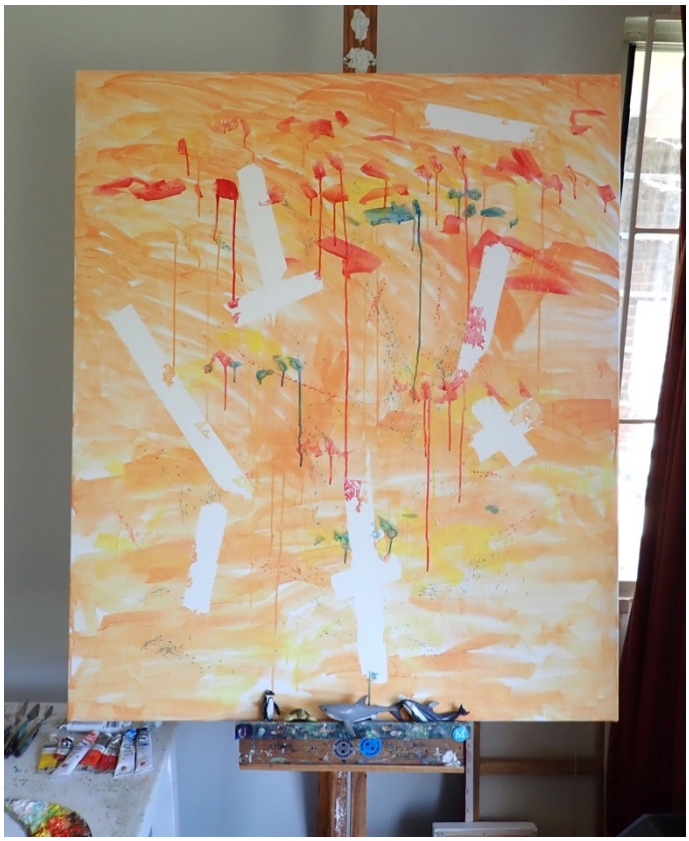
Chapter 5: My paintings: A catalogue from process to product

5.1 Process material common to the series

5.1.1 Preliminary graphite sketches as frames for a possible illustrative story



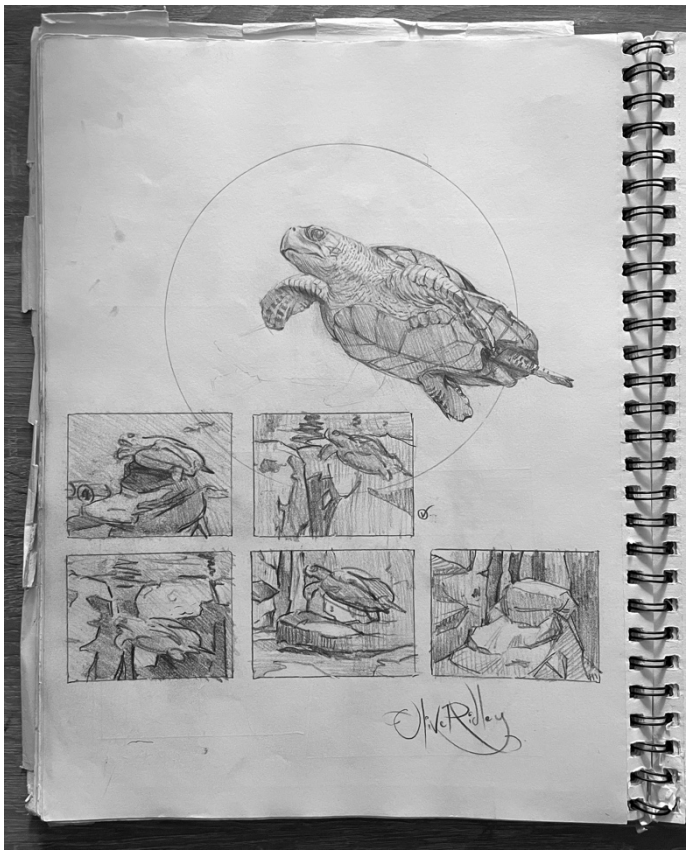
5.1.2 Example of an activated canvas



5.1.3 Brushes used

5.1.4 Palette, roller, and palette knives used

5.1.5 Sketch of an olive ridley sea turtle

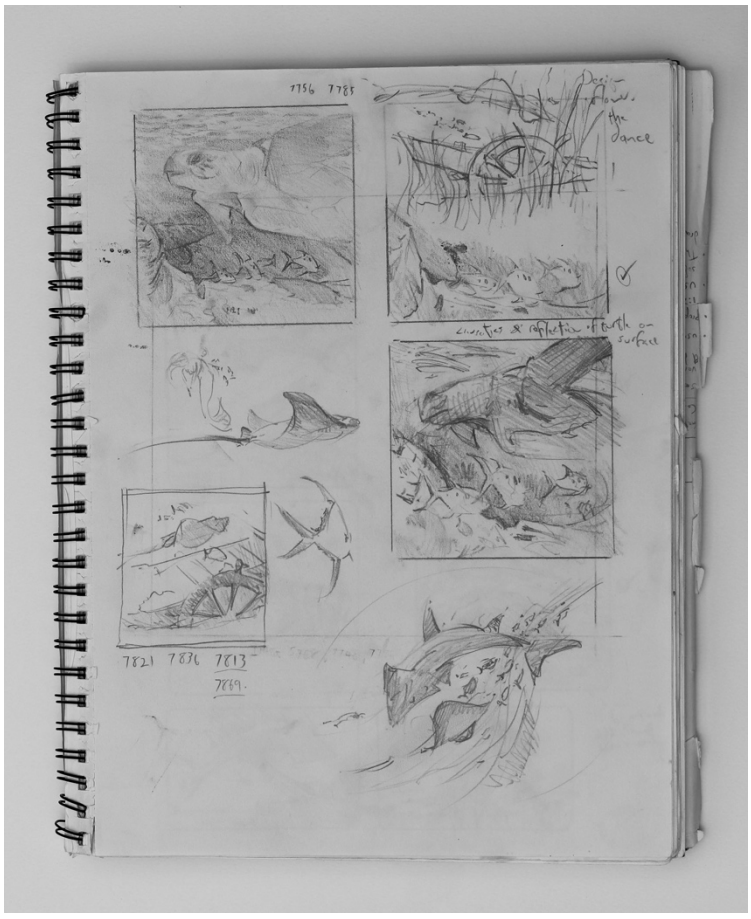


5.1.6 Painting of a leatherback sea turtle and its characteristic tracks on the sand

5.2 The process material for *Surveying*

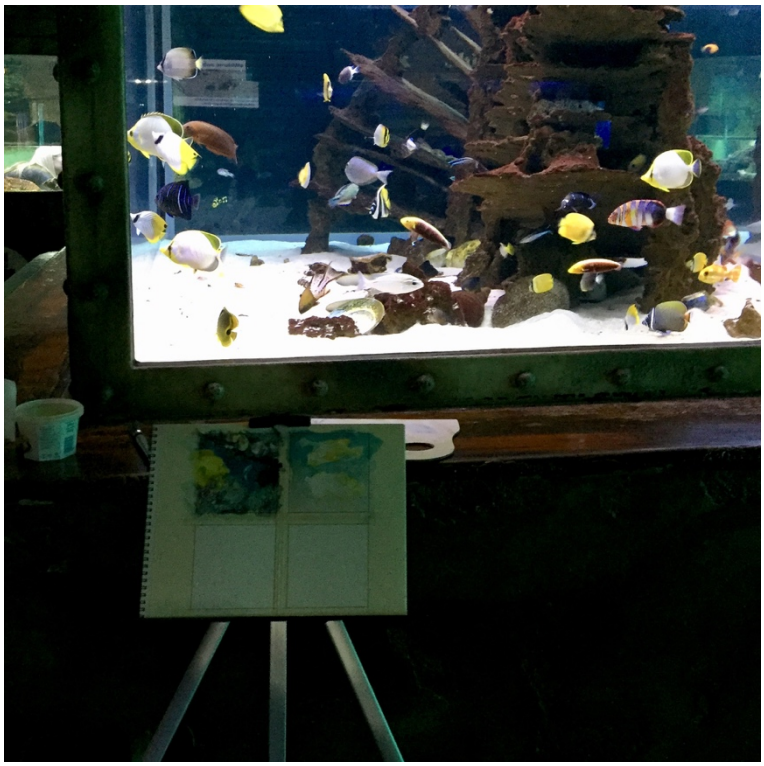
5.2.1 Personal photographic references for *Surveying*

5.2.2 Preliminary graphite and ink sketches for *Surveying*

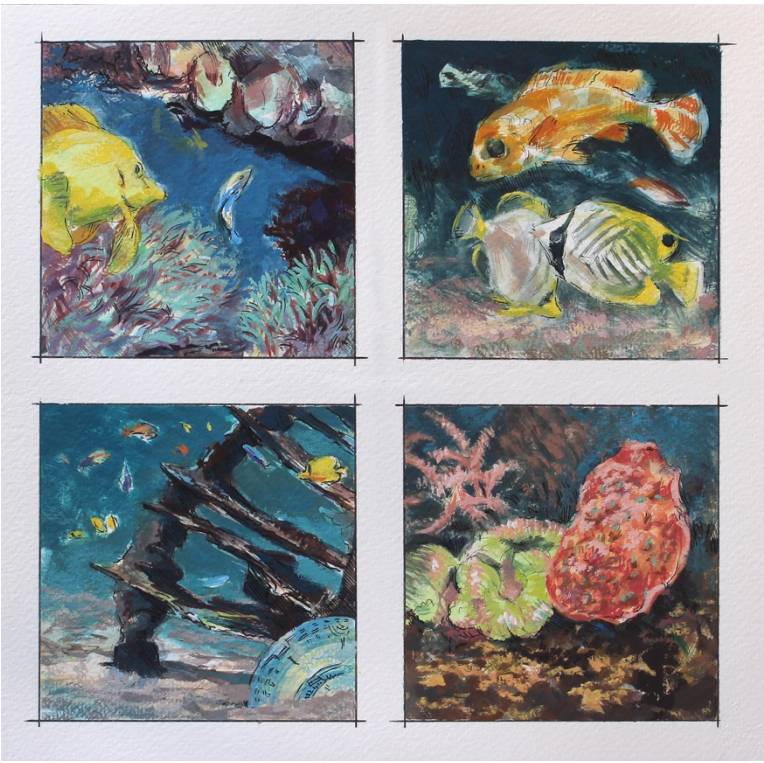


5.2.3 Preliminary gouache studies for *Surveying*

5.2.4 My easel set up for on-location gouache painting at the uShaka aquarium



5.2.5 A set of on-location gouache paintings created at the uShaka aquarium



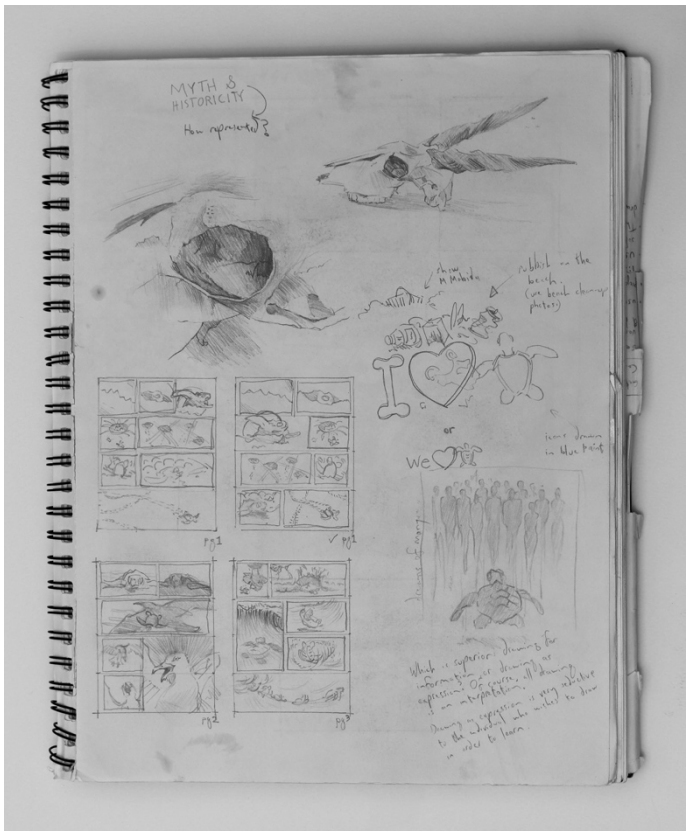
5.2.6 Close-up details from *Surveying*

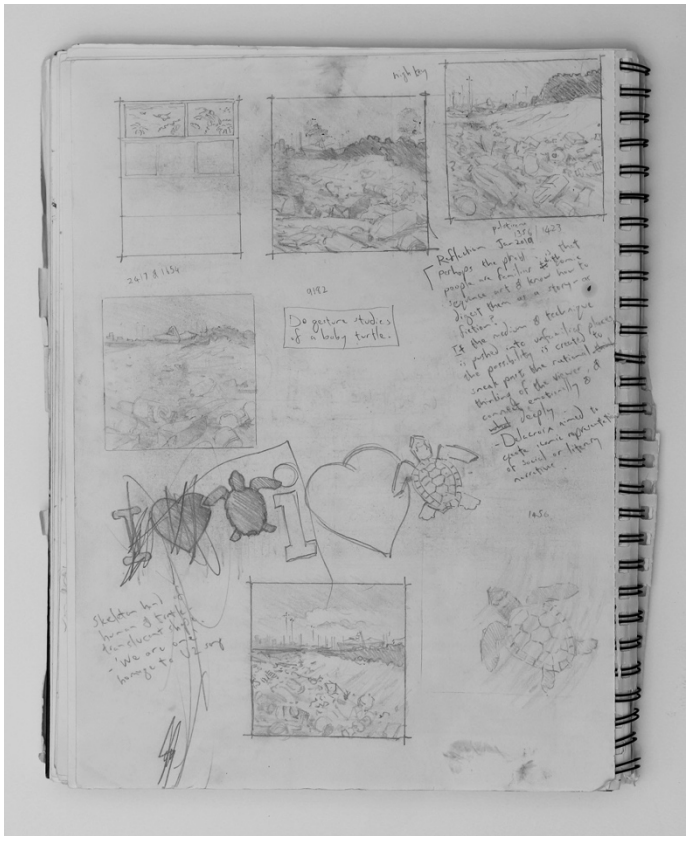
5.3 The process material for *I Love Turtles*

5.3.1 Photographic references by Heidi Killian used in *I Love Turtles*

5.3.2 Personal photographic reference taken on a beach in Réunion Island

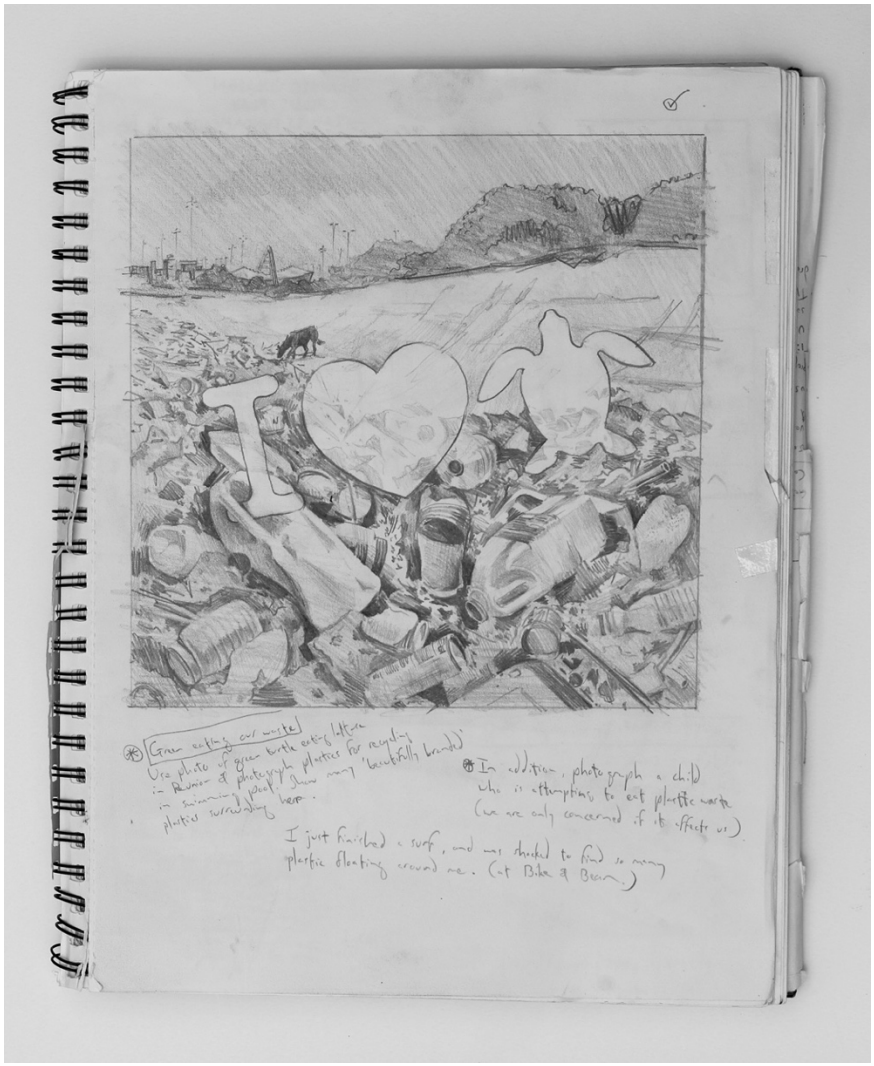
5.3.3 Preliminary graphite sketches for *I Love Turtles*





5.3.4 A print of the vector drawing for *I Love Turtles*

5.3.5 The final composition graphite drawing for *I Love Turtles*

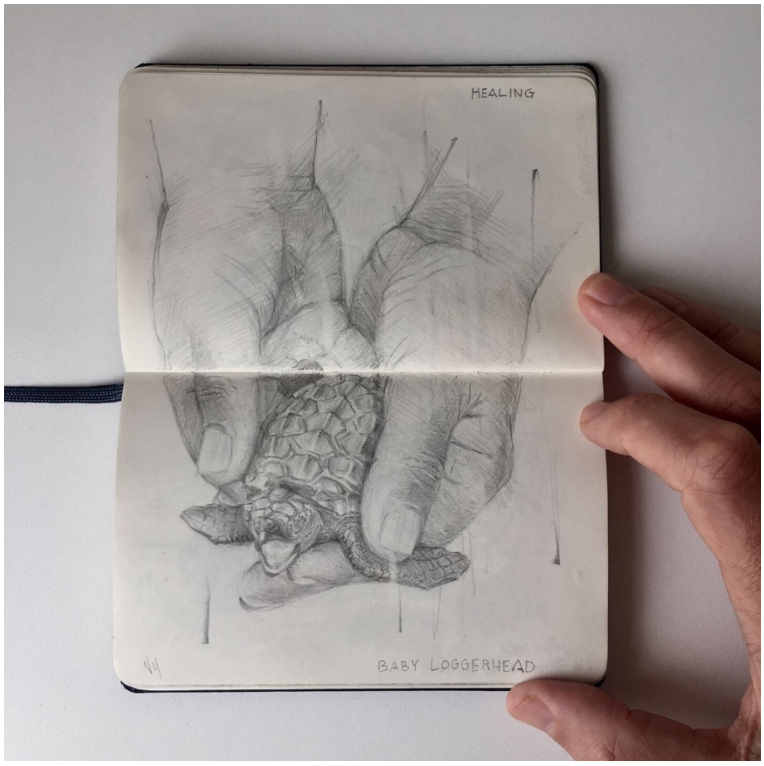


5.3.6 Close-up details from *I Love Turtles*

5.4 The process material for *Second Chance*

5.4.1 Personal photographic references for *Second Chance*

5.4.2 Preliminary drawings for *Second Chance*

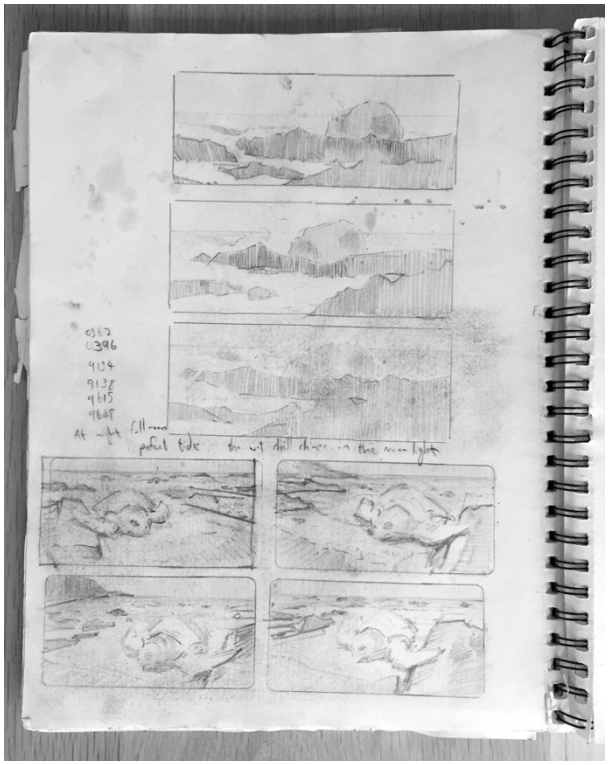


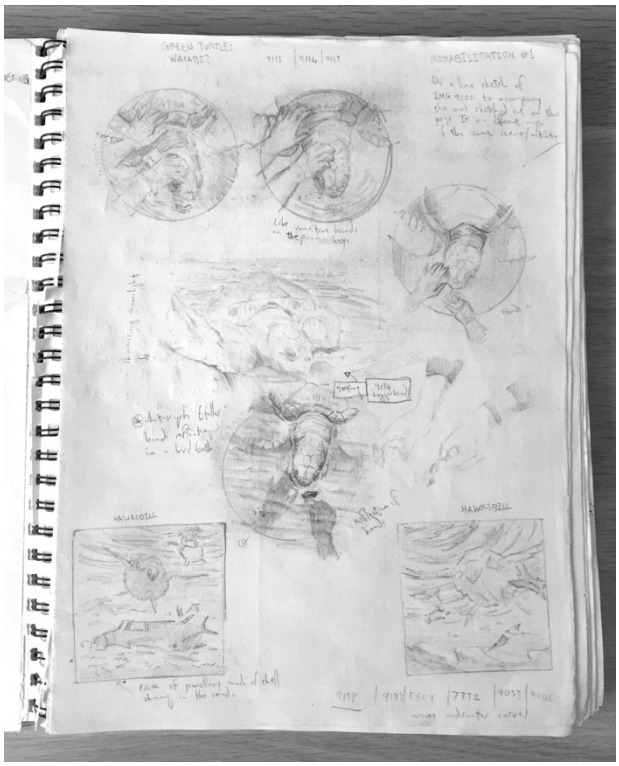
5.4.3 Close-up details from *Second Chance*

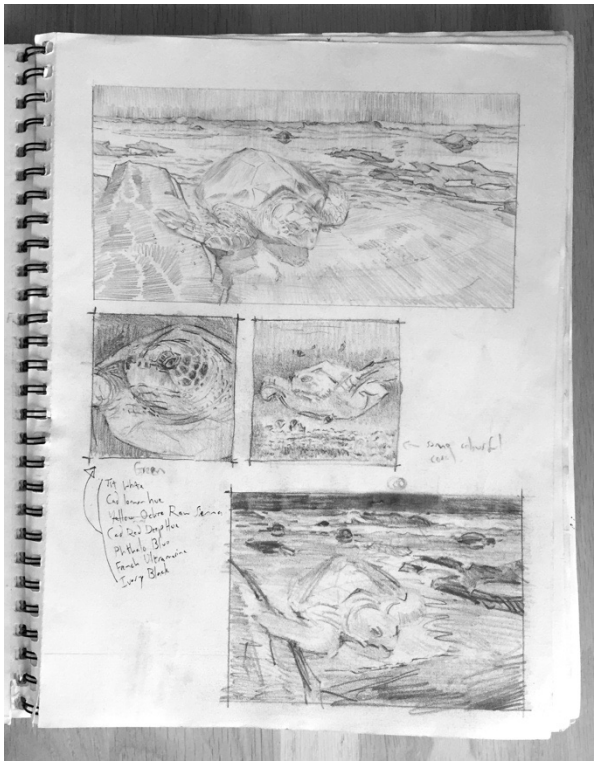
5.5 The process material for *Mother*

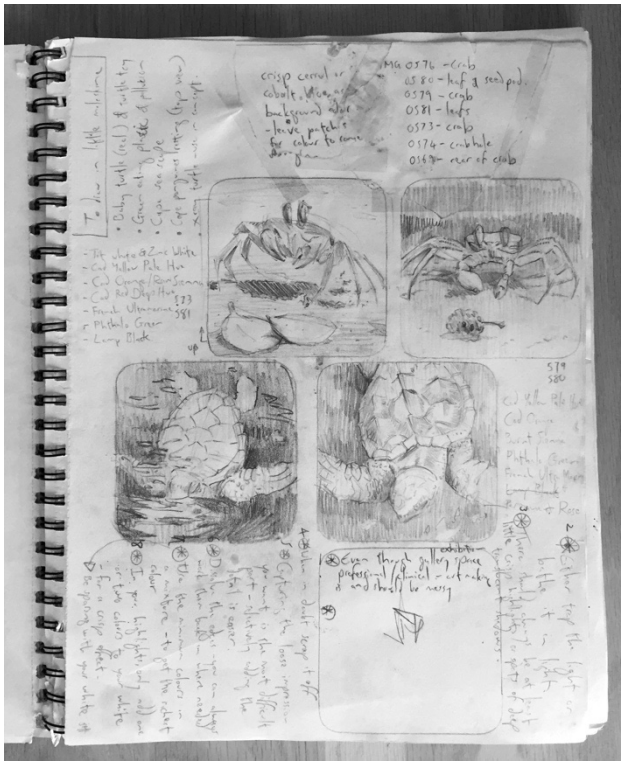
5.5.1 Personal photographic references for *Mother*

5.5.2 Preliminary graphite sketches for *Mother*

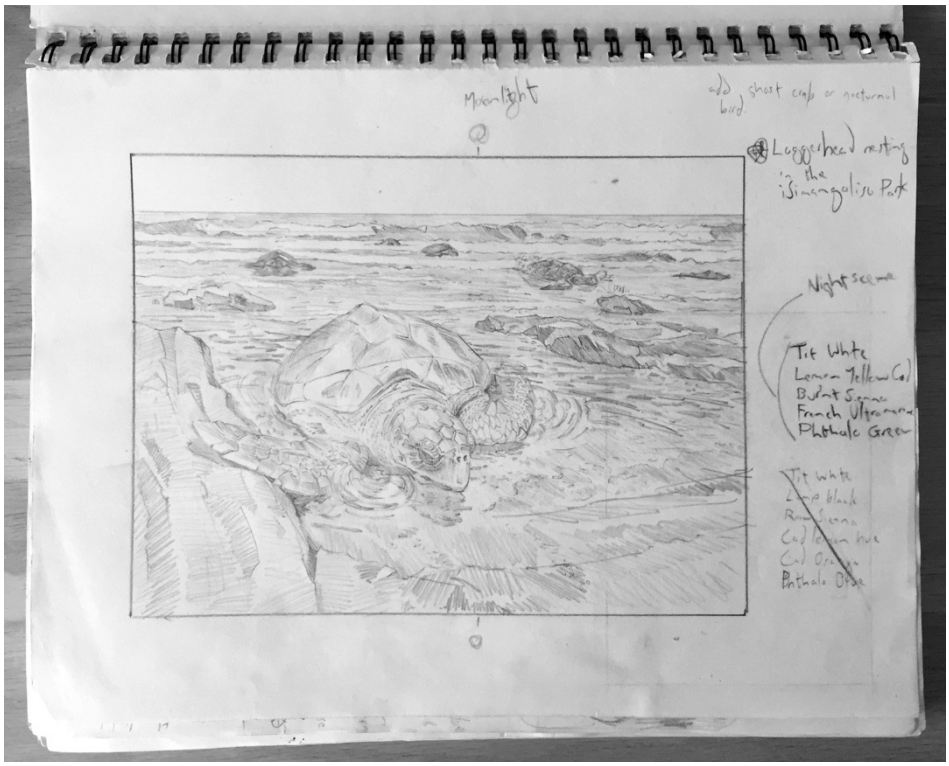



GREEN TURTLE:
WAYARE?
HAWKSBILL





5.5.3 Final composition graphite drawing for *Mother*

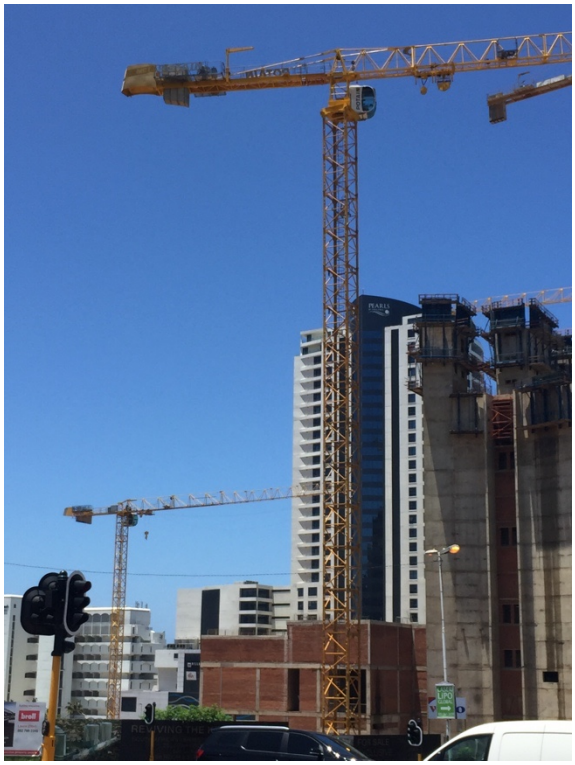


5.5.4 Preliminary painting studies of crabs for *Mother*

5.5.5 Close-up detail from *Mother*

5.6 The process material for *Power*

5.6.1 Personal photographic references for *Power*



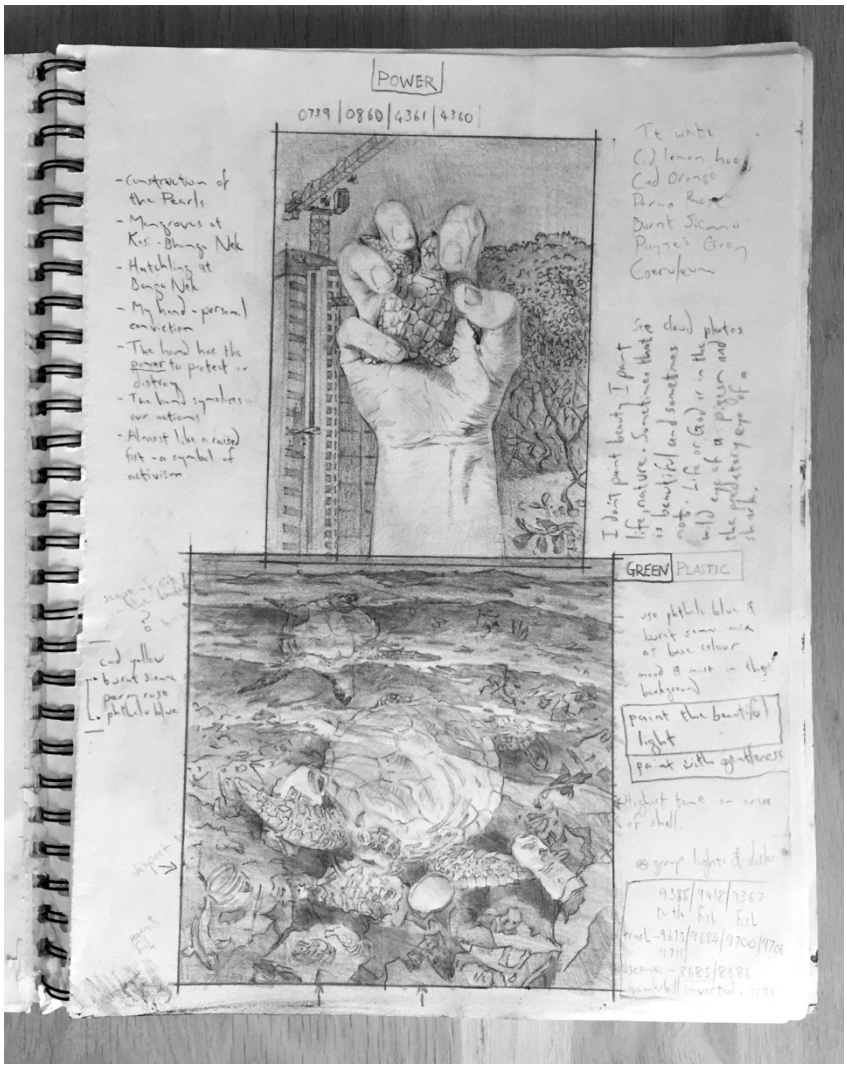
5.6.2 Preliminary drawings for *Power*


Artline
Calligraphy Pen 1.0
POWER


Mars Lumograph
4B

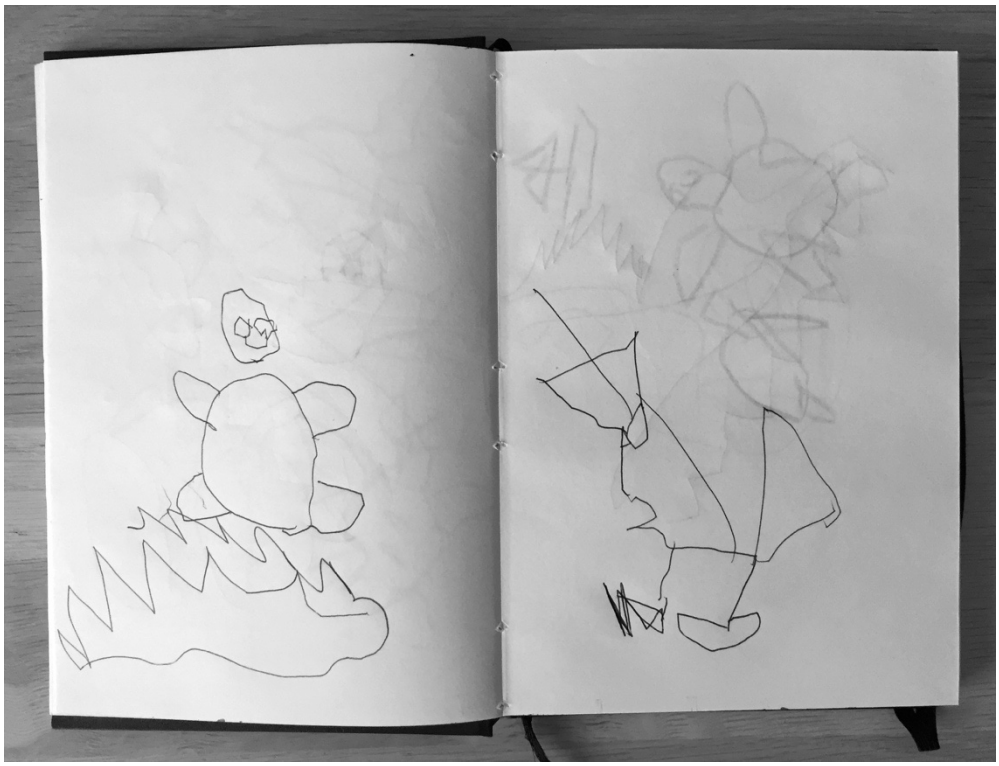

POWER

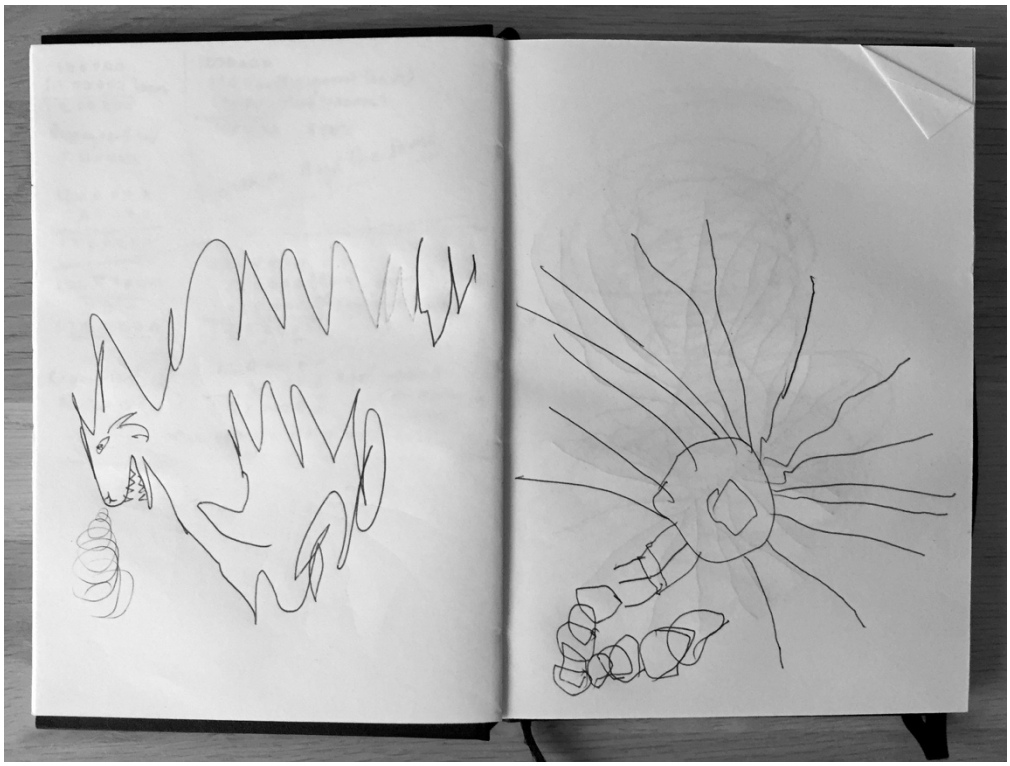
5.6.3 Final composition graphite drawing for *Power*



5.7 The process material for *Primitief*

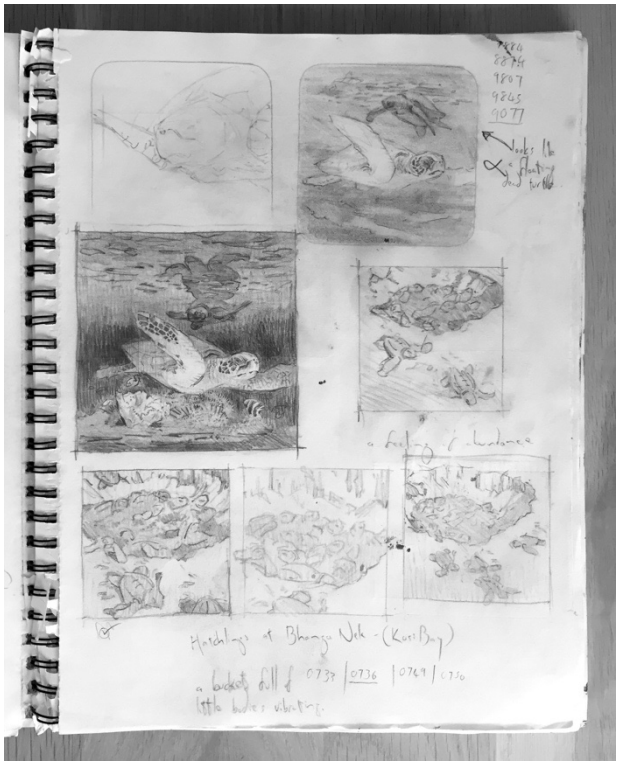
5.7.1 Lucian's drawings copied in *Primitief*





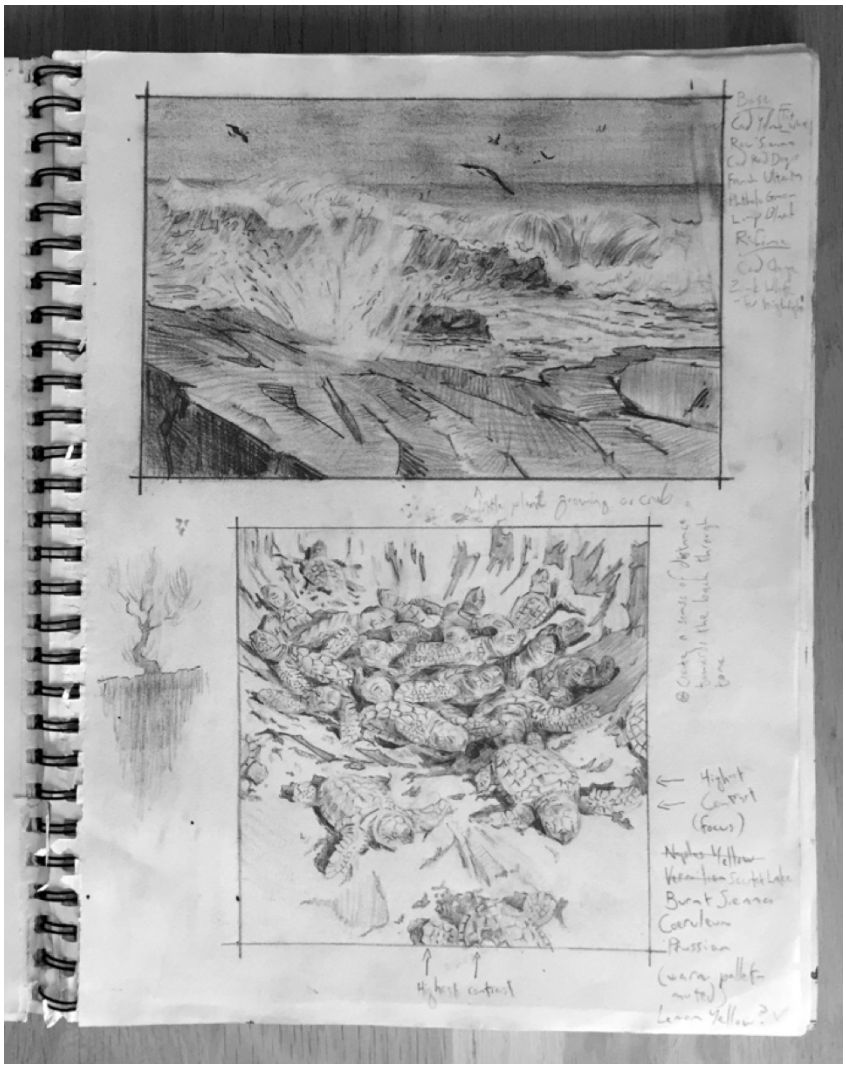
5.7.2 Personal photographic references for *Primitief*

5.7.3 Preliminary sketches for *Primitief*




Great Rhinoceros
uni-ball pin FINE LINE
WATER AND FADE PROOF PIGMENT INK

5.7.4 Final composition drawing for *Primitief*



5.7.5 Preliminary oil paint studies for *Primitief*

5.7.6) Close-up details from *Primitief*

5.8 The process material for *Green*

5.8.1 Personal photographic references for *Green*


Lays
PURITI
head to toe
wash

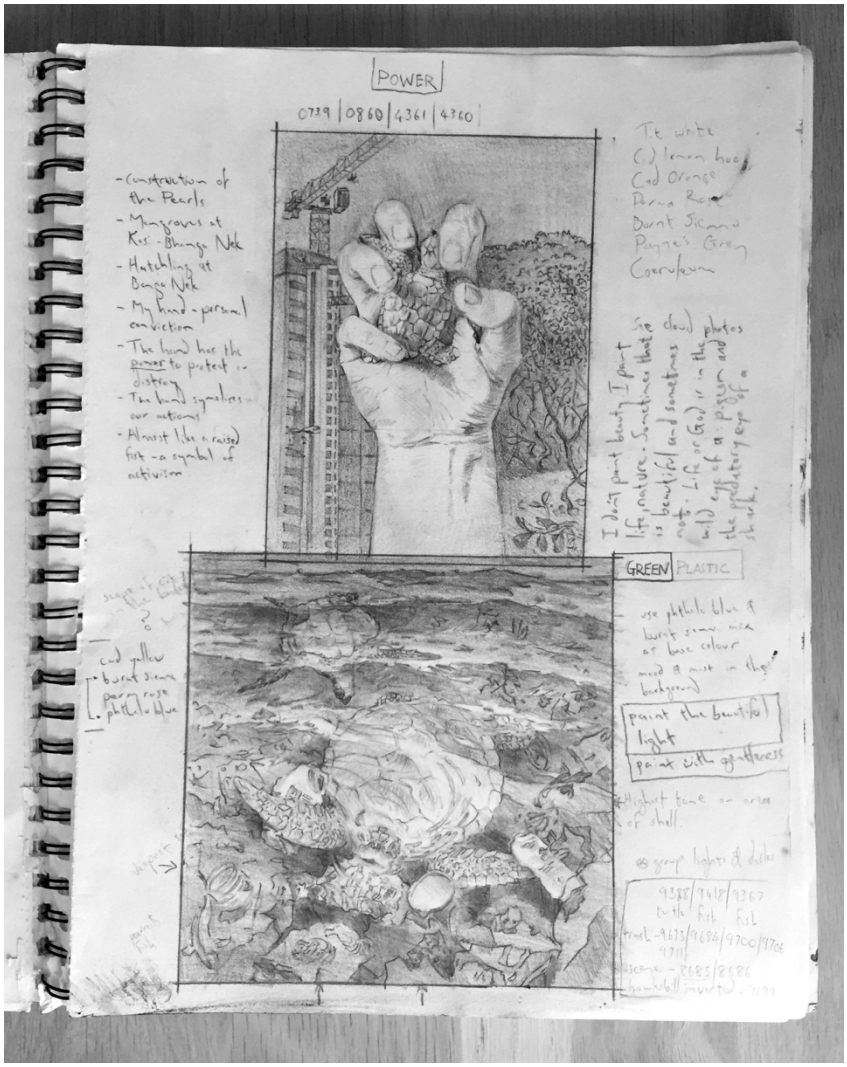

Pants
Huggies
Dry
Pant


Lays


Eco bak

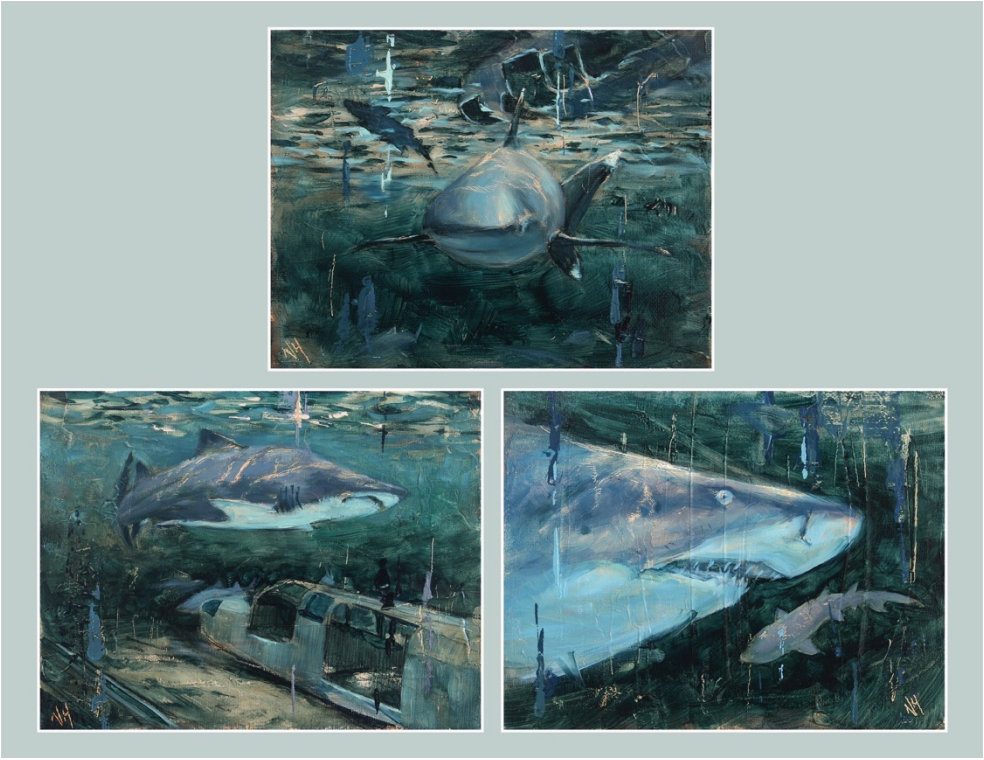

Clover
LOW FAT
FRESH
MILK

5.8.2 Preliminary graphite sketches for *Green*


POWER
0739 | 0860 | 4361 | 4360
- Construction of the Pearls
- Mangroves at Kos - Bhanga Nek
- Hatchling at Dance Nek
- My hand - personal conviction
- The hand has the power to protect or destroy
- The hand symbolises our actions
- Almost like a raised fist - a symbol of activism
GREEN PLASTIC
paint the beautiful light
paint with gentleness

5.8.3 Preliminary gouache studies for *Green*

5.8.4 Oil painting set that informed the ocean colours in *Green*



5.8.5 Oil painting of hawksbill that informed *Green*

5.8.6 Oil painting that informed the wave treatment in *Green*

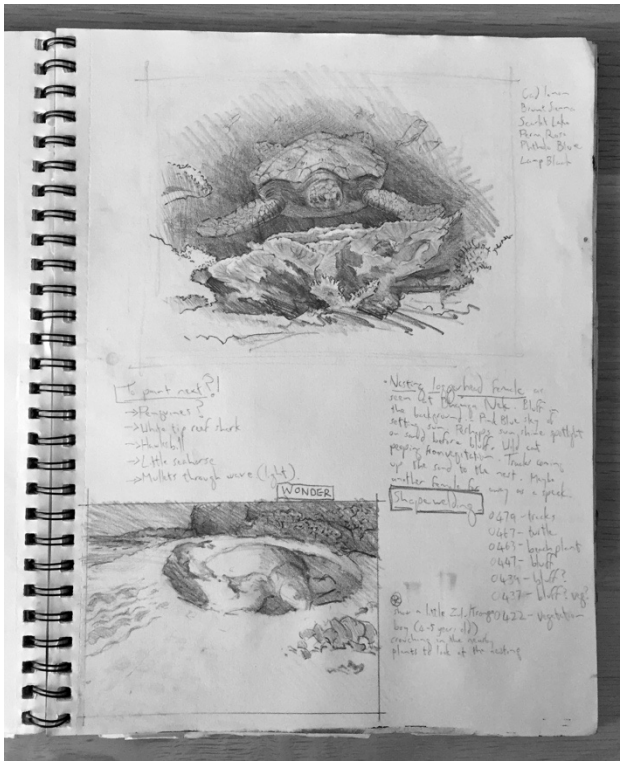
5.8.7 Oil painting that informed the concept of *Green*

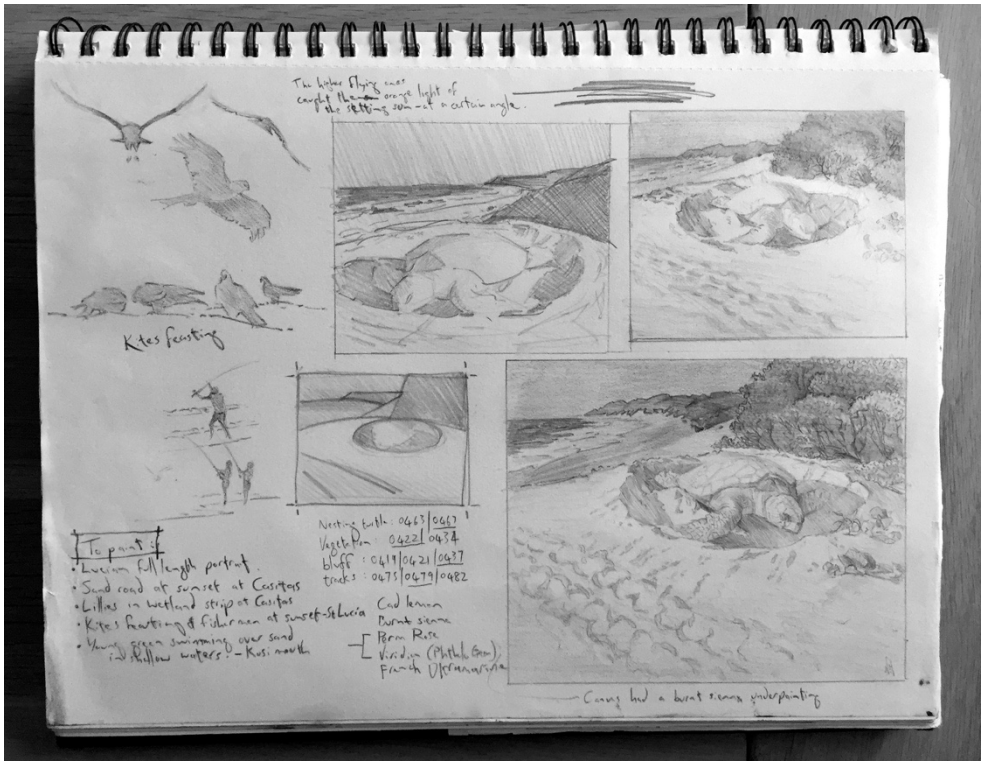
5.8.8 Close-up details from *Green*

5.9 The process material for *Wonder*

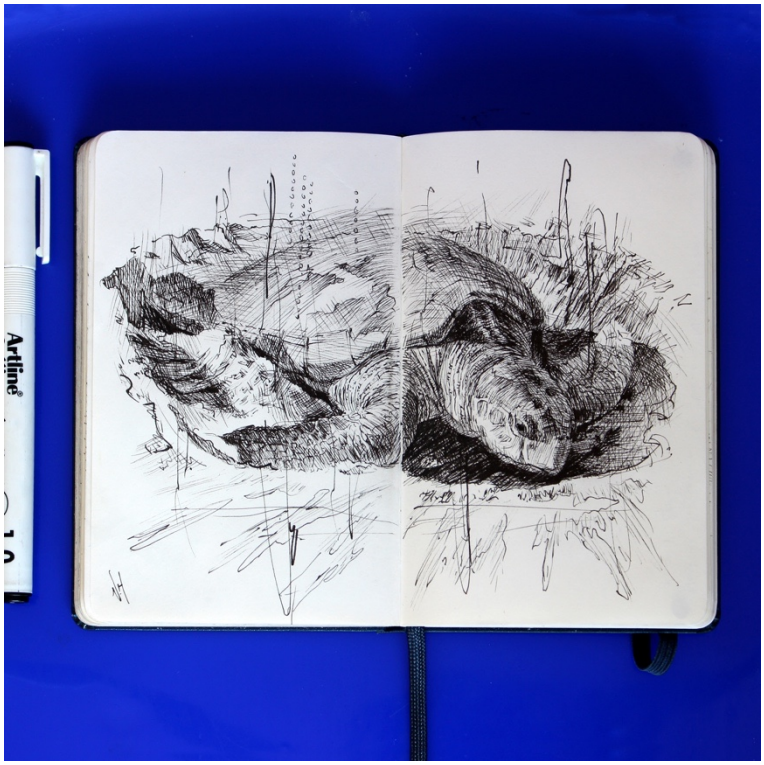
5.9.1 Personal photographic references for *Wonder*

5.9.2 Preliminary drawings for *Wonder*




The higher flying ones caught the orange light of the setting sun – at a certain angle.
Kites feasting
To paint:
• Lucian full length portrait.
• Sand road at sunset at Cassitas
• Lilies in wetland strip at Cassitas
• Kites feasting @ fisherman at sunset-St Lucia
• Young green swimming over sand in shallow waters! – Kos. mouth
Nesting turtle 0463 0467
Vagie Pan 0422 0434
bluff 0419 0421 0437
tracks 0475 0479 0482
Cad lemon
Burnt sienna
Perm Rose
Viridian (Phthalo Green)
French Ultramarine
Carry had a burnt sienna underpainting


Artline



5.9.3 Oil painting set that informed details in *Wonder*

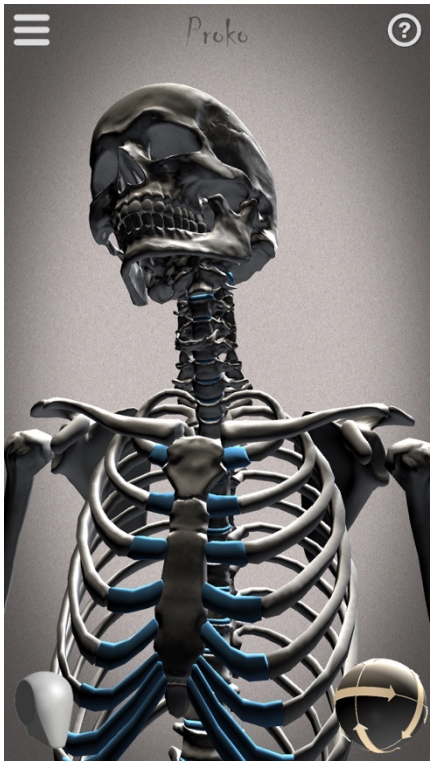
5.9.4 Close-up details from *Wonder*

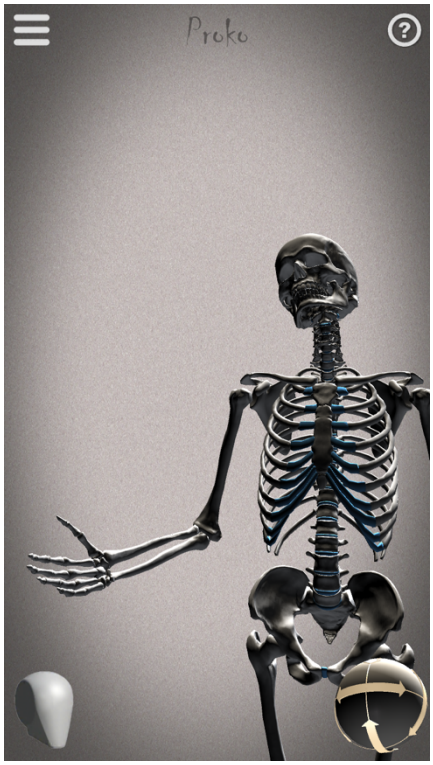
5.10 The process material for *Shared*

5.10.1 Personal photographic references for *Shared*

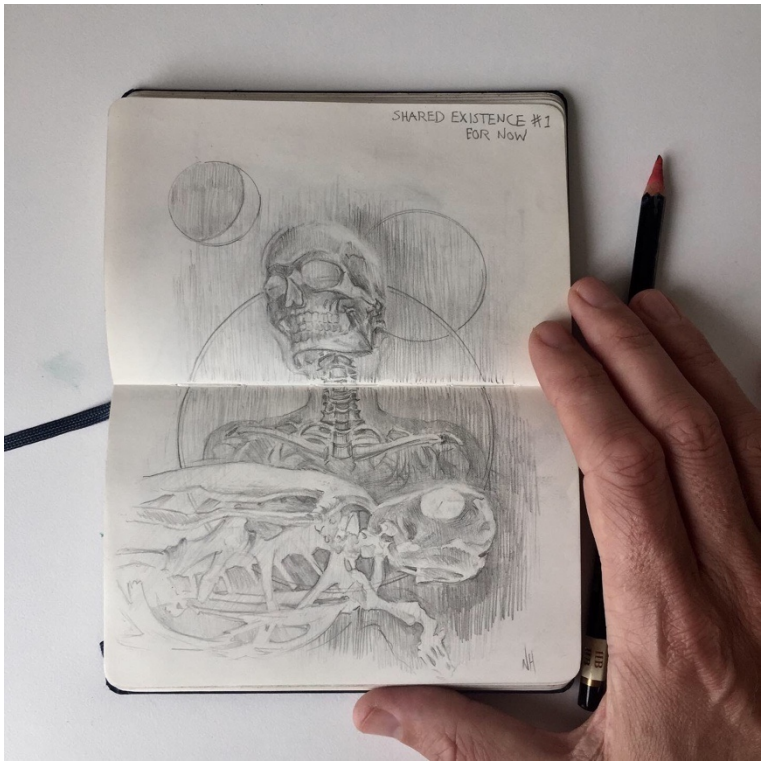

DULUX
TRADE

5.10.2 Proko Skelly app screenshot references for *Shared*



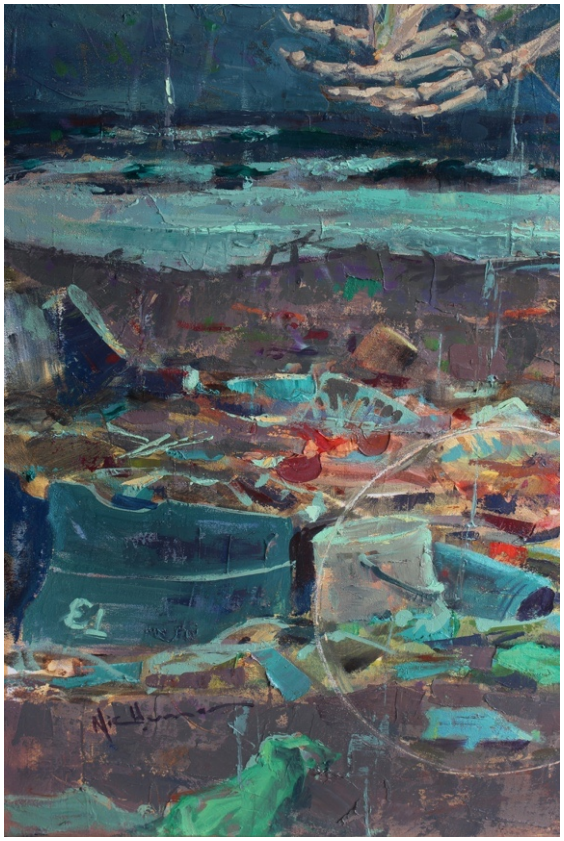


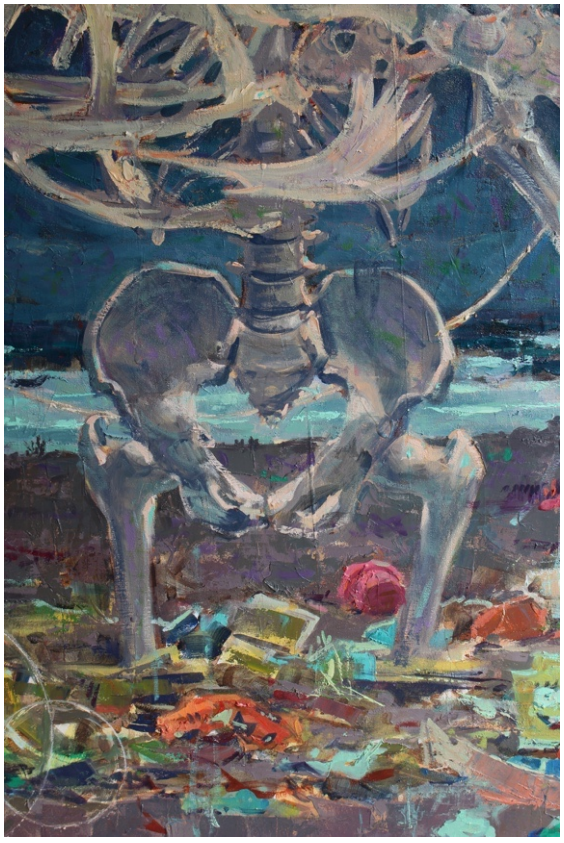
5.10.3 Preliminary graphite sketch for *Shared*



5.10.4 Preliminary digital composite reference for *Shared*

5.10.5 Close-up details from *Shared*





Postscript

The postscript discusses a few points that may prompt future visual-art projects and considerations of ecological preservation. From the current study, a question might arise as to how a painter (or any visual artist) can explore the conservation of threatened lifeforms. Or, more fundamentally, how an artist impresses the importance of such lifeforms on our moral and social consciousness. In the case of the sea turtle, I am working with a creature that we human creatures do not fear, or a creature that enjoys a good press, as it were. What, however, about sharks or stingrays as a subject for painting, for 'aesthetic' treatment? Images from the film *Jaws* might hinder the viewer's sympathy. Yet extinction is equally a threat to a number of chondrichthyans, such as sharks and rays (Espino-Ruano *et al.* 2023; Shiffman *et al.* 2021). Species that are confirmed to play a key role in regulating ecosystems even as predators are undergoing a significant decline in numbers, some to the edge of extinction.

Subsequent to my series of paintings on turtles, I have explored two compositions: one of a reef shark and the other of a stingray and an eagle ray. Shown here, the works are but a preliminary attempt to familiarise myself with the visual characteristics of these lifeforms while being mindful of the 'fearful' way in which they are typically portrayed in popular media.

Figure 6.1 *Pulsing* (2023)

Figure 6.2 *Majestic* (2023)

There is, however, a concern that "flagship species" are typically chosen for the marketing of environmental conservation (Lundberg *et al.* 2019: 432). Environmental organisations draw on the visual attractiveness and "symbolic power" of select species to garner public support, while "ugly animals" are neglected (de Pinho *et al.* 2014: 1). While environmentalists grapple with such biases, so too might a visual artist who aims to address imperilled species.

Another visual art challenge could be how to portray lifeforms that are relatively unknown and do not yet have an established presence in the minds of the general public, such as those that are particularly small but play a crucial role in ecology. Here, recent advances in micro-photography may indicate potential. Durban-based marine-life photographer and scientist Robyn Scott, for example, was able to capture high-definition underwater photographs of nudibranchs, which are a fraction of the size of a person's fingernail.

In addition, there is the critique of "single-species conservation" (Riggio *et al.* 2022; Runge *et al.* 2019: 2; Watts and Truitt 2021). Earlier in the study, I referred to 'keystone' species to justify sea turtles as a motif; similarly, there is a school of thought that recognises criteria for selecting "umbrella species", where various lifeforms would benefit from the conservation of a single species. Despite some success since the early 2000s, recent literature has begun to investigate alternative ecological conservation strategies in "multi-species prioritisation".

Apart from the theme of ocean pollution, this study has suggested other marine life threats that could warrant attention in activist art, such as large-scale bycatch and the over-exploitation of industrialised fishing. By encountering narratives from the local people near the

nesting grounds, there is also the opportunity for a deeper exploration of the relationship between indigenous knowledge and the sea turtles on the southern African coast.

By choosing to end with a postscript rather than a conclusion, I am suggesting that the very concern of both my discussion and my painting is an ongoing concern. As I have argued, an art of the environment is not an 'art for art's sake' but an art of social and political implication, especially in its 'story' of our need for a kinder planet, a planet of reciprocity between human creatures and non-human creatures. Or, more simply, the reciprocity of all of us who must share the only environment that we have.

References

Allen, R. 2009. Art activism in South Africa and the ethics of representation in a time of AIDS. *A South-North Journal of Cultural & Media Studies*, 23 (3): 396-415.

Anon. 2014. Art, submerged. *Foreign Policy*, Article ID(209): 98-100.

Art-Works-For-Change. n.d. *Alexis Rockman*. Available: https://www.artworksforchange.org/portfolio/alexis-rockman/ (Accessed 9 August 2022).

Aswani, S. 2019. Perspectives in coastal human ecology (CHE) for marine conservation. *Biological Conservation*, 236: 223-235.

Avens, L., Goshe, L. R., Zug, G. R., Balazs, G. H., Benson, S. R. and Harris, H. 2020. Regional comparison of leatherback sea turtle maturation attributes and reproductive longevity. *Marine Biology*, 167 (4): 1-12.

Ayres, L. 2008. Semi-Structured Interviews. In: Given, L. M. ed. *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, California: SAGE Publications, Inc, 810-811.

Art-Works-For-Change. n.d. *Alexis Rockman*. Available: https://www.artworksforchange.org/portfolio/alexis-rockman/ (Accessed 9 August 2022).

Balladares, C., Gonzalez, M. F. and Rodriguez, D. 2020. A matrix population model for the hawksbill sea turtle (Eretmochelys imbricata) in the Gulf of Paria, Venezuela. *Latin American Journal of Aquatic Research*, 48 (5): 739-748.

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. and Ferrer, E. A. 2011. Has the earth's sixth mass extinction already arrived? *Nature*, 471: 51-57.

Basso, K. 1996. Wisdom sits in places: Notes on a western Apache landscape. In: Feld, S. and Basso, K. eds. Proceedings of *Senses of Place*. Santa Fe.

Berleant, A. 1995. Naturalism and aesthetic experience. *The Journal of Speculative Philosophy*, 9 (3): 237-240.

Bjorndal, K. A. and Bolten, A. B. 2003. From ghosts to key species: restoring sea turtle populations to fulfill their ecological roles. *Marine Turtle Newsletter*, 100: 16-21.

Blank-Gomel, R. 2017. Cycling injuries and the re-modernisation of mundane risks: From injury prevention to a population health and environmental problem. *Health, Risk & Society*, 19 (3/4): 168-188.

Bowers, A., Lacy, S. and Buszek, M. E. 2012. "Necessary positions" in feminist art: A conversation. *Art Journal*, 71 (1): 138-150.

Bradshaw, R. D. 2016. Art integration fosters empathy in the middle school classroom. *Cleaning House*, 89 (4/5): 109-117.

Bresler, L. 2006. Toward connectedness: Aesthetically based research. *Studies in Art Education*, 48 (1): 52-69.

Bresler, L. and Latta, M. M. 2008. Aesthetics. In: Given, L. M. ed. *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, California: SAGE Publications, Inc, 11-14.

Brown, M. B. 2018. Speaking for nature: Hobbes, Latour, and the democratic representation of nonhumans. *Science & Technology Studies*, 31 (1): 31-51.

Cáceres-Farias, L., Reséndiz, E., Espinoza, J., Fernández-Sanz, H. and Alfaro-Núñez, A. 2022. Threats and vulnerabilities for the globally distributed olive ridley (Lepidochelys olivacea) sea turtle: A historical and current status evaluation. *Animals*, 12 (14): 1-22.

Ceballos, G., Ehrlich, P. R. and Dirzo, R. 2017. Biological annihilation via the ongoing sixth mass extinction signaled by vertebrate population losses and declines. *Proceedings of the National Academy of Sciences of the United States of America*, 114 (30): E6089-E6096.

Chakrabarty, D. 2021. *The Climate of History in a Planetary Age*. Chicago: University of Chicago Press.

Chandler, D. and Pugh, J. 2021. Islands and the rise of correlational epistemology in the Anthropocene: Rethinking the trope of the 'canary in the coalmine'. *Island Studies Journal*, 16 (1): 209-228.

Chandler, D. and Reid, J. 2020. Becoming indigenous: The 'speculative turn' in anthropology and the (re)colonisation of indigeneity. *Postcolonial Studies*, 23 (4): 485-504.

Chave, A. 2011. The Guerrilla Girls' reckoning. *Art Journal*, 70 (2): 102-111.

Choi, E., Charles, K. E., Charles, K. L., Stewart, K. M., Morrall, C. E. and Dennis, M. M. 2020. Leatherback sea turtle (Dermochelys coriacea) embryo and hatchling pathology in Grenada, with comparison to St. Kitts. *Chelonian Conservation and Biology*, 19 (1): 111-123.

Clukey, K. E., Lepczyk, C. A., Balazs, G. H., Work, T. M., Li, Q. X., Bachman, M. J. and Lynch, J. M. 2018. Persistent organic pollutants in fat of three species of Pacific pelagic longline caught sea turtles: Accumulation in relation to ingested plastic marine debris. *Science of the Total Environment*, 610/611: 402-411.

Couce, E. A., Ridgwell, A. and Hendy, E. J. 2013. Future habitat suitability for coral reef ecosystems under global warming and ocean acidification. *Global Change Biology*, 19 (2): 3592-3606.

Coupaye, L. 2018. ‘Yams have no ears!’: Tekhne, life and images in Oceania. *Oceania*, 88 (1): 13-30.

Crutzen, J. P. and Stoermer, E. F. 2000. The anthropocene. *IGBP Global Change Newsletter*, 41: 17-18.

Cupchik, G. C., Vartanian, O., Crawley, A. and Mikulis, D. J. 2009. Viewing artworks: Contributions of cognitive control and perceptual facilitation to aesthetic experience. *Brain and Cognition*, 70: 84-91.

Curtis, D. J., Reid, N. and Ballard, G. 2012. Communicating ecology through art: What scientists think. *Ecology and Society* 17(2). Available: http://www.ecologyandsociety.org/vol17/iss2/art3/ (Accessed 29 August 2019).

Czegledy, N. 2014. Art as a catalyst. *Leonardo*, 47 (5): 492-492.

Davidson, A. 2015. Beyond the mirrored horizon: Modern ontology and amodern possibilities in the Anthropocene. *Geographical Research*, 53 (3): 298-305.

Davin, E. L. and De Noblet-Ducoudré, N. 2010. Climatic impact of global-scale deforestation: Radiative versus nonradiative processes. *Journal of Climate*, 23 (1): 97-112.

Davis, H. 2015. Life & death in the Anthropocene: A short history of plastic. In: Davis, H. and Turpin, E. eds. *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. London: Open Humanities Press, 347-358.

Davis, H. and Turpin, E. 2015. Art & death: Lives between the fifth assessment & the sixth extinction. In: Davis, H. and Turpin, E. eds. *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. London: Open Humanities Press, 3-30.

Deck, K. 2020. Enviro-envision: Visualizing climate change through art. *Leonardo*, 53 (5): iii-40.

de Figueiredo, M. D., Marquesan, F. F. S. and Imas, J. M. 2020. Anthropocene and “development”: Intertwined trajectories since the beginning of The Great Acceleration. *Journal of Contemporary Administration*, 24 (5): 400-413.

DeLand, L. 2018. A fig leaf for Jeff Koons: Pornography, privacy, and “made in heaven”. *Criticism*, 60 (3): 295-314.

Demos, T. J. 2013. Contemporary art and the politics of ecology. *Third Text*, 27 (1): 1-9.

de Pinho, J. R., Grilo, C., Boone, R. B., Galvin, K. A. and Snodgrass, J. G. 2014. Influence of aesthetic appreciation of wildlife species on attitudes towards their conservation in Kenyan agropastoralist communities. *PLoS ONE*, 9 (2).

Derrida, J. and Wills, D. 2002. The Animal That Therefore I Am (More to Follow). *Critical Inquiry*, 28 (2): 369-418.

Dew, K. 2016. Purifying and hybridising categories in healthcare decision-making: The clinic, the home and the multidisciplinary team meeting. *Health Sociology Review*, 25 (2): 142-156.

Dewey, J. 2010. Hegel's philosophy of spirit. In: Shook, J. R. and Good, J. A. eds. *John Dewey's Philosophy of Spirit, with the 1897 Lecture on Hegel*. New York: Fordham University Press, 93-176. Available: https://ebookcentral.proquest.com/lib/durbanut-ebooks/reader.action?docID=3239554 (Accessed 24 August 2019).

Di Renzo, L., Ceci, R., D'Antonio, S., Di Francesco, G., Di Giacinto, F., Ferri, N., Giansante, C., Leva, M., Mariani, G., Olivieri, V., Pulsoni, S., Salini, R., Scortichini, G., Tammaro, G. and Diletti, G. 2022. Chlorinated Persistent Organic Pollutants (PCDD/Fs and PCBs) in Loggerhead Sea Turtles Stranded along the Central Adriatic Coast. *Animals*, 12 (22): 1-13.

Di Renzo, L., De Angelis, M. E., Torresi, M., Di Lollo, V., Di Teodoro, G., Averaimo, D., Defourny, S. V. P., Di Giacinto, F., Profico, C., Olivieri, V., Pomilio, F., Cammà, C., Ferri, N. and Di Francesco, G. 2022. First report of septicaemic listeriosis in a loggerhead sea turtle (Caretta caretta) stranded along the Adriatic coast: Strain detection and sequencing. *Animals*, 12 (18): 1-9.

Di Santo, V. 2015. Ocean acidification exacerbates the impacts of global warming on embryonic little skate, Leucoraja erinacea (Mitchill). *Journal of Experimental Marine Biology & Ecology*, 463: 72-78.

Eichhorn, K. 2015. Copy machines and downtown scenes. *Cultural Studies*, 29 (3): 363-378.

Eriksen, M., Lebreton, L. C. M., Carson, H. S., Thiel, M., Moore, C. J., Borerro, J. C., Galgani, F., Ryan, P. G. and Reisser, J. 2014. Plastic pollution in the world's oceans: More than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea. *PLoS ONE*, 9 (12): 1-15.

Espino-Ruano, A., Castro, J. J., Guerra-Marrero, A., Couce-Montero, L., Meyers, E. K. M., Santana-del-Pino, A. and Jimenez-Alvarado, D. 2023. Aggregative behaviour of spiny butterfly rays (Gymnura altavela, Linnaeus, 1758) in the shallow coastal zones of Gran Canaria in the Eastern Central Atlantic. *Animals*, 13 (1455): 1-14.

Faik, I., Thompson, M. and Walsham, G. 2019. Designing for ICT-enabled openness in bureaucratic organizations: Problematizing, shifting, and augmenting boundary work. *Journal of the Association for Information Systems*, 20 (6): 681-701.

Ferrarese, E. 2016. Vulnerability: A concept with which to undo the world as it is? *Critical Horizons*, 17 (2): 149-159.

Fisher, J. 1997. Interperformance: The live tableaux of Suzanne Lacy, Janine Antoni, and Marina Abramovic. *Art Journal*, 56 (4): 28-33.

Gablik, S. 1991. *The Reenchantment of Art*. London: Thames & Hudson.

Gablik, S. 1992. Connective aesthetics. *American Art*, 6 (2): 2-7.

Gasparin, M., Green, W. and Schinckus, C. 2020. Slow design-driven innovation: A response to our future in the Anthropocene epoch. *Creativity & Innovation Management*, 29 (4): 551-565.

Gerhardt, C. 2018. Pacific and plastic: Midway atoll, plastiglomerate, and love of place. *Mosaic: A Journal for the Interdisciplinary Study of Literature*, 51 (3): 123-140.

Ghosh, A. 2016. *The Great Derangement*. Chicago: The University of Chicago Press.

Girard, F., Catteau, S., Gambaiani, D., Gérigny, O., Sénégas, J. B., Moisson, P. and Claro, F. 2021. Shift in demographic structure and increased reproductive activity of loggerhead turtles in the French Mediterranean Sea revealed by long-term monitoring. *Scientific Reports*, 11 (1): 1-12.

Goble, B. J. 2014. Pressures and Threats: Development Pressure. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 144-145.

Goble, B. J. 2014. Pressures and threats: Sand mining in estuaries. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 155-156.

Goble, B. J. and Van der Elst, R. P. 2014. Pressures and Threats: Loss of Coastal and Marine Biodiversity. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 141-143.

Gocova, A. 2013. Artlantis. *Alternatives Journal: Canada's Environmental Voice*, 39 (3): 34-37.

Goldsworthy, A. 2017. *And Goldsworthy: Projects*. New York: Abrams.

Gregory, M. R. 2009. Environmental implications of plastic debris in marine settings—entanglement, ingestion, smothering, hangers-on, hitch-hiking and alien invasions. *Philosophical Transactions of the Royal Society B* 364: 2013-2025.

Guiet, J., Galbraith, E., Kroodsma, D. and Worm, B. 2019. Seasonal variability in global industrial fishing effort. *PLoS ONE*, 14 (5): 1-17.

Gurney, J. 2009. *Imaginative Realism: To Paint What Doesn't Exist*. Kansas City: Andrews McMeel Publishing, LLC.

Gurney, J. 2010. *Color and Light*. Kansas City: Andrews McMeel Publishing, LLC.

Hall, L. 2015. My mother's garden: Aesthetics, Indigenous renewal, and creativity. In: Davis, H. and Turpin, E. eds. *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. London: Open Humanities Press, 283-292.

Halpern, B. S., Longo, C., Hardy, D., McLeod, K. L., Samhouri, J. F., Katona, S. K., Kleisner, K., Lester, S. E., O'Leary, J., Ranelletti, M., Rosenberg, A. A., Scarborough, C., Selig, E. R., Best, B. D., Brumbaugh, D. R., Chapin, F. S., Crowder, L. B., Daly, K. L., Doney, S. C., Elfes, C., Fogarty, M. J., Gaines, S. D., Jacobsen, K. I., Karrer, L. B., Leslie, H. M., Neeley, E., Pauly, D., Polasky, S., Ris, B., St Martin, K., Stone, G. S., Sumaila, U. R. and Zeller, D. 2012. An index to assess the health and benefits of the global ocean. *Nature*, 488 (7413): 615-620.

Hamilton, C. and Grinevald, J. 2015. Was the Anthropocene anticipated? *The Anthropocene Review*, 1: 1-14.

Haraway, D. 2015. Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making kin. *Environmental Humanities*, 6 (1): 159-165.

Donna Haraway (2016) Staying with the trouble: Making kin in the Chthulucene. Durham: Duke University Press. 312 pages. ISBN: 978-0822362241 by Haraway, D., reviewed in *Science & Technology Studies*, 30(2).

Haraway, D., Ishikawa, N., Gilbert, S. F., Olwig, K., Tsing, A. L. and Bubandt, N. 2016. Anthropologists are talking – about the Anthropocene. *Ethnos: Journal of Anthropology*, 81 (3): 535-564.

Hawkins, A. and Giroux, J. 2012. Art activism in the classroom: One imagined future for service-learning. *Interdisciplinary Humanities*, 29 (3): 88-101.

Helguera, P. 2011. *Education for Socially Engaged Art*. New York: Jorge Pinto Books Inc.

Hobbes, T. and Missner, M. 2016. *Thomas Hobbes: Leviathan* Renascence Editions.

Hobson, G. 1979. Introduction: Remembering the earth. In: Hobson, G. ed. *The Remembered Earth: An Anthology of Contemporary Native American Literature*. Albuquerque: University of New Mexico, 11.

Holdaway, S. J., Emmitt, J., Furey, L., Jorgensen, A., O'Regan, G., Phillipps, R., Prebble, M., Wallace, R. and Ladefoged, T. N. 2019. Mãori settlement of New Zealand: The Anthropocene as a process. *Archaeology in Oceania*, 54 (1): 17-34.

Holtz, B., Stewart, K. R. and Piniak, W. E. D. 2021. Influence of environmental and anthropogenic acoustic cues in sea-finding of hatchling leatherback (Dermochelys coriacea) sea turtles. *PLoS ONE*, 16 (7): 1-14.

Hughes, G. R. 1973. The Sea Turtles of South East Africa. Doctor of Philosophy, University of Natal.

Hughes, J. D. 2010. Ancient deforestation revisited. *Journal of the History of Biology*.

IUCN. 2021. *IUCN Red List of Threatened Species* [Online]. Available: https://www.iucnredlist.org/search?query=sea%20turtle&searchType=species [Accessed 2022].

Jackson, J. B. C., Kirby, M. X., Berger, W. H., Bjorndal, K. A., Botsford, L. W., Bourque, B. J., Bradbury, R. H., Cooke, R., Erlandson, J., Estes, J. A., Hughes, T. P., Kidwell, S., Lange, C. B., Lenihan, H. S., Pandolfi, J. M., Peterson, C. H., Steneck, R. S., Tegner, M. J. and Warner, R. R. 2001. Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293: 629-638.

Johnson, W. C. 2014. Guerrilla ganja gun girls: Policing black revolutionaries from Notting Hill to Laventille. *Gender & History*, 26 (3): 661-687.

Kagan, S. J. 2012. *Toward Global (Environ)Mental Change: Transformative Art and Cultures of Sustainability*. Berlin: Heinrich-Böll-Stiftung.

Kagan, S. J. 2014. The practice of ecological art. *Plastik*: 1-6. Available: http://art-science.univ-paris1.fr/plastik/document.php?id=866 (Accessed 9 March 2019).

Kaika, M. 2018. Between the frog and the eagle: claiming a 'Scholarship of Presence' for the Anthropocene. *European Planning Studies*, 26 (9): 1714-1727.

Kaufman, V. 2018. Leaning into the wind: Andy Goldsworthy. *Cineaste*, 43 (3): 80-80.

Kemp, M. 1998. Goldsworthy's genera. *Nature*, 391 (6664): 235.

Kenney, M. 2017.

Knauß, S. 2018. Conceptualizing Human Stewardship in the Anthropocene: The Rights of Nature in Ecuador, New Zealand and India. *Journal of Agricultural and Environmental Ethics*, 31 (6): 703-722.

Knebusch, J. 2007. The perception of climate change. *Leonardo*, 40 (2): 113.

Koons, J. E. 2008. Earth Jurisprudence: The moral value of nature. *Pace Environmental Law Review*, 25 (2): 263-339.

Kopnina, H. and Gjerris, M. 2015. Are some animals more equal than others? Animal rights and deep ecology in environmental education. *Canadian Journal of Environmental Education*, 20 (1): 108-122.

Koster, E. 2020. Anthropocene: Transdisciplinary shorthand for human disruption of the Earth System. *Geoscience Canada*, 47 (1/2): 59-64.

Kwon, B. G., Amamiya, K., Sato, H., Chung, S. Y., Kodera, Y., Kim, S. K., Lee, E. J. and Saido, K. 2017. Monitoring of styrene oligomers as indicators of polystyrene plastic pollution in the North-West Pacific Ocean. *Chemosphere*, 180: 500-505.

Lagabrielle, E., Lombard, A. T., Harris, J. M. and Livingstone, T. C. 2018. Multi-scale multi-level marine spatial planning: A novel methodological approach applied in South Africa. *PLoS ONE* 13(7): 1-29

Laina, E. 2018. Negotiations for sustainable oceans: Significant challenges ahead. *Environmental Policy and Law*, 48 (5): 262-268.

Lam, S., Ngcobo, G., Persekian, J., Thompson, N., Witzke, A. S. and Tate, L. 2013. Art, ecology and institutions. *Third Text*, 27 (1): 141-150.

Larjosto, V. 2020. Islands of the Anthropocene. *Area*, 52 (1): 38-46.

Latour, B. 1993. *We have never been modern*. Porter, C. Massachusetts: Harvard University Press.

Leduc, T. B. and Crate, S. A. 2013. Reflexive shifts in climate research and education: Toward relocalizing our lives. *Nature and Culture*, 8 (2): 134-161.

Lee, H.-J., Kim, I.-H., J-K, K., Jeong, S. and Park, D. 2014. First detailed morphological description of the loggerhead sea turtle (Caretta caretta) caught from the Yellow Sea of Korea. *Journal of Ecology and Environment*, 37 (4): 201-208.

Le Gouvello, D. Z. M., Girondot, M., Bachoo, S. and Nel, R. 2020. The good and bad news of long-term monitoring: An increase in abundance but decreased body size suggests reduced potential fitness in nesting sea turtles. *Marine Biology*, 167 (112): 1-12.

Leuthold, S. 1996. Is there art in indigenous aesthetics? *Journal of Arts Management, Law & Society*, 25 (4).

Liguori, B. L., Polyak, M. M. R., Clark, S. A., Sabater, A. N., Clasen, T. B. and Manire, C. A. 2021. Transplastron enterocentesis to manage buoyancy disorder in an adult loggerhead sea turtle (Caretta caretta). *The Journal of Herpetological Medicine and Surgery*, 31 (4): 272-277.

Livingstone, T. C., Harris, J. M., Lombard, A. T., Smit, A. J. and Schoeman, D. S. 2018. Classification of marine bioregions on the east coast of South Africa. *African Journal of Marine Science*, 40 (1): 51-65.

Lugo-Morin, D. R. 2021. Global mapping of indigenous resilience facing the challenge of the COVID-19 pandemic. *Challenges*, 12 (15): 1-23.

Lundberg, P., Vainio, A., MacMillan, D. C., Smith, R. J., Veríssimo, D. and Arponen, A. 2019. The effect of knowledge, species aesthetic appeal, familiarity and conservation need on willingness to donate. *Animal Conservation*, 22 (1): 432-443.

Machin, A. 2019. Agony and the anthropos: Democracy and boundaries in the Anthropocene. *Nature and Culture*, 14 (1): 1-16.

Mann, B., Harris, J. & Livingstone, T. 2014. Marine Protected Areas. In: Goble, B. J., Van Der Elst, R. P. & Oellermann, L. K. (eds.) *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal.* Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute.

Marcum, J. H. 2021. Reconsidering the aesthetics of garbage in Waste Land. *Afterimage*, 48 (3): 35-57.

Markussen, T. 2013. The disruptive aesthetics of design activism: Enacting design between art and politics. *Design Issues*, 29 (1): 38-50.

Martínez-Vargas, J. A., de la Cueva, H., Liñán-Cabello, M. A. and Ortega-Ortiz, C. D. 2022. Morphometry and allometry of free-living olive ridley sea turtles (Lepidochelys olivacea) from the Mexican Central Pacific. *Latin American Journal of Aquatic Research*, 50 (4): 633-641.

Matley, J. K., Johansen, L. K., Klinard, N. V., Eanes, S. T. and Jobsis, P. D. 2021. Habitat selection and 3D space use partitioning of resident juvenile hawksbill sea turtles in a small Caribbean bay. *Marine Biology*, 168 (120): 1-15.

Maxwell, S. L., Fuller, R. A., Brooks, T. M. and Watson, J. E. M. 2016. Biodiversity: The ravages of guns, nets and bulldozers. *Nature News,* 536: 143-145 (Accessed 6 April 2021).

McCarthy, W. 2023. Portraits of decay and recovery. *Earth Island Journal*, 37 (4): 27-29.

McCauley, D. J., Pinsky, M. L., Palumbi, S. R., Estes, J. A., Joyce, F. H. and Warner, R. R. 2015. Marine defaunation: Animal loss in the global ocean. *Science*, 347 (6219)

Mekonnen, M. M. and Hoekstra, A. Y. 2015. Global gray water footprint and water pollution levels related to anthropogenic nitrogen loads to fresh water. *Environmental Science & Technology*, 49 (21): 12860-12868.

Meisner, M. 2010. Blinded by ecoporn. *Alternative Journal – Canada's environmental voice*, 36 (1): 7.

Montford, K. S. 2020. Milk and law in the Anthropocene: Colonialism's dietary interventions. *Journal of Food Law & Policy*, 16 (1): 48-77.

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

Moore, J. W. 2016. Anthropocene or Capitalocene? Nature, History, and the Crisis of Capitalism. In: Grubačić, A. ed. *Anthropocene or Capitalocene?* Oakland: PM Press.

Morton, T. 2013. *Hyperobjects: Philosophy and Ecology After the End of the World*. Minneapolis: University of Minnesota Press.

Mould, S. A. 2019. Seeing double in art and geoscience: 3D aerial portraits of 'lost' Anthropocene landscapes. *Journal of Maps*, 15 (3): 92-101.

Murphy, J. 2021. Book review: The ahuman manifesto: Activism for the end of the Anthropocene. *Afterimage*, 48 (1): 91-98.

Mussgnug, F. 2019. Species at war? The animal and the Anthropocene. *Paragraph*, 42 (1): 116-130.

Nandi, A. 2020. The Anthropocene and the [SARS-CoV-2] contagion: A study on the virological metaphors of Jacques Derrida and the contamination of the ontological body. *Scholedge International Journal of Multidisciplinary & Allied Studies*, 7 (6): 131-139.

Nel, R., Punt, A. E. and Hughes, G. R. 2013. Are coastal protected areas always effective in achieving population recovery for nesting sea turtles? *PLoS ONE*, 8 (5): 1-12.

Ng, C. K. Y., Ang, P. O., Russell, D. J., Balazs, G. H. and Murphy, M. B. 2016. Marine macrophytes and plastics consumed by green turtles (Chelonia mydas) in Hong Kong, South China sea region. *Chelonian Conservation & Biology*, 15 (2): 289-292.

Nordstrom, B., James, M. C. and Worm, B. 2020. Jellyfish distribution in space and time predicts leatherback sea turtle hot spots in the Northwest Atlantic. *PLoS ONE*, 15 (5): 1-21.

Okuyama, J., Watabe, A., Takuma, S., Tanaka, K., Shirai, K., Murakami-Sugihara, N., Arita, M., Fujita, K., Nishizawa, H., Narazaki, T., Yamashita, Y. and Kameda, K. 2022. Latitudinal cline in the foraging dichotomy of loggerhead sea turtles reveals the importance of East China Sea for priority conservation. *Diversity and Distributions*, 28 (8): 1568-1581.

Oliveira, G. C. S., Corso, G., Medeiros, D. M., Silva, I. M., Santos, A. J. B., Nakamura, M. F., Carmo, H. M. A. and Lima, G. Z. S. 2020. Later nesting by hawksbill turtle following sea surface warming. *Journal of Herpetology*, 54 (3): 371-377.

O'Loughlin, I. and McCallum, K. 2019. The aesthetics of theory selection and the logics of art. *Philosophy of Science*, 86 (2): 325-343.

Oreskes, N. and Conway, E. M. 2013. The collapse of western civilization: A view from the future. *Dædalus, the Journal of the American Academy of Arts & Sciences*, 142 (1): 40-58.

Palys, T. 2008. Purposive Sampling. In: Given, L. M. ed. *The SAGE Encyclopedia of Qualitative Research Methods*. Thousand Oaks, California: SAGE Publications, Inc, 697-698.

Petts, J. 2000. Aesthetic experience and the revelation of value. *The Journal of Aesthetics and Art Criticism*, 58 (1): 61-71.

Phillips, C. 2017. Discerning ocean plastics: Activist, scientific, and artistic practices. *Environment & Planning*, 49 (5): 1146-1162.

Pinault, M. 1991. *The Painter as Naturalist: From Dürer to Redouté*. Sturgess, P. Paris: Flammarion.

Pinou, T., Prunier, R., Bresson, M., Padilla, I. E., Perez, J. F. J., Robles, J. A. T., DiGiovanni Jr, R. A. and Robinson, N. J. 2018. Repeated sampling adds to the genetic diversity of Lepidochelys olivacea (Eschscholtz 1829) olive ridley sea turtle. *Journal of Natural History*, 52 (45/46): 2899-2917.

Plot, V. and Georges, J. Y. 2010. Plastic debris in a nesting leatherback turtle in French Guiana. *Chelonian Conservation & Biology*, 9 (2): 267-270.

Potter, P. 2006. Manifesting ecologic and microbial connections. *Emerging Infectious Diseases*, 12 (4): 715-716.

Relidzyńska, A. 2021. Anthropocene nostalgia for the 1980s in Netflix's Stranger Things. *European Journal of American Culture*, 40 (3): 233-247.

Riggio, J., Foreman, K., Freedman, E., Gottlieb, B., Hendler, D., Radomille, D., Rodriguez, R., Yamashita, T., Kioko, J. and Kiffner, C. 2022. Predicting wildlife corridors for multiple species in an East African ungulate community. *PLoS ONE*, 17 (4): 1-17.

Robinson, N. J. and Paladino, F. V. 2013. Sea turtles. *Reference Module in Earth Systems and Environmental Sciences,* Article ID: 1-13. Available: 10.1016/B978-0-12-409548-9.04352-9

Rousell, D., Hohti, R., MacLure, M. and Chalk, H.-L. 2021. Blots on the Anthropocene: Micropolitical interventions with young people in a university museum. *Cultural Studies/Critical Methodologies*, 21 (1): 27-40.

Runge, C. A., Withey, J. C., Naugle, D. E., Fargione, J. E., Helmstedt, K. J., Larsen, A. E., Martinuzzi, S. and Tack, J. D. 2019. Single species conservation as an umbrella for management of landscape threats. *PLoS ONE*, 14 (1): 1-17.

SAQA. 2021. *South African Qualifications Authority: Registered Qualification: Doctor of Philosophy in Visual and Performing Arts*. Available: https://regqs.saqa.org.za/viewQualification.php?id=94621 (Accessed 16 March 2022).

Schuyler, Q. A., Wilcox, C., Townsend, K. A., Wedemeyer-Strombel, K. A., Balazs, G., Van Sebille, E. and Hardesty, B. D. 2016. Risk analysis reveals global hotspots for marine debris ingestion by sea turtles. *Global Change Biology*, 22 (2): 567-576.

Schwarzenbach, R. P., Egli, T., Hofstetter, T. B., Von Gunten, U. and Wehrli, B. 2010. Global water pollution and human health. *Annual Review of Environment & Resources*, 35 (1): 109-136.

Scott, R., Biastoch, A., Agamboue, P. D., Bayer, T., Boussamba, F. L., Formia, A., Godley, B. J., Mabert, B. D. K., Manfoumbi, J. C., Schwarzkopf, F. U., Sounguet, G.-P., Wagner, P. and Witt, M. J. 2017. Spatio-temporal variation in ocean current-driven hatchling dispersion: Implications for the world's largest leatherback sea turtle nesting region. *Diversity and Distributions*, 23 (6): 604-614.

Seeturtles.org. 2022. *Why are sea turtles important* [Online]. Available: https://www.seeturtles.org/why-are-sea-turtles-important [Accessed 2022].

Seitzinger, S. P., Gaffney, O., Brasseur, G., Broadgate, W., Ciais, P., Claussen, M., Erisman, J. W., Kiefer, T., Lancelot, C., Monks, P. S., Smyth, K., Syvitski, J. and Uematsu, M. 2015. International Geosphere–Biosphere Programme and Earth system science: Three decades of co-evolution. *Anthropocene*, 12 (1): 3-16.

Setälä, O., Fleming-Lehtinen, V. and Lehtiniemi, M. 2014. Ingestion and transfer of microplastics in the planktonic food web. *Environmental Pollution*, 185: 77-83.

Shiffman, D. S., Macdonald, C. C., Wallace, S. S. and Dulvy, N. K. 2021. The role and value of science in shark conservation advocacy. *Scientific Reports*, 11 (1): 1-12.

Simangan, D. 2020. Literature review: Where is the Anthropocene? IR in a new geological epoch. *International Affairs*, 96 (1): 211-224.

Skoglund, A. 2020. Book & resource reviews. *In:* Chandler, D. & Reid, J. (eds.) *Becoming indigenous—governing imaginaries in the Anthropocene.* Academy of Management Learning & Education: Rowman and Littlefield.

Sloterdijk, P. 2015. The Anthropocene: A process-state at the edge of geohistory? In: Davis, H. and Turpin, E. eds. *Art in the Anthropocene: Encounters Among Aesthetics, Politics, Environments and Epistemologies*. London: Open Humanities Press, 327-340.

Smith, D. F. 2017.by Goldsworthy, A., reviewed in *Library Journal*, 142(18), 79-79.

Smith, A., Mather, A., Cooper, A. and Goble, B. J. 2014. Pressures and Threats: Coastal Hazards. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 152-154.

Smith, S. 2006. Suzanne Lacy and Susan Leibovitz Steinman — the confluence of conservation ecology and comnnunity economics. *Art Journal*, 65 (1): 58-60.

Spracklen, B. D., Kalamandeen, M., Galbraith, D., Gloor, E. and Spracklen, D. V. 2015. A global analysis of deforestation in moist tropical forest protected areas. *PLoS ONE*, 10 (12): 1-16.

St-Hilaire, F. 2016. Brazilian marginal cinema. *Off Screen,* 20 (10). Available: https://offscreen.com/view/brazilian-marginal-cinema (Accessed 6 February 2022).

Stafford, K. M. 2013. Indigenous aesthetics and tribal space: Figurations of landscape in contemporary American Indian poetry. *Interdisciplinary Humanities*, 30 (2): 90-99.

Steenberg, E. 2007. Visual aesthetic experience. *The Journal of Aesthetic Education*, 41 (2): 89-94.

Stein, G. 2011. Guerrilla Girls and Guerrilla Girls BroadBand: inside story. *Art Journal*, 70 (2): 88-101.

Takemoto, T. 2016. Queer art / queer failure. *Art Journal*, 75 (1): 85-88.

Tomalin, M. and Goble, B. J. 2014. Pressures and Threats: Coastal Pollution and Litter. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 146-148.

Torres Colón, G. A. and Hobbs, C. A. 2015. The intertwining of culture and nature: Franz Boas, John Dewey, and Deweyan strands of American anthropology. *Journal of the History of Ideas*, 76 (1): 139-162.

Van der Elst, R. P. 2014. Chapter 4: Coastal and marine species: Sea turtles. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 157-159.

Van der Elst, R. P. 2014. Pressures and threats: Species at risk. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 157-159.

Van der Elst, R. P. and Goble, B. J. 2014. Pressures and Threats: Climate Change. In: Goble, B. J., Van der Elst, R. P. and Oellermann, L. K. eds. *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal*. Cedara: KwaZulu-Natal Department of Agriculture and Environmental Affairs and the Oceanographic Research Institute, 149-151.

Van Krieken, R. 2002. The paradox of the 'two sociologies': Hobbes, Latour and the Constitution of modern social theory. *Journal of Sociology*, 38 (3): 255-273.

Vecchioni, L., Pace, A., Sucato, A., BerlinghieriI, F., Cambera, I., Visconti, G., Hochscheid, S., Arculeo, M. and Alduina, R. 2022. Unveiling the egg microbiota of the loggerhead sea turtle Caretta caretta in nesting beaches of the Mediterranean Sea. *PLoS ONE*, 17 (5): 1-18.

Veloric, C. H. 2021. Aesthetic and industrial rupture in the work of Edward Burtynsky and Justin Brice Guariglia. *Afterimage*, 48 (1): 28-36.

WWF. 2018. *Living Planet Report 2018*. World Wildlife Fund. Available: https://wwf.panda.org/knowledge_hub/all_publications/living_planet_report_2018/ (Accessed 14 April 2020).

WWF. 2016. *Living Planet Report 2016: Summary*. World Wildlife Fund. Available: https://wwf.panda.org/wwf_news/?282370/Living-Planet-Report-2016 (Accessed 14 April 2020).

WWF. 2012. *Living Planet Report 2012*. World Wildlife Fund. Available: https://wwf.panda.org/knowledge_hub/all_publications/living_planet_report_timeline/lpr_2012/ (Accessed 14 April 2020).

Wallen, R. 2012. Ecological art: A call for visionary intervention in a time of crisis. *Leonardo*, 45 (3): 234-242.

Watson, S. A., Peck, L. S., Tyler, P. A., Southgate, P. C., Tan, K. S., Day, R. W. and Morley, S. A. 2012. Marine invertebrate skeleton size varies with latitude, temperature and carbonate saturation: implications for global change and ocean acidification. *Global Change Biology*, 18 (10): 3026-3038.

Watts, B. D. and Truitt, B. R. 2021. Influence of introduced peregrine falcons on the distribution of red knots within a spring staging site. *PLoS ONE*, 16 (1): 1-12.

Weldon, S. L. and Htun, M. 2013. Feminist mobilisation and progressive policy change: Why governments take action to combat violence against women. *Gender & Development*, 21 (2): 231-247.

Wharton, G., Engel, D. and Taylor, M. C. 2016. The artist archives project: David Wojnarowicz. *Studies in Conservation*, 61: 241-247.

Wilcox, C., Puckridge, M., Schuyler, Q. A., Townsend, K. and Hardesty, B. D. 2018. A quantitative analysis linking sea turtle mortality and plastic debris ingestion. *Nature: Scientific Reports* 8: 1-11. Available: https://www.nature.com/articles/s41598-018-30038-z (Accessed 10 July 2019).

Wilder, B. T., O'Meara, C., Monti, L. and Nabhan, G. P. 2016. The importance of indigenous knowledge in curbing the loss of language and biodiversity. *BioScience*, 66 (6): 499-509.

Wilkinson, A., Ariel, E., Van de Merwe, J. and Brodie, J. 2022. Trace element concentrations in forage seagrass species of Chelonia mydas along the Great Barrier Reef. *PLoS ONE*, 17 (6): 1-19.

Willan, S. 2004. Briefing: Recent changes in the South African government's HIV/AIDS policy and its implementation. *African Affairs*, 103 (410): 109-117.

Wu, J., Snell, G. and Samji, H. 2020. Climate anxiety in young people: A call to action. *The Lancet Planetary Health*, 4: e435-e436.

Wyneken, J. 2001. *The Anatomy of Sea Turtles*. Miami: National Marine Fisheries Service.

Yang, A. 2017. Naturalcultural wonders to Anthropocene disasters: A bibliography for possibility aesthetics. *Art Journal*, 76 (3/4): 126-129.

Yazdani, S. R. 2021. Wolfgang Tillmans's abstract mediations and other ecologies. *Afterimage*, 48 (2): 109-130.

Young, H. S., McCauley, D. J., Galetti, M. and Dirzo, R. 2016. Patterns, causes, and consequences of Anthropocene defaunation. *Annual Review of Ecology, Evolution, and Systematics*, 47: 333-358.

Yusoff, K. 2010. Biopolitical economies and the political aesthetics of climate change. *Theory, Culture and Society*, 27 (2-3): 78-81.

Zalasiewicz, J., Waters, C. N., Williams, M., Barnosky, A. D., Cearreta, A., Crutzen, P., Ellis, E., Ellis, M. A., Fairchild, I. J., Grinevald, J., Haff, P. K., Hajdas, I., Leinfelder, R., McNeill, J., Odada, E. O., Poirier, C., Richter, D., Steffen, W., Summerhayes, C., Syvitski, J. P. M., Vidas, D., Wagreich, M., Wing, S. L., Wolfe, A. P., Zhisheng, A. and Oreskes, N. 2015. When did the Anthropocene begin? A mid-twentieth century boundary level is stratigraphically optimal. *Quaternary International*, 383 (1): 196-203.

Ziegler, S. S. 2019. The Anthropocene in geography. *Geographical Review*, 109 (2): 271-280.