Nature Morte:
Decomposing Darwinism's Evolutionary Aesthetics

by

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Abstract

This dissertation illuminates how contemporary creative engagements with the evolutionary thinking of Charles Darwin (1809-1882) work to decompose Darwinism's evolutionary aesthetics. Redefining death and decay as a creative threshold for evolutionary progress, this study demonstrates how innovative fiction, film, poetics and art incite a radical reinterpretation of the principles of life, matter, and being in Darwin's natural scientific oeuvre. By contextualizing Darwin's treatises and correspondence in the history of vitalist debates from the nineteenth century to the present, this study identifies four exemplary organisms that foment and sustain decompositional processes: *worms, molluscs, corals,* and *fish*. These four case studies are informed by several of Darwin's book-length studies, including *The Zoology of the Beagle* (1838), *The Voyage of the Beagle* (1839), *The Structure and Distribution of Coral Reefs* (1842), *Living Cirripedia* and *Fossil Cirripedia* (1851), *On the Origin of Species* (1859), and *The Formation of Vegetable Mould Through the Action of Worms, With Observations on Their Habits* (1881).

Reading Darwin's exploration of life through the lens of decomposition, this dissertation makes two critical interventions. First, it argues that this examination of Darwin's principle of decomposition in turn reforms our understanding of the intellectual lineage of vitalist philosophy that followed in Darwin's wake, particularly in the work of Henri Bergson (1859-1941), along with Gilles Deleuze (1925-1995) and Félix Guattari (1930-1992). Second, it contends that the remarkable collection of film, fiction, poetics and art in this analysis portrays the seen and unseen operations of matter across deep time, both in and through the life/death distinction and the human/animal divide. This study concludes that this vitalist principle of decomposition contributes a new and provocative reinterpretation of Darwinism that has so far gone unnoticed

in classical studies of Darwin by scholars in the History and Philosophy of Science, and that furthermore has important implications for reorienting treatments of death and animality in the fields of New Materialism, Posthumanism, Animal Studies, and the Environmental Humanities more broadly.

The collection of creative work explored in this study includes Stephen Collis and Jordan Scott's zoopoetic decomposition of Darwin's book, *On the Origin of Species,* in their poetry collection *decomp* (2013), A.S. Byatt's neo-Victorian meditation on vegetable mould and the vermiform in *Angels and Insects* (1992), filmmaker Peter Greenaway's pageantry of putrefaction in *A Zed and Two Noughts* (1985), Rebecca Stott's historical *roman à clef* featuring ancient marine life in *The Coral Thief* (2008), Jason deCaires Taylor's Anthropocenic underwater coral sculptures (2012-present), Richard Flanagan's colourful post-modern fiction, *Gould's Book of Fishes* (2001), and novelist Jim Crace's fishy funeral ecology in *Being Dead* (1999). Each chapter explores how Darwin's fascination with the "decaying branches" and "fresh buds" of the great Tree of Life inform our understanding of natural history, and moreover continue to shape our responses to urgent issues of the present day, such as the loss of species biodiversity and the decline of ecological habitats.

In sum, my analysis of these creative divergences of matter across deep time seeks to unearth the impact of Darwin's thinking in literature, film, art, and poetry of the late twentieth and early twenty-first century. This approach is both *dialogical* and *reciprocal*. In other words, the texts of this project extend back to Darwin to creatively re-interpret his thinking of lost life forms, but they also invite new ways of reading and representing Darwinism's evolutionary aesthetics in and through the imminent crisis of the Anthropocene.

Preface

Two parts of this dissertation have been published in other venues. Part of the Introduction to this dissertation appears in a book chapter entitled "A Darwinism of the Muck and Mire in 4 Theses" in *Texts, Animals, Environments: Zoopoetics and Ecopoetics.* This book is edited by Roland Borgards, Catrin Gersdof, Frederike Middlehoff, and Sebastian Schönbeck, and is slated for publication by Rombach Verlag in the Cultural Animal Studies Series (2018). The contribution comes out of my doctoral project presentation at the "Texts, Animals, Environments: Zoopoetics and Ecopoetics" Symposium held at Castle Herrenhausen in Hannover, Germany in October 2016.

Part of Chapter 4 was published as an article in the September 2015 conference proceedings issue of *Mosaic: A Journal for the Interdisciplinary Study of Literature* (48.3). The article, entitled "Necro-Eco: The Ecology of Death in Jim Crace's *Being Dead"*, was presented at the "Matter of Life/Death" Conference in October 2014 at The University of Manitoba, Canada. The article was subsequently selected for reprinting in a book manuscript of collected essays entitled *Jim Crace*, edited by Lawrence Trudeau in the Contemporary Literary Criticism Series of Layman Poupard Publishing, 2017.

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The University of Alberta Faculty of Graduate Studies and Research, the Department of English and Film Studies, and the Graduate Students Association further supplied me with travel funding to attend several international research training programs. I'm very grateful to have had the opportunity to participate in Rosi Braidotti's Critical Theory Summer School in Utrecht, Netherlands (2014) and in the Cornell University International School of Criticism and Theory in Ithaca, New York (2016). I made a number of vital connections in these programs. I am beholden to Alice Colquhoun, Veronika Schuchter, Inés Corujo Martín, Katja Herges, Hedy Fraunhofer, and Miriam Piilonen for their intellectual insights, conveyed both in person, on Skype, and via email.

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INTRODUCTION

A Darwinism of the Muck and Mire

This project plunges headlong into rot; into the very muck and mire of Darwinism. It is here, in the damp earth of the entangled bank, that we begin our muddy descent into an evolutionary underworld of past species and endlessly-evolving forms. Amidst the brambles of the undergrowth, flowering abundantly with verdant botanicals and swarming with all manner of serenading sparrows and starlings, plodding beetles, and wriggling worms, there is a "grandeur" of life that is forged in the rotting, fetid sludge of decomposition. Darwin writes in *On the Origin of Species* (1859) that in the soil of past geological epochs, fresh buds burst forth from the dead and broken branches of the Tree of Life, covering the earth with their "ever branching and beautiful ramifications." For Darwin, and for the authors and artists who engage with the muck and mire of decomposition, death becomes a vital stage for life's continued expression: it is at this creative threshold that earthworms moulder and crawl, molluscs secrete their slime, coral reefs crumble, fish putrefy, and mushroom caps erupt from the leaf litter.

Some scholars may find this soiled and sedimentary interpretation of Darwinism to be a peculiar deviation from what is widely understood as the cultural legacy of Darwin's evolutionary theory. Principally founded upon the pillars of common descent, natural selection, and contingent progress, Darwin's thinking precipitated seismic shifts in the history and philosophy of science during the nineteenth century, and continues to propel research in the natural sciences towards even more detailed and extensive studies of species variation. But further to the monumental influence of Darwin's research in shaping the modern tenets of evolutionary biology and other scientific fields, what I find most remarkable about Darwin's view of evolution is its groundedness in the materiality of life and death. From his early work on coral reefs to his

final treatise on the earthworm, Darwin sees life not as a progressive or predetermined narrative, but as a gritty and animate cycle of entropic dissolutions and creative regenerations.

Both aboard the HMS *Beagle* and abroad, across the mountainous ridges of Patagonia and upon the shores of the Galapagos Islands, Darwin routinely conducts his research in the dirt. He trudges through the thick sediment that has subsided to the bottom of coral atolls that lie off the coasts of the islands of Mauritius. He grovels in the tellurian excavations of earthworms that labour beneath the wormstone of Down House. Upon the ledges of rock that overlook the crashing waves of the Atlantic in the Cape Verde Archipelago, he pockets rough-hewn fossils and other ancient bone fragments for his collections. Darwin works in the muck and mire of diverse ecological habitats over the course of his prodigious scientific career, and it is arguably by delving into the dirt that he develops a revolutionary perspective of the Tree of Life.

In taking on a resolutely geological view of evolution, Darwin's ontology of life starkly counters the Aristotelian order of nature that had for centuries dictated the praxis of natural science. While Aristotle's exegesis of nature in *De Anima* presents life as a graduated ladder of animal, human, and celestial forms, Darwin's comprehensive evolutionary model of decay and rebirth in the Tree of Life accounts for the diverse proliferations of organic and inorganic matter in the natural historical record. According to Darwin, life and death processes meld together seamlessly in the continuous and interminable circuit of evolution.

In order to trace the convergent points of death and rebirth in Darwin's natural scientific oeuvre, this study as a whole *administers a post-mortem of Darwin's evolutionary thinking*, more than 150 years after the publication of *On the Origin of Species* (1859). From my reading of Darwin's work on *worms, molluscs, corals,* and *fish*, I propose that a decompositional mechanism is operative in his understanding of 'life.' These insights into the decompositional processes of evolution are

modelled in the divergence diagram of Darwin's *Origin*, which I argue advances an interpretation of the great Tree of Life that is *subterranean, embedded,* and *decompositional.* This model of life produces an earth-oriented perspective of natural history, an embedded politics of life, and a decompositional aesthetics. Building on these premises, I contend that the contemporary texts of this project, which range from poetics and art to fiction and film, creatively engage with Darwin's decompositional principle, thereby creating their own inventive index of artistic values that in turn expand the parameters of what we have so far understood of Darwinism's evolutionary aesthetics.

In this re-reading of Darwinism and neo-Darwinist texts, processes of death and decay generate creative possibilities for inter-species collaborations that extend beyond the temporal-spatial coordinates and taxonomic divisions of life conventionally upheld in natural science. All species, both *living* and *dead*, *human* and *nonhuman*, are entangled together in the Tree of Life. It is the representation of this entanglement of forms that becomes the basis for Darwinism's decompositional aesthetics.[1] This principle emphasizes the creative generativity of both organic and inorganic decay. As an extension of Darwin's holistic view of material life and death, the art of decomposition includes the nutritive outgrowths of new and burgeoning biological forms as well as the expiration of organic matter — from the death of individual cells in a body to the extinction of species across vast geological epochs. Furthermore, this holistic view unites all material entities: not just the labour of the worm, for instance, but the convergence of worm *and* dirt. Dispelling what Manuel DeLanda critiques as the "organic chauvinism" of the nonhuman

[1] I make a distinction between Darwin and Darwin*ism* here. I want to make it clear that while I initiate a provocative re-reading of Darwin's oeuvre that accounts for a mechanism of decomposition (a point that has so far been neglected by literary scholars and cultural historians of Darwin), my analysis mainly focuses on the resounding cultural implications of Darwinism, as represented in contemporary creative texts.

turn (103), I argue that for the artists, authors, filmmakers, and poets featured in the following chapters, decomposition is an intensely vital process that vibrates with creative potential: it is what binds and diffuses necro-ecological assemblages between living and dead organisms and their environments.

It is from an unusual faction of exemplary species that an aesthetics of decomposition emerges. Through their sticky secretions and regenerations, *worms, molluscs, corals,* and *fish* initiate creative breakdowns of bodies, time, and space. These organisms are what Susan McHugh deems *animal agents* — nonhuman animals that mark the "different orders of agency beyond the human subject" (487), apart from discursive or linguistic systems that moderate the bounds of human knowledge and experience. As they transform dead matter into new forms, these animal agents also work in the middle space of being, muddying the waters of the life/death distinction and the human/animal divide. Some, like earthworms, mushrooms, and molluscs (namely snails), are classified as *decomposers* — organisms with the unique capacity to break down dead organic matter into nutrients for other nonhuman animals. Other species, like coral, are marine invertebrates that construct a calcareous exoskeleton that eventually disintegrates and decays, creating a build-up of sediment on the ocean floor that can lead to life-sustaining geological formations like the fringing reef, barrier reef, or atoll. While the coral creates inorganic structures through decay, other aquatic organisms, such as divergent species of fish (*e.g.* parrotfish and clown loaches) are considered *detrivores*, animals that typically find nutrients in dung and carrion. These species play both central and minor roles in Darwin's correspondence, notebooks, and published manuscripts, and each possesses different classificatory functions, mobilities, sizes, and modes of connection. Nevertheless, these organisms together compose a unique case study for the operation of life's primary principle of decay. Through their remarkable representation in

contemporary poetry, fiction, film and art, these exemplary species enable us to address the as-yet-unexamined facets of Darwin's evolutionary thinking about life, time, matter, and posthumous being.

To be clear, the organisms featured in these chapters in no way produce an exhaustive picture of decompositional processes, nor is decomposition itself limited to these particular organisms. All multicellular organisms eventually die. Given the certainty of death, what makes decompositional organisms exemplary is their capacity to establish relationships between the contiguous borders of bodies and the entropic states of growth and decay. For these organisms, death is not the terminus of being, but rather a springboard for the creative transformation of human and nonhuman animal bodies.

The decompositional labours of these animal agents are tenuously captured in the still life, or *nature morte.* In this genre of artistic representation, organic matter is suspended at the peak of ripeness. From flowers and foliage to flesh and fruit, the traditional still life holds time and death in abeyance; it portrays life only insofar as it remains intact, full-bodied, unblemished. But in a profound inversion of the still life, the creative works of this project revel in decay, fabricating dynamic tableaus that trace the passage of time and the dissolution of bodies as they expand outwards, onto a map of shifting coordinates. These tableaus pick away at ontological and epistemological borders — namely, that which is impossible to *know and see of death* (and of *being dead*) in the deep time of evolution. As I will show, this perverse transposition of the still life into a spectacle of rot provokes new and subversive ways of thinking through the ecological forces that death and decay occasion.

To establish a basis for the aesthetic critique of decomposition that governs this project, I devote the first section of this Introduction to unearthing the groundwork of Darwin's

decompositional thinking of life. In Part I, *The Tree of Life: A Post-Mortem*, I examine how Darwin's interpretation of life makes a unique contribution to vitalist debates in natural science and philosophy from the nineteenth to the twenty-first century, and furthermore provides a radical alternative to biopolitical and thanatopolitical paradigms that have been widely utilized in the fields of Animal Studies and Posthumanism. Part II of this Introduction, *Nature Morte: A Decompositional Aesthetics,* elaborates further on the methods and practices of a decompositional aesthetics, which I understand to be an innovation of the *nature morte* genre and a critical intervention into the humanist fields of Literary Darwinism and evolutionary aesthetics. In addition, I demonstrate how this creative practice foregrounds the labours of exemplary nonhuman animal species that are specially qualified to initiate necro-ecological formations. In so doing, this creative practice illuminates a central component of New Materialist treatments of nonhuman life, which explore the "more-than-human materiality" of the natural world. As I hope to show, Darwinism's decompositional aesthetics explores the spontaneous generativity of nonhuman organisms in representing the shifting variables of time, matter, and being. Lastly, in my overview of the four chapters of this dissertation, I illuminate how this engagement with Darwinism prompts a compelling revision of natural history, creative evolution, and geological time, and furthermore presents an innovative platform for considering the lively expressions of post-mortem matter.

I. The Tree of Life: A Post-Mortem

The vital, outstretching limbs of the Tree of Life have, throughout the centuries of natural scientific study from Aristotle to Darwin and beyond, sketched a phylogenetic link between common ancestors (*roots*) and descended species (*branches*) in the natural order. To simplify the complex affinities between species across the millennia, the Tree of Life tethers all

living organic beings to a concrete origin: a singular, fecund node that spreads out from simple organisms (such as primitive bacteria and eukaryotes) to more complex organisms (plants, fungi, molluscs, and variations of vertebrates). The most definitive analysis of this history of the Tree of Life comes from David J. Archibald's *Aristotle's Ladder, Darwin's Tree: The Evolution of Visual Metaphors for Biological Order*. In his cultural interpretation of the tree, Archibald constructs a relationship between the Aristotelian ladder of nature and the imagery of the tree from Darwin's *Origin*, arguing that these visual metaphors persist to the present day due to their innate simplicity. Yet Archibald notes that Darwin sketched a total of six different trees in his notebooks throughout the 1840s-1850s, and it is his sketch from Notebook B (pictured below in Fig. 1) that has become most iconic: this "small figure from Notebook B is far more recognized and reproduced, especially since the celebration of the bicentenary of his birth in 2009…This tree, not the one in *On the Origin of Species*, has come to symbolize Darwin's evolutionary views" (101). This fact is intriguing, Archibald writes, because Darwin was known, first and foremost, as a geologist (100). Yet in this cursory sketch from Notebook B, the image of the tree is spatially unbound and disconnected from geological epochs of the past.

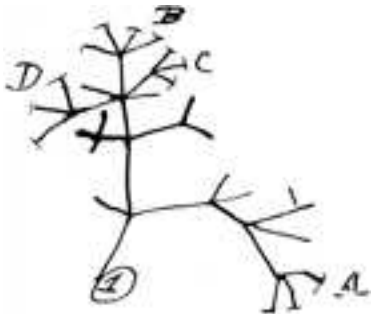

Fig. 1. "Tree of Life." *Notebook B*. 1837. Darwin Online.

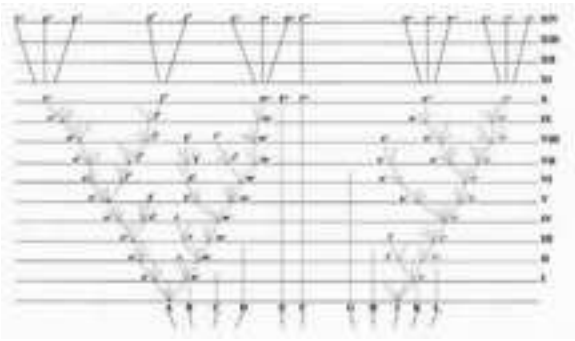

Fig. 2. "Divergence Diagram." 1859. Wikimedia Commons, Online.

While the visual metaphor of the image from Notebook B presents a view of the variation of species as non-hierarchical, expansive, and multiple — all integral aspects of Darwin's evolutionary thinking — I contend that the divergence diagram from *Origin* (pictured above in Fig. 2) emblematizes Darwin's holistic vision of species theory and presents a more fulsome overview of his decompositional thinking. Unlike the image from Notebook B, the visual model of divergence incorporates spatial and temporal coordinates, detailing not only the specifics of classificatory divisions but also the creative outspreading of species variation in geological time. Darwin's divergence diagram plots the evolution of species upon a horizontal map, documenting the perambulatory meanderings of matter across generations of species that lie embedded within the sedimentary record of deep time, growing in variation and complexity of structure. This divergent design is distinctly subterranean, embedded in a post-mortem past that is continually decomposing itself. As such, the Tree of Life has no "surface" or "base" — there is no discernible teleological horizon, nor are there completely perfected forms. Unlike the majority of natural scientists of his time, who believed that a higher power had endowed all life with a pre-determined trajectory and a concrete, singular origin — as per the Biblical story of creation — Darwin's theory of natural selection moves life outward, expansively, maneuvering farther and farther away from essential entities and categories. In Darwin's model, the Tree of Life resiliently

and yet indeterminately produces the very formations and structures that sustain life, while also recording, like the rings of a tree trunk, the ancestral and archival chapters of life's earliest expressions. All living and dead species of the Tree of Life are entwined and structurally unified: bodies merge, bio-historical processes spiral and unfurl, and environments inhabited by proliferating forms concomitantly cohere and dissemble.

As we conduct our own post-mortem of Darwin's thinking, we see how this subterranean, embedded, and decompositional Tree of Life reverberates across the *Origin.* As a visual model, the Tree of Life is figured as a horizontal, striated map. This map outlines an immense underground graveyard of past species that is continually being overlaid with new and emanating forms. As we read in Darwin's chapter on natural selection, the divergence diagram captures a brief snapshot of past and present species that are themselves representative of *fresh buds* and *dying branches*. Each horizontal line in the diagram, Darwin writes, "has hitherto been supposed to represent a thousand generations, but each may represent a million or hundred million generations, and likewise a section of the successive strata of the earth's crust including extinct remains" (*Origin* 79). The embedded remains of dead species, while stratified in the earth, in turn nurture the vital germinations of developing organisms. "From the first growth of the tree," Darwin writes,

> many a limb and branch has decayed and dropped off; and these lost branches of various sizes may represent those whole orders, families, and genera which have now no living representatives, and which are known to us only from having been found in a fossil state…As buds give rise by growth to fresh buds, and these, if vigorous, branch out and overtop on all sides many a feebler branch, so by generation I believe it has been with

> the great Tree of Life, which fills with its dead and broken branches the crust of the earth, and covers the surface with its ever branching and beautiful ramifications. (*Origin* 82)

For Darwin, the earth-encased fossils of dead species carry life forward, in all its splendid forms.

Further evidence of Darwin's decompositional thinking appears throughout the *Origin* in the trope of missing chapters. According to Darwin, the Book of Life is a decaying, fragmented, and incomplete record of past species. As such, omissions in this record of life on earth often result in an imperfect analysis of paleontological evidence. In a section on "Laws of Variation," Darwin argues that "there will be blanks in our geological history," due to the secluded or inaccessible final resting places of some organic remains which are susceptible to denudation or erosion (109), or due to the unique circumstances required to fossilize certain species (wholly soft organisms, Darwin says, are rarely preserved). The effects of deep time also shape the paleontological record, creating a deeply fractured register of past species that resembles, to some degree, a kind of sparsely-furnished museum. In Darwin's view, the crust of the earth is composed of fossils that "have been made only at intervals of time immensely remote" (109). Elsewhere, Darwin outlines how scientists have only been able to produce a rudimentary sketch of life on earth due to the fact that fossil species are catalogued often from mere broken fragments that have been collected from a limited number of locations (181). In addition to the colossal area as yet unexplored by palaeontologists, Darwin insists that the imperfect record of species has its own crumbling linguistic structure, which is "written in a changing dialect" with only a short chapter or a fragmented line of text preserved (195). In this metaphor of the decaying chapters of natural history, Darwin concedes that the full picture of life on earth will always be — in large part — hidden from view.

What the incompleteness of the paleontological record invariably imparts upon Darwin is a sense in which *all evolutionary forms are endlessly (de)composed.* In and through the gaps in the earth's natural history, the grandeur of life is attributed to the immense temporal and spatial frame of evolution, which poignantly proclaims the magnificence of life's enduring expression in both the extinction and emergence of species. Expanding upon this vision of decomposition on a grand scale, I claim that interpreting Darwin's visual metaphor of the Tree of life as *subterranean, embedded, and decompositional* creates a foundation for enlarging the vitalist principle to include all living and dead organisms. This structure of the Tree of Life is significant because it portrays a picture of the natural historical record as an organization of organic and inorganic matter creatively configured in the brittle spaces between life and death, present and past, human and nonhuman. In turn, the visual model of the Tree of Life demonstrates that all processes of composition and decomposition are enfolded together, embedding all material forms in a dynamic, vital system. In this model, death is an affirmative regeneration of life into new biological and environmental formations.

The Evolutionary Underworld: A Subterranean View

Understanding Darwin's view of evolution as distinctly *subterranean* has important implications for how we interpret evolutionary theory and the history of life. As I have established thus far, Darwin's visual representation of life connects innumerable generations of species in a stratigraphical model of deep time. This descent into an evolutionary "underworld" of past species advances a comprehensive and unified picture of life's material expressions, yet it also gestures to the *unseen material productions of the earth's evolutionary past*. This view is compatible with some of Darwin's closest predecessors and contemporaries — such as Jean-Baptiste Lamarck (1744-1829), Georges Cuvier (1769-1832), and Charles Lyell (1797-1875) — but also

resonates in the work of two of Darwin's intellectual heirs, vitalist philosophers Henri Bergson (1859-1941) and Gilles Deleuze (1925-1995), as I will detail in the next section.

To contextualize the influence of Lamarck, Cuvier and Lyell, it is important to note that a number of scientific disciplines, including biology, geology, and paleontology, were instrumental in shaping early evolutionary theories at the close of the eighteenth century. Prior to Darwin, an assembly of naturalists were actively studying the relationship between organic and inorganic matter, comparing the anatomical structures of fossils with living specimens, and developing an approach to biostratigraphy (the dating of ancient forms of life as they appear in the geological strata). The first example, which is perhaps most intriguing for our reading of Darwin's decompositional mechanism of life, is the work of Lamarck. In his natural philosophy, Lamarck regards the earth as a repository of decayed inorganic elements that serves as the basis for an organizing power of life (*pouvoir de la vie*). In *Histoire naturelle des animaux sans vertebres* (1815), Lamarck utilizes a geological approach to investigate the spontaneous generation of inorganic into organic matter (similar to what Bergson would later theorize as the *élan vital*: the impulse of life). As historian of science Guido Giglioni writes, Lamarck's theory of decay as the organizing power of life understands "the material universe as an inherently self-decomposing and decaying system in constant need of external stimuli to preserve movement and life" (43). For Lamarck, decay is a motivational force in the resurgence of living organic forms.

Cuvier, though uninterested in such spontaneous generations of matter, and vehemently opposed to Lamarck's theory of the transmutation of species, similarly takes on an earth-centred view of post-mortem remains in *Le Règne Animal* (1817). Cuvier's paleontological work is shaped by an integrated approach to living species and fossil specimens in the geological record. His comparative anatomical studies place living and dead organic matter side by side, incorporating

both past and present species in a biostratigraphic narrative. Lyell, too, though more strictly limited to the study of geological formations, writes in his *Principles of Geology* (1830-33) that dead matter lies trapped within the earth's strata, creating a kind of post-mortem menagerie beneath the earth's surface. What is significant about these thinkers is that in their varied approaches to life, each adopt a *bio-geo-historical approach* to scientific practice, which later comes to characterize Darwin's natural science. Even as the institutionalization of scientific disciplines at the turn of the nineteenth century made these disciplines more distinct from one another, Darwin's work, like that of his predecessors, remains attentive to the biological, geological, and paleontological variables that shape vitalist processes.

This bio-geo-historical focus upon the seen and unseen procedures of life enables an extended critique of visuality in Michel Foucault's history of the natural sciences in *The Order of Things*. Darwin's interest in the incomplete volumes and "changing dialects" of natural history, while consonant with the leanings of Lamarck, Cuvier, and Lyell, nevertheless marks a deviation from other leading early naturalists like Georges-Louis Leclerc, Comte de Buffon (1707-1788) and Carl Linnaeus (1707-1778), whose taxonomic tables nominalized visible forms of life onto a "grid of knowledge." In Foucault's analysis of *taxinomia* (the knowledge of beings), the organization of visible forms through the visual apparatus or "grid" is integral to the practice of natural science. Foucault asserts that the "naturalist is the man concerned with the structure of the visible world and its denomination according to characters," rather than "with life" (*The Order of Things* 176), and that "life itself [prior to the nineteenth-century] did not exist. All that existed was living beings, which were viewed through a grid of knowledge constituted by *natural history*" (139). Such a claim indicates that Foucault's history of the natural sciences does not register Darwin's subterranean naturalism — which fully identifies the vast paleontological record

as yet unexplored and unobserved — as a critical departure from early naturalists. While Darwin was, undoubtedly, a keen observer of natural phenomena, his underground view of past geological epochs and their post-mortem remainders belies a more circumspect approach to capturing life in a taxonomic grid.

Regardless of whether or not Foucault fully acknowledges the earth-oriented approach to natural history by Darwin and some of his closest predecessors, I propose that Darwin was successful in developing what Foucault calls a "*historical* knowledge of the visible" as well as a "*philosophical* knowledge of the invisible" (*The Order of Things* 150). Darwin's earth-oriented perspective, which emphasizes the vast record of life that lies out of view, reforms what Foucault contends is the basis of natural science: the primary relationship between "things and the human eye" (*The Order of Things* 145). To be sure, this relationship is one of *scale and scope*: to see and to thereby name and classify an organism, one must submit that organism to the microscope or to the gaze of the eye, and must also disengage the organism from its natural environment by adding it to a natural history collection (whether in a museum, herbarium, or zoological garden). But as I demonstrate in the next section, Foucault's historical treatises carry on a tradition of observational study in the organization of life. Along with the grid of knowledge in *The Order of Things*, visuality in Foucault's bio-historical work extends from the medical gaze of individual bodies in *The Birth of the Clinic* to the panopticism of *Discipline and Punish,* as well as to the biopolitical organization of life in his Collège de France lectures, *Society Must Be Defended (1975-6)*, *The Birth of Biopolitics (1978-9)* and *The Hermeneutics of the Subject (1981-2).* From the epidemiologist who depends upon the anatomical consistency of the body in order to pathologise disease, to the biopolitical subject who comes under the panoptic surveillance of the modern state, life for Foucault is visually organized into a system of beings. By contrast, Darwin's

subterranean view does not limit life to a visible scale and scope: rather, it regards life as a contingent process that unfolds within the radically ahuman, imperceptible expanse of biological, geological, and historical development.

Beyond Biopolitics: An Embedded Politics of Life

The bio-geo-historical vein of vitalist thought that shapes Darwin's subterranean view of evolution in the *Origin* gives rise to an *embedded politics of life* that imagines all matter to be in a proximate relationship across vast temporal and spatial coordinates. In radical opposition to taxonomical methods that would separate animal life from geological history or presume the ascendancy of the human over nature, Darwin's bio-geo-historical approach to the observable and unobservable variables of life's continued expression provides evidence of a kind of vitalism that is quite distinct from Foucault's visually-centred critique of *taxinomia* in the natural sciences, and from his analysis of the hierarchical operation of power in biopolitics. Reviewing the rise of the biopolitical paradigm in Foucault's analysis of sovereign power and its impact upon the nonhuman turn, I posit that Darwin's subterranean view traces life not through a negative framework of finitude but through an affirmative paradigm of embeddedness: a framework in which all matter wields the creative capacity for regeneration.

To be clear, I do not dispute the fundamental basis of Foucault's historical genealogy of biopolitics. Rather, what I aim to show is that Foucault's limited focus on modern biological discourses, which are traced through the "make live and let die" imperative of the biopolitical state, leads to a politics of the individual and social body that is divorced from the earth's evolutionary history of life and death. Even as early as *The History of Sexuality,* for instance, Foucault articulates the view that power is "situated and exercised at the level of life [and of] species" (137), while death is disavowed and erased from political discourse. His later Collège de

France lectures in the mid-1970s and 1980s further explore the modern state's mandate to maximize, enhance, and prolong life, but only by relegating death to a place "outside the power relationship" (*Society Must Be Defended* 247). In these lectures, Foucault's analysis shifts from a focus on the panopticon of power and of death by the sword in the era of sovereign power to the policy of life enhancement and extension, which is made evident in the state's engagement with the biological discourses of population and sexual reproduction. As I intimated earlier, I concede to Foucault's interpretation of natural history to the extent that life for natural historians prior to Darwin was a matter of *organization* over *conceptualization.* Yet it is clear that in relegating death (and particularly the post-mortem body) to the sidelines of the modern state, biopolitics accounts only for the embodied subject *insofar as it lives*. Conversely, I argue that Darwin's thinking builds a natural history that is not merely about the "nominalization of the visible" or the preservation of mortal beings, but of a more nuanced intersection of seen and unseen forces on earth that compose the history of life *and* death. Darwin's modern evolutionary synthesis establishes that all of matter is a part of an embedded politics of life. Not surprisingly, this synthesis quite clearly goes on to follow a vitalist genealogy that unfolds not from Foucault's biopolitical paradigm but from the thinking of Bergson and Deleuze.

To situate my own contribution to this vitalist genealogy through an embedded politics of life and death, I am careful to note that treatments of death and animality in fields of the nonhuman turn today frequently rely on a biopolitical (or thanatopolitical) paradigm of life. By establishing a framework of finitude that emphasizes the shared mortality and corporeal vulnerability of human (and especially nonhuman animal bodies), the biopolitical paradigm provides scholars of Animal Studies and Posthumanism with a responsible and compassionate ethical approach to death. However, by highlighting the vulnerability of mortal bodies, this

paradigm remains focused on the systemic violence of the biopolitical state, which maintains the view that life itself is ultimately weak and easily assailable. Without discrediting the important work that this scholarship does in articulating notions of grievability,[2] this perspective nevertheless perpetuates a sharp division between life and death. By interpreting death as the definitive end of being, this paradigm furthermore configures the subject as *subjected to* a host of external (if not also malevolent) forces. As Rosi Braidotti suggests in her examination of Giorgio Agamben's philosophy of "bare life" in *Homo Sacer*, the biopolitical subject is founded upon a principle of perishability: what she calls "its propensity and vulnerability to death, and extinction" ("The Politics of Life Itself" 206). Biopolitical discourses, in other words, favour the privation of the mortal subject. By shifting away from the "subjected subject" of biopolitics and the negative framework of finitude, this project instead affirmatively envisions the embeddedness of all living and dead organisms within the horizontal stratum of the earth's geological record. Apprehended this way, Darwin's decompositional thinking renders life as the organism's *enclosure within* — contra what finitude posits as its *exposure to* — the world.

My approach to Darwin's decompositional thinking rightly opens itself up to criticism by proponents of the biopolitical paradigm and by detractors from new materialist approaches. First, a scholar of biopolitics might propose that conspicuous risks arise when one irresponsibly fails to analyze the historical and political factors that lead to the oppression and death of human and nonhuman animals. Biopolitical scholars might inquire, for instance, how sexism, racism, colonialism and imperialism afflict Darwin's own writing and scientific practice, and seriously undermine his thinking on evolution's decompositional processes. How, biopolitical scholars might ask, does this project respond to the political inequities and injustices inflicted upon poor,

[2] Further details on my nuanced approach to biopolitics can be consulted in my article, "Necro-Eco: The Ecology of Death in Jim Crace's *Being Dead*" (192-5).

marginalized, and subordinate classes, along with racial and ethnic groups and nations, both Western and non-Western? What is the relationship between Darwinism's decompositional aesthetics and those various and pernicious brands of Social Darwinism that promote eugenics under the rubric of "the survival of the fittest"? Scholars of biopolitics might suggest that in locating a creative process in the death and decomposition of living human and nonhuman animals, this project risks eliding the significance of social, racial, ethnic, gender-based, and political inequalities, resulting in an aestheticization of death that might disregard the sanctity of life. In response to these concerns, I want to make patently clear that this dissertation does not comply with Social Darwinism, nor with the legacy of its aesthetic representations.[3] Moreover, while histories of colonialism and capitalism undoubtedly converge with the history of the earth, the objective of this project is not to sacrifice social history for the sake of evolutionary history, but rather *to uncover the aesthetic dimensions of evolutionary theory and to expose the radical politics of decay as a creative process that includes, but also extends beyond, human histories*. While maintaining the value of biopolitical approaches for animal studies and posthumanism, this project focuses primarily on the relational ontologies of Darwin's divergence diagram, which outlines a vital set of connections between species and across vast geological epochs and which exemplifies a non-anthropocentric view of life in its varied forms.

Detractors of new materialist approaches may also identify a few potential shortcomings in new materialism's interpretation of vitalist philosophy.[4] In particular, Jane Bennett's *Vibrant*

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[3] A notable example is the work of physical anthropologists Josiah C. Nott and George Gliddon in their 1856 monograph *Types of Mankind.* In this book, Nott and Gladden present physiognomic caricatures that compare white male figures with their black male "simian" counterparts.

[4] Kyla Wazana Tompkins notes in her article, "On the Limits and Promise of New Materialism" that "it is of deep concern […] how much New Materialism, particularly in Object Oriented Ontology, cannot deal with race; how it ignores or misreads the work of feminist and queer theory; and how the move to a kind of ontology-centered hermeneutic suppresses the question and problem of difference" (n.p.).

Matter: A Political Ecology of Things has come under fire for its usage of a "flat ontology" that abrades the differences between mineral, vegetable, animal, and human matter. In a noteworthy scene in Bennett's introduction on a "storm drain tableau," for instance, Bennett argues that a plastic bottle cap, mat of oak pollen, men's work glove, a stick, and a dead rat heaped together in a storm drain become "vital" because of their contingency.[5] Yet these bodies and beings — particularly the bottle cap and work glove — are swept up in capitalist production and thereby take on meaning outside of their "vibrant" contingency. Along with scholars of the biopolitical paradigm, what detractors of new materialists worry about is how a flat ontology of "life" and "matter" depoliticizes death. In a time of ecological crisis, this failure to attend to the methods and manner with which death becomes politically distributed (i.e. from the staggering death toll of black populations as a result of Hurricane Katrina to the displacement of Indigenous peoples in Canada due to water pollution) could be the greatest fault of new materialism. I avoid this blind spot by emphasizing the necro-ecological dimensions of life in the Anthropocene, which, as the dissertation progresses, leads to a set of new ecological and ethico-political prospects that are provoked in natural burial initiatives, and which furthermore generate creative possibilities for the meaningful intersections of gendered, racialized, and otherwise differential bodies and necro-ecological agents.

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[5] Bennett writes that "On a sunny Tuesday morning on 4 June in the grate over the storm drain to the Chesapeake Bay in front of Sam's Bagel's on Cold Spring Lane in Baltimore, there was:
one large men's black plastic work glove
one dense mat of oak pollen
one unblemished dead rat
one white plastic bottle cap
one smooth stick of wood
Glove, pollen, rat, cap, stick. As I encountered these items, they shimmied back and forth between debris and thing - between, on the one hand, stuff to ignore...and, on the other hand, stuff that commanded attention in its own right, as existents in excess of their association with human beings, habits, or projects (4)".

Further to my response to potential critics of my interpretation of Darwin's decompositional thinking, I want to make clear that the bio-geo-historical vein of vitalism diverges from the biopolitical philosophy of life in its immanent focus on *Life-as-a-concept,* rather than on *life-as-form*. In scholarship today that targets anthropocentric paradigms of biopolitical life, such as that of Nicole Shukin and Mel Y. Chen, the basis of biopolitical critique can be attributed to an engagement with the "new vitalism" of organization, according to Eugene Thacker's history of vitalism in *After Life*. Shukin's careful and brilliant parsing of the material rendering of animal bodies in biopolitical capitalism illuminates how post-mortem animal remains are organized and diffused into the "mere jelly" of industrial markets, while Chen frames debates in life philosophy around the "insensate, immobile, or deathly" conceptualizations of marginalized racial and gendered bodies. Both of these treatments of material life and death consider how biopolitics demonstrates what Chen calls the "current anxieties around the production of humanness in contemporary times" (3). Yet in expanding biopolitical life to include human and nonhuman animal others, these treatments of death and animality follow a particular bio-historical logic (as outlined by Foucault) that corresponds with the modern biological vitalisms that spring up in a variety of disciplines in the post-Enlightenment period, such as in the embryological insights of Hans Driesch (1867-1941), the physiological studies of Xavier Bichat (1771-1802) and Claude Bernard (1813-1878), and in the biogenesis experiments of Louis Pasteur (1822-1895). While the legacy of these scientists in collectively advancing biological study at the end of the eighteenth and beginning of the nineteenth century continues to persist in today's biopolitical sphere, this vitalism of life-as-form cannot account for the creative possibilities of the post-mortem on an evolutionary scale. Consequently, despite the value of these

approaches in critiquing the speciesism of the state, there is no room for an affirmative reading of post-mortem being in biopolitical critiques.

While an immanent philosophy of life may indeed side-step the operations of biopower (and can be accused of potentially neglecting to address the urgent problems of mass extinction in the present era), I am nevertheless prompted to ask: how can we account for the creative unfolding of life not in biopolitical times, but in the deep time of evolution? What can the bio-geo-historical vitalism of Darwin tell us about the politics of life as we enter into the Anthropocene, which may or may not include the human in its forthcoming chapters? Is a biopolitical critique insufficient for determining our approach to sustainable environmental futures, and if so, how can Darwin's embedded politics of life reform our protocols for protecting species biodiversity?

Proceeding from these inquiries, my critique of the decompositional mechanism in Darwin's thinking is situated within the immanent tradition of "Life-as-a-concept," and therefore shares a common basis with Deleuze's vitalism. In this framework, Darwin's embedded politics of life enables us to contemplate how life initiates necro-ecological formations both *between bodies* and *across milieus,* and on a multi-millennial timeline. By extending the vitalist principle to include life's immanent processes of decomposition, my analysis of Darwin's Tree of Life builds upon the central claim, as articulated best by Elizabeth Grosz in her book, *Becoming Undone: Darwinian Reflections on Life, Politics and Art*, that "the Darwinian revolution in thought disrupts and opens life to other forms of development beyond, outside, and after the human" (2-3). Arguing convincingly that Darwin's evolutionary insights have resounding implications for the Humanities and in particular for the interpretation of philosophy of life thinkers like Bergson and Deleuze, Grosz investigates how this knowledge might transform our understanding of matter and further

nuance the temporal and historical narrative of life's unfolding (*The Nick of Time* 4). Grosz's work is especially useful because her careful reading of Darwin and the work of Darwin's philosophical heirs demonstrates, in her words, "a new kind of philosophy of life, a trajectory in which life is always intimately attuned to and engaged with material forces, both organic and inorganic, which produce, over large periods of time, further differentiations and divergences, both within life and within matter as well as between them" (*Becoming Undone* 4). According to Grosz, Darwin's work inspires a lineage of thinking about life, and also makes it possible for us to question the seemingly superior position of the human that had been widely assumed by early naturalists, and which remains actively contested in fields of the nonhuman turn.

While this project follows a similar path to Grosz's work (in that it attends to the intellectual lineage of Darwin, Bergson, and Deleuze), my study of the vitality of decomposition in Darwinism is grounded in the sub-field of vital materialism. This vital materialism is principally the work of contemporary New Materialist and Ecocritical scholars like Jane Bennett, Serpil Opperman, Serenella Iovino, Karen Barad, and Jeffrey Jerome Cohen, who explore the generative expressions of organic and inorganic matter as "lively," "animate," and "intra-active" processes. Although Grosz's careful study of Darwin's ontology of life does not specifically advance a "new" materialism (*Becoming Undone* 5), I would argue that Grosz's examination of both *inorganic and organic* matter remains a shared concern of New Materialist scholars. Yet what both Grosz and other scholars of the nonhuman turn overlook is a consideration of the full extent of material transformations, which are at their most creative when in transition, between entropic states of decay and renewal. While some of these scholarly treatments of matter make important strides toward negotiating the animacy of organic bodies and inorganic agents like dirt, clay,

stone, and minerals, it is nevertheless the case that the post-mortem productions of matter have, until now, evaded close analysis in these fields.

Filling in this gap in the philosophy of vital materialism, my aim is to examine material decay in all its anomalous forms and varied interactions. With all of these living and dead, organic and inorganic material forms bound together in the layers of strata, we see how this vision produces an embedded politics of life. This treatment of life is "bioegalitarian" — to use a term from Braidotti — in that it utilizes a structure of life in which all species share "transversal, trans-species structural connection[s]" (*Transpositions* 99). In my close analysis of Darwin's Tree of Life, I present this view of evolution as an affirmative philosophy of life that adds a more nuanced approach to treatments of death in the nonhuman turn.

Paramount to this analysis is an examination of *necro-ecologies*, a term I use to describe the extraordinary interspecies interactions and ecological conditions made possible by being dead. This necro-ecological analysis explores the actions of decomposer organisms upon other bodies and environments. In this analysis, I read Darwin's Tree of Life as the basis for a radically ahuman cycle of life that creatively remakes itself in the processes of death and decay, irrespective of anatomically-consistent, corporeally-vulnerable bodies and taxonomic divisions. On the one hand, then, this analysis of necro-ecological forces focuses on the inner workings of growth and decay as processes. It is, in other words, what Thacker defines as an organicist approach to life: "a new type of generative order [in which] decomposition becomes a new type of composition" (255). Yet on the other hand, a necro-ecological approach also emphasizes the exemplary species that direct the course of breakdowns and regenerations. Aligned between the organicism of growth and decay and the entanglements of multi-species networks, my reading of

necro-ecologies builds an alternative genealogy of vitalist thinking that diversifies and expands our understanding of life in relation to human and nonhuman animal organisms.

Multi-Species (De)compositions

In building this analysis, I take my cue from the work of Bruno Latour, who outlines the composition (and decomposition) of a multi-species network in his "Attempt at a 'Compositionist Manifesto'". My methodology of reading Darwin's decompositional mechanism is informed by this manifesto, which I think aptly discerns how the practice of *composition* over *critique* in turn illuminates how nonhuman animals participate in the world as agential actors. For instance, Latour writes that composition "carries with it the pungent but ecologically correct smell of 'compost,' itself due to the active 'de-composition' of many invisible agents" (474). Insisting that what can be composed may, at any point, be *de*composed" (474), Latour proposes that composition be a careful, cautious, and caring endeavour. Unlike critique, which sledge-hammers through the veil of appearances attempting to discover the world of realities beneath (474-5), compositionism is inherently immanent, material, embodied, and realistic in its composition of a common world (484). This approach remedies modernity's failure to acknowledge all the invisible agents — those nonhuman actors — that together forge complex relations with other organisms. According to Latour's manifesto, composition and decomposition are compatible, if not also synonymic, practices. Working in between these processes, this project follows Latour's admonition to pursue the pungent smell of compost; to carefully uncover the multi-species connections and necro-ecological relations that are made and unmade in the moments subsequent to clinical death. As such, this post-mortem politics of embeddedness looks for the mordacious markers of (de)composition, but also recognizes that its operations may be unseen.

Having outlined this framework of a post-mortem politics of embeddedness, the question now is how Bergson and Deleuze advance Darwin's decompositional ontology of life. While the chapters of this dissertation elaborate on this question at greater length, for now I will suggest that Bergson and Deleuze develop a structural critique of the perceptive apparatuses of natural science. For Bergson, the mollusc eye and the cinematograph decompose the tableau of creative evolution, breaking down the apparatus of the eye itself into a "mosaic of cells." Bergson undertakes a critical analysis of the body as a multifaceted surface, and furthermore explores how biology, as the study of life in the individual organism, was aided by a precise — if not also obfuscating — scale of observance in the instrument of the microscope. While Darwin himself relied upon the powers of magnification, Bergson's work foregrounds the shifting adaptations of visual perception in apprehending the procedures of creative evolution.

Deleuze and Guattari, on the other hand, adopt a view of *enclosure* (unlike the paradigm of *exposure* in biopolitics) in their conception of assemblages, unnatural participations and couplings, deterritorializations, bodies without organs (BwOs), "minor" literatures, and nomadic becomings. Deleuze and Guattari's understanding of life is derived from their geo-philosophical approach, which is arguably an innovative reformation of Darwin's subterranean Tree of Life. Amidst their wider project of rhizomatic becomings, Deleuze and Guattari work to dismantle transcendental humanism, exploring how we might instead de-stratify the multiple Darwinisms that have proliferated in cultural treatises of evolution over the past two centuries. According to Deleuze and Guattari, Darwin's fundamental contribution to natural science is his interpretation of life as a series of multiplicities, shifting boundaries, and couplings of individuals and milieus (*A Thousand Plateaus* 48). I build upon this genealogy of life philosophy and assemblage analysis in this dissertation by exploring how select authors, artists, filmmakers and poets bring the

decompositional thinking of Darwin to light through inter-species interactions. By tracing a link from Darwin to Bergson to Deleuze, I show that life in these texts is the capacity to generate new ways of becoming in the world. As another stage in the organism's transformation, life according to this vital materialist lineage is not the property of a singular being, but a relentless and diversifying principle that flows within, and beyond, the bounds of the organism as pure excess and potentiality.

This vital materialist lineage therefore opens up a critique of the body (and particularly the collaboration of living and dead bodies) in the creative texts of this project. Following Spinoza, Deleuze imagines not what a subject or a body *is*, but what it can *do*. He writes that when a body dies, it becomes latitudinally and longitudinally decomposed, "its parts…acquir[ing] *a different relation* of motion and rest" (emph. Deleuze's, *Spinoza: Practical Philosophy* 32). Establishing this analysis as the basis for my reading of multi-species decompositions, my projects asks what kinds of speeds and slownesses, latitudes and longitudes (or degrees of intensity), and what kinds of assemblages of material bodies these texts can create and enact, and how these relations challenge what it means to be human, and to be dead, in the world.

In shifting away from what a subject or a body *is* to what it can *do*, Deleuze's vitalism informs my philosophical approach through its interpretation of the subject's capacity to rupture structures of knowledge through radical becoming. The politics of enclosure that is essential to Darwin's Tree of Life and to Deleuze's philosophy also extends to Guattari's ecosophy (as articulated in *The Three Ecologies* and *Chaosmosis: An Ethico-Aesthetic Paradigm*). Guattari's ecosophy launches a critique of the traditional Western philosophical category of the subject from an ecological point of view. In his concept of "mental ecology," Guattari focuses on a re-articulation of subjectivity as a transversal relation which "will lead us to reinvent the relation of the subject

to the body, to phantasm, to the passage of time, to the 'mysteries' of life and death" (*The Three Ecologies* 24). This transversal subject, earlier referenced in an excerpt from Braidotti's *Transpositions*, is created and constituted through movement, becoming, and collective ecological action. More importantly, this interpretation of the transversal subject is spatialized. As per Bernd Herzogenrath's explanation of the "subject-as-habitus" (6), the transversal subject of ecosophy is embedded, inhabited, and integrated in a lively set of inter-species interactions.

For the purposes of making a contribution to scholarship in Animal Studies and Posthumanism that attempts to describe the "world" of the human and nonhuman animal, I illuminate how the creative texts of this project imagine an inclusive outlook of death and decay that unseats the human from its upright posture and frontal relation to death. Countering speciesism in treatments of death and animality, this vital materialism enables an approach to life that is horizontal, expansive (like a Deleuzoguattarian plateau), and wide-sweeping in its consideration of the earth's pre- and post-mortem undertakings.

II. Nature Morte: A Decompositional Aesthetics

This project proposes that Darwin's decompositional principle broadens the scope of our understanding of evolutionary aesthetics. To examine this alternative schema of Darwin's decompositional aesthetics, however, we must first grapple with the pulsating masses of worms, molluscs, corals, fish, and other mouldering remains represented in the contemporary fiction, film, art, and poetics presented in the following chapters. Why, for example, does A.S. Byatt present us with shrivelled moths and dusty jawbones in her diptych of novellas, *Angels and Insects*? How do we interpret the chalky cliffs of ancient madrepore fossils in Rebecca Stott's historical fiction, or the algae death masks of Jason deCaires Taylor's coral reef sculptures? What do the oozing, rotting prawns of Peter Greenaway's *A Zed and Two Noughts* have in common with the

fermenting pages of Stephen Collis and Jordan Scott's poetry, or the decaying fish and corpses of Jim Crace's novel, *Being Dead,* and Richard Flanagan's *Gould's Book of Fish*?

In what follows, I posit an answer to these queries by outlining my intervention into Literary Darwinism and the field of evolutionary aesthetics. This intervention redefines the parameters of creative production, carrying it beyond the bounds of the living human and into the realms of the inorganic, nonhuman, and post-mortem. I also detail the aesthetic values of decompositional texts and visual media, examining how these works create what Deleuze and Guattari term "minor" literatures and art, singularized by the *percepts* (nonhuman landscapes) and *affects* (nonhuman becomings) of being dead. Lastly, I explore how the creative works of decay and renewal innovate the *nature morte* genre. By illuminating the creative capacity of decomposer organisms to establish necro-ecological formations, I argue that these texts unravel our standard aesthetic responses to the "natural" (often seen through the lens of the sublime), while also navigating through the always-expanding territories of time, matter, and being in the narrative of evolution. In short, I demonstrate how the marvellous work of these contemporary poets, filmmakers, authors, and artists redefines and remakes Darwinism's evolutionary aesthetics.

Decomposing Darwinism's Evolutionary Aesthetics

My critical intervention into Literary Darwinism and the field of evolutionary aesthetics is based on Darwin's own posthumanist leanings (which are, as I explained earlier, illuminated splendidly by Elizabeth Grosz). I have illustrated in the first half of this introduction that our muddy descent into an evolutionary underworld of past species initiates a shift in our perspective of natural history and proposes an embedded politics of life that is steadfastly geological. Both of these gestures advance the key objectives of Posthumanist theory (such as that laid out by Cary Wolfe and Donna Haraway, among others) by sustaining a critique of humanism that challenges

anthropocentric conceptions of human and nonhuman "nature." As such, my objective is to bridge the gap between scholarship in the Environmental Humanities and scholarship in Literary Darwinism. I foresee that in "Posthumanizing" Literary Darwinism and "Darwinizing" Posthumanism, it will become possible to address the profound contribution Darwin's work makes to our interpretation of the human, of art, and especially of death. My intention, then, is to advance a posthumanist reading of Darwinist aesthetics that poses a challenge to Literary Darwinism's limited focus on the human, and subsequently on the production of "high" aesthetic values, which in this field are shaped exclusively by the principles of adaptation and natural and sexual selection. While the influence of humanism lingers in much of this neo-Darwinist theory, my posthumanist approach to Darwin, by contrast, interprets natural history and ecology as an expression of the earth's own narrative agency, decomposed through the creative forces of organic and inorganic matter at the tremulous threshold of life and death.

This ecological and narratological approach to Darwin is prescribed by Gillian Beer, a distinguished scholar of Darwinism, as an antidote to Literary Darwinism's humanist roots. Her book, *Darwin's Plots: Evolutionary Narrative in Darwin, George Eliot, and Nineteenth-Century Fiction,* challenges the view that evolutionary theory merely serves as a rationale for the superiority of the human. Instead, Beer argues that "reading *The Origin* is an act which involves you in a narrative experience" (3). Her conclusion is that some scholars of Literary Darwinism aim to "domesticate [evolutionary theory], to colonize it with human meaning, to bring man back to the centre of its intent" (7) — a fact that is further compounded by novelists who "single out man" in their fictional representations of human behaviour in society (7). To counter this, Beer advocates for an *ecological*, rather than a *patriarchal,* approach to analyzing evolutionary science and literature (10). Proceeding from Beer's ecological approach to evolutionary narratives, the question is not, how

did we become the storytelling animal? (as per Literary Darwinist Jonathan Gottschall), but rather: how is the earth exercising its own narrative agency? What is the story of life's unfolding progression across the millennia?

Aside from Beer, the bulk of Literary Darwinists follow a patriarchal model. Scholars like Brian Boyd, Robert Storey, and philosophy of art Professor Denis Dutton, for example, contend that Darwin's evolutionary theory produces an explanation for the development of the human's unique cognitive traits and its "story-telling" nature. Robert Storey's *Mimesis and the Human Animal: On the Biogenetic Foundations of Literary Representations* captures the key sentiment of Literary Darwinists when he asserts that "the adaptive function…offers the single most important key for springing the literary lock" (xvi). Similarly turning to the scientific method to conduct his literary analysis, Jonathan Gottschall's objective is to treat texts as evidence of human exceptionalism — a tactic he argues is more accurate and holistic than what he calls "libratory" literary analysis (by which he means the post-structuralist paradigm and other theoretical approaches to race, gender, sexuality and other markers of identity in fiction) (13). Like Gottschall, Brian Boyd imperiously privileges Western rationalism in his book, *On the Origin of Stories: Evolution, Cognition and Fiction*, which makes a case for literature as a "human universal" and a biological adaptation (8). Michael Austin's utilitarian approach further secures this view, appraising texts and stories that hold economic value by transmitting information — a fundamental component, he argues, of hominid cognition. When we turn to the philosophy of art, Denis Dutton's research on the "art instinct" supports this framework. Dutton claims that animals ought to be excluded from art theory because they lack the ability to create with deliberate intention: he writes that "*The Art Instinct* is a book about human beings and the peculiarly human impulses and drives that underlie our culture…Animals, nevertheless, do not create art" (9). More specifically, this aesthetics is, for

Dutton, grounded in beauty, skill, pleasure, aesthetic judgment or taste, all of which are described as "high" artistic values that are shaped by the biologically-adapted human brain (11-12). Dutton illustrates this theory in his *TED* talk, entitled "A Darwinian Theory of Beauty," wherein he interprets Darwin's well-known ethological study of the peacock and peahen as an example of sexual selection.[6] For seasoned readers of Darwin and novices alike, this is the evolutionary aesthetics with which we are intimately familiar: it is a theory of beauty that arises out of biological necessity and the operations of natural and sexual selection.

We can locate this theory of beauty in Darwin's *The Descent of Man and Selection in Relation to Sex* (1871), which historians of Darwin argue is determined by the social scientific principles of human evolution and by the "particular nature" of the human — whether it be psychological, physiological, behavioural, affective, cognitive, anthropological, or in this case, aesthetic. The impetus behind the pressing turn to human evolution and aesthetics, however, is explained helpfully by Barbara Larson in her introduction to *Darwin and Theories of Aesthetics and Cultural History.* Here, Larson argues that while Darwin's program of aesthetics among humans has enjoyed greater visibility in literary theory and the arts, much of evolutionary aesthetic theory over the past century has reflected the views of Darwin's (somewhat adversarial) contemporary, John Ruskin (1819-1900) — an "eminent art theorist" who promoted "the idea that beauty in nature was for the aesthetic pleasure of god and man" (5). Unfortunately, this anthropocentric theory of art, which is grounded in the Kantian ideal of aesthetic judgment, has perpetuated throughout much of Literary Darwinist criticism and "nature" writing over the past two centuries.

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[6] In this study, the vibrant plumage of the peacock excites the peahen and secures her as a potential mate.

To combat what lingers of Kantian aesthetics in contemporary art theory, scholars of New Materialism have established a nonanthropocentric framework for interpreting "storied matter." In particular, the work of Opperman and Iovino's edited book, *Material Ecocriticism*, proclaims a "nonanthropocentric conceptualization of materiality" (29) that attributes narrative agency to the earth, which in turn "does not purport to enhance human qualities in fictive or material domains; rather, it denotes the vitality, autonomy, agency, and other signs that designate an expressive dimension in nonhuman entities" (30). This ecological and narratological approach to the environment shares a common goal with Beer, along with thinkers like Stacy Alaimo and Heather Sullivan, who closely examine human and nonhuman natures and their entwined discursive and material forces.

But to push literary and artistic analysis in these fields further, the crux of this project's intervention into Literary Darwinism is that evolutionary aesthetics must account for the significance of decompositional processes in Darwin's thinking of life. Challenging Dutton's assertion that animals ought to be excluded from art theory, I argue that nonhuman entities are integral to Darwinism's decompositional aesthetics. It is the animal, as Grosz would say, that directs us to artistic production (*Becoming Undone* 169).

So what is special about *post-mortem poeisis*? In what way does the post-mortem serve as a heightened creative threshold? The most crucial aspect of my contribution to "Darwinizing" Posthumanism lies in examining the creativity of post-mortem entities: bodies that burst, weather, and foul. Through their decay, these bodies enter into blocks of sensation with other necro-ecological agents (worms, blowflies, slugs, microbial organisms, etcetera) that converge together to transform matter into new configurations. At first glance, these nonliving organisms appear to be inert. However, in and through decay, the assemblages of dead and living matter develop their

own particular *temporalities, speeds, and capacities.* Just as worms wriggle, molluscs crawl, corals corrode, and fish flitter and stink, dead matter also rises, bloats, ruptures, seeps, stirs, (dis)colours, shrinks, disintegrates, and becomes dust. The putrefying body is a rooted composite of forces that unfold, securing a constellation of other bodies on a stratified plane. Understood this way, the affects of being dead are the intensities of matter's dilation, which mark a wave of creativity as bodies are remade into new forms and structures. These affects signal the beginning of depersonalization, opening up a mode of possibility for a multiplicity of encounters with other ecological elements and organisms.

Decompositional blocks of sensation also generate collisions between nonliving bodies and their environments: the beaches, swamps, leaf litter, and chalky cliffs that are the nonhuman landscapes of being dead, along with post-mortem matter itself, which generates and accommodates life as a thriving habitus for bacteria and fungi. These necrophagous organisms launch a necro-ecological chain of reactions in the gut and brain and tissues, shifting energy into other bodies and into smaller building blocks of life. The exemplary decomposer organisms of this project similarly "inhabit" bodies and spaces, both literally and figuratively modelling creative evolution as a universal principle of breakdowns, deletions, and spontaneous assemblages. All of these creative iterations actualize an index of bodies and temporalities that displace the focus on what bodies *are* to what bodies can *do* and *become*. In turn, part of what sustains this crest of intensified transformation is the excess created in decay: the surplus of energy that carries bodies away into proximate relationships with all other nonliving bodies from epochs past. As layers of strata pile on the earth's surface, this temporal and spatial index of post-mortem bodies jostles and reassembles relations below, redistributing agencies and forging new communal connections.

Post-mortem poiesis can therefore be defined as the creative potential of dead matter to chart alternative topographies, cartographies, figures, and rhythms of being in the deep time of evolution. By producing "minor" literatures, arts, and histories of the post-mortem, Greenaway, Crace, Collis and Scott, Byatt, deCaires Taylor, Flanagan, and Stott shine a light on the dark places and stages of being dead, from the slime and goo to the dust and pulp. Shifts in biomass further mobilize reconstructions of genetic codes and weaves other surviving discursive pieces of DNA in other bodies (as argued by Judith Roof in *The Poetics of DNA*), leaving traces in the paleontological record. Biological matter's discursive capacity is amplified by the minute breakdowns of inorganic elements — ions of sodium, calcium, and magnesium, along with other building blocks of life, such as the molecules of carbon and hydrogen, which provide a nutritive reserve for protists, mites, millipedes, slugs, and other detrivores. All of this demonstrates what DeLanda argues is the basis of evolutionary theory: that across the centuries, humanity (and I would argue all matter) is basically just "liquefied and solidified in different forms" (16). The post-mortem poiesis of the earth is an active re-arrangement of these inorganic and organic elements, though small in scope, but operative on the grandest of scales — the millennia of vast geological epochs.

Nature Morte

It is perhaps no surprise, given the preoccupation of decompositional texts with the time of evolution and the matter of being dead, that the *nature morte* genre is transformed by multi-species decompositions. Decay has been hovering at the frayed edges of the still life since its inception. While most art critics would argue that the still life expresses the beauty of life at its peak, the tableaus of rot in this project invite us to contemplate: how do we understand life when flies are abuzz; when unsightly liquids seep into the frame?

The authors and artists of these decompositional texts make both explicit and implicit reference to the *nature morte* genre. For Collis and Scott, the decompositional still life is modelled in the entangled bank of Darwin's *Origin*; for Byatt, in the mouldering underground; for Greenaway, in the Muybridgean grid of time-lapse cinematography and the *tableau vivant*; for Stott, in the engraved embankment of corals; for deCaires Taylor, in the vacillating fronds of seaweed and the pilous carpeting of xooanthellae upon the surface of pH-neutral concrete; for Flanagan, in the still life watercolours of seahorses and stargazers; and for Crace, upon the beach, replete with the washed and thinned remains of fish. These decompositional still lifes are represented in fictional plots, pastoral poetics, cinematographic tableaus, and underwater galleries. They also include material objects, such as paper, concrete, actual dead zoological specimens, and living organisms. In innovating the *nature morte* genre, these decompositional authors and artists quite often opt for direct engagements with material forms over mimetic representations of nature. In this project, it is the materiality of art that palpably portrays the animacy and vitality of nature.

Given these interventions into materiality and innovative textual and artistic mediums, the central claim I want to make here is that Darwin's divergence diagram, when paired with his notable reflections on the "entangled bank," sets the stage for decomposing the still life. As I explain in further detail in the first chapter, the entangled bank in particular foregrounds Darwin's thinking on the creative productions of matter in the deep time of evolution. Occupied by worms, flittering birds, and the crawling of insects, the bank is the place where Darwin ruminates on the diversity of living and dead organisms in the earth's natural historical record. For him, the aesthetics or "beautiful ramifications" of decay and renewal begin in the muck. Furthermore, while the divergence diagram appears to be a static model of deep time, *the lively actions of decomposer organisms in the entangled bank animate the still life of the divergence diagram*, providing

a richly textured, albeit brief, snapshot of life's unfolding. By bringing death to life, the *nature mortes* of this project generate questions about how we conceive of life, how we represent natural forms, and how we might establish a nearer proxy with these forms that thereby critiques scientific methods of observation and the ocularcentrism of the artistic field.

The history of the still life genre is far too extensive to be outlined here in full, but it is helpful for the purposes of this introduction to discern how these decompositional texts work against the grain of the still life. First and foremost, the still life mainly portrays a careful and ordered arrangement of inanimate and mostly nonhuman forms: game, fish, flowers, fruit, bread, and other banquet goods. Think of Pieter Aersten's meat stall, Michelangelo Caravaggio's woven baskets brimming with fruit, and Paul Cezanne's domestic platters of ruby-red apples. There is a touch of realism in the still life: it is often associated with the everyday and with "low" aesthetic values in the hierarchy of artistic genres (at the top of which are portraiture, landscape paintings, and Biblical or historical paintings). Modern variations of this genre, from Van Gogh's vibrant sunflowers to Picasso's cubist violins, have adapted the still life into a play of abstract scales and expansive affective registers. But what sets the decompositional still life apart is its critique of visuality as an epistemological tool. Instead of reaffirming the objective distance of the natural world, the decompositional still life pierces through the seemingly hygienic seal that separates the classical art object and the observer. In the decompositional still life, inert matter becomes truly alive.

There is also a strong link between the still life genre and zoological and botanical science, according to art historian Giovanni Aloi. In his overview of butterflies in contemporary art, for example, he writes that "the prominence of vision as the epistemological tool of the Classical Age" was demonstrated not only by the tradition of scientific illustration in the sixteenth

and seventeenth centuries, but also by the still life genre, which could together "be read as different methods contributing to a rationalization of nature, one that attempts to preserve the beauty of what fades and that which is by nature elusive" (72). By contrast, the decompositional still lifes of this dissertation are mobile, animate, ecologically-connected, grotesque, performative, disordered, and disarming to the senses. They are not beautifully ordered and arranged, frozen in time, or marked with the symbols of mortality (such as in the *memento mori* or *vanitas*). Rather, the decompositional still lifes represented in art, fiction, film, and poetics are depicted *in medias res.* Like Darwin's entangled bank, they capture a brief snapshot of an ongoing narrative of material dissolution and renewal.

If the decompositional still life self-reflexively gestures to the limits of visuality in relation to the natural world, then it offers an alternative to the affects of terror and awe that are often attributed to the natural sublime. Instead, the "grandeur" of the entangled bank arises from its lowliness; from the small and seemingly insignificant actions of nonhuman animals. In fact, what becomes important for the decompositional still life are the things that seep beyond the frame and escape the conventions of creative expression. While the *parergon* in Derrida's interpretation of the Kantian metaphor of framing in *The Truth in Painting* would outline the inside/outside of aesthetic representation (48), the frame of the decompositional still life has fuzzy, indeterminate edges. The inside/outside problem of Kantian aesthetics is not a framing device for the decompositional still life, because it does not hedge around the classically beautiful art object in order to ensure its safe capture and display. Alternatively, the metaphor of the frame cannot contain the surplus of creativity that is instigated by decay. Decomposing bodies produce a palimpsest of zoological scrawls and prosopopeiac utterances that upset the composition of the still life, tearing it away from the frame.

Mirroring the subterranean position of Darwin's ontology of life, these decompositional creative works could be said to produce "low" aesthetic values. Decompositional art festers in the underground, under the aegis of the grotesque. It is this tradition of the grotesque — which literally translates to the *grotto*, cave, crypt, or underground — that navigates through the unseemly affects of death: the ugly, disgusting, incongruous, open, and suppurating. The contemporary texts of this project respond, in varying degrees, to the history of the grotesque tradition that arises at the end of the eighteenth century and carries through the Victorian period and into the twentieth and twenty-first centuries. This tradition includes the symbolic grotesque of Ruskin, the grotesque realism of Mikhail Bakhtin's carnivalesque, and the abject grotesque of French philosopher Julia Kristeva. It captures the riotous and discordant assembly of human-animal hybrids; the spilling of blood and guts; and the repugnant sights and odours of decay. Darwinism's decompositional aesthetics similarly authorizes the proximate relationships between human and nonhuman organisms, inorganic and organic elements, and past and present temporalities. Yet unlike the moralism of Ruskin, the fantasy of Bakhtin, and the self-dissolution of Kristeva, this aesthetic schema is necro-ecological: it produces a critical response to, and appreciation of, decomposition's objective, contingent, and communal creative forces.

Chapter Summaries

Each of the four chapters of this project, along with the conclusion on fungi, begins with a key scene or tableau that exhibits the inner-workings of decay in these fictional, filmic, poetic, and artistic productions. The *nature mortes* that elucidate the operation of Darwin's decompositional aesthetics are placed front and centre in my analysis, presenting an interpretation of how each decomposer organism, from worms and molluscs to corals and fish, contributes to life's unfolding chapters of death and rebirth.

In the first chapter, entitled "*Worms* | A Post-Mortem Natural History," I argue that Charles Darwin's final book, *The Formation of Vegetable Mould Through the Action of Worms, With Observations on Their Habits* (1881), serves as a foundational text that emphasizes the decompositional nature of life's evolutionary unfolding in deep time. The worm of Darwin's treatise serves as an ambassador for the vitalistic and material decay of the earth and its human and nonhuman animal inhabitants. The key argument I make is that Darwin's worms practice a post-mortem methodology that is contrary to the practice of natural history, which aims to classify, locate, nominalize, and temporally suspend life's ongoing expressions into extinct categories. Darwin's last treatise on the worm lays the groundwork for thinking beyond the normative constructs of time, space, and the human. As a small but potent force in the making and unmaking of natural history in Darwin's geological vision, worms incite a temporal, spatial, and ontological breakdown through the continuous ecological relations with other living and dead human and nonhuman animal organisms in the earth's natural historical record.

Affirming the capacity of the worm to decompose the narrative of the earth through its ecological connections with other organisms, this chapter also makes the case for natural history's inherently post-mortem orientation. Darwin's initial insight in the *Origin*, which discloses that the story of the earth is replete with "missing chapters," calls attention to the fragmentary constitution of the earth's record, while his later earthworm research posits that the trace of the worm's industrious activities necessitates a re-examination of natural history that accounts for the remnants of organic matter in deep time.

As an exemplary case study of this relentless decompositional impulse prompted by the worm, Stephen Collis and Jordan Scott's contemporary poetry and photograph collection, *decomp* (2013), is a collaborative writing project *with* worms that produces new meaning out of the

tattered textual fragments of five weathered copies of Darwin's *Origin*, each of which has been left to decay for a calendar year in five distinct ecosystems of British Columbia, Canada. The material and vital force of the worm in Collis and Scott's project opens up important questions about the significance of human observance and its bearing on the construction of narratives of natural history and the practice of poetics. Collis and Scott's creative methodology ("we will be as worms") leads to the recusal, in part, of the human composer in favour of a synergistic and sympoetic partnership with worms and the possibility for the autopoetic expression of the worm, the weather, and the nonhuman inhabitants of each biogeoclimatic zone. As a post-mortem project that compiles fragments from the weathered copies, *decomp* brings critical attention to the process of decomposing meaning beyond the bounds of origins and endings, here and there, human and nonhuman. Similarly, A.S. Byatt's *Angels and Insects* (1992) articulates an "understory" of natural history that subsists in the thinking of Darwin on worms and in the occultism that reverberates across Byatt's neo-Victorian novel. Thus, by arguing for the equality and transversality of all living and dead organisms (Bennett, Braidotti), my analysis of *decomp* and *Angels and Insects* reveals the ways in which the rich vermicast of the worm works to subvert the very foundations of knowledge that are the substructure of natural history.

Exploring Peter Greenaway's *Darwin* documentary (1993) and *A Zed and Two Noughts* (1985), the second chapter, "*Molluscs* | The Decompositional Tableau of Creative Evolution," brings Darwin's natural scientific volume and letters of correspondence on barnacles and molluscs into an analysis of Greenaway's *Z&OO*. Greenaway's ethology of creaturely putrefaction in this film destabilizes the dualisms that frequently attend zoological and ethological practice: namely, the articulation of difference that is foundational to understandings of the human, life, and zoological observation. Greenaway's film features the snail as a slimy

representative of putrefaction that diffuses these dualisms in its referral to the origin of primordial ooze and the snails's trails of mucilage. Contextualizing the taxonomical history of the snail alongside Darwin's barnacle work and vitalist debates about the classes of *cirripedia* and *mollusca*, I contend that these scenes of ooze, slyme, and murk speak to larger questions of origins and endings that extend beyond the bounds of the individual and personal deaths of the zoo animals and even of the two zoologists themselves. In challenging the seemingly stable narrative of evolution that Attenborough's BBC nature films posit (that of organisms coming into being through time, arising out of the sludge), Greenaway's persistent return to the decompositional tableau of material decay takes us to the periphery of what can be seen — and consequently of what we can know — of being dead. Ultimately, *Z&OO* showcases the unseating of the scientific observer and the failure of the cinematic apparatus itself, which functions as a cinematograph in Greenaway's film analysis of Bergson's *Creative Evolution*. This failure indicates that a narrative of decomposition exists on a creative register outside the empirical view of the human gaze, and beyond the parameters of reason.

In the third chapter, "*Coral* | The Geo-Vitalism of Coral Reefs," I explore the post-mortem underwater world of Rebecca Stott's *The Coral Thief* (2008) and the contemporary coral reef sculptures of British artist Jason deCaires Taylor. Returning to Darwin's obsession with the world-making capacity of corals in *The Structure and Distribution of Coral Reefs* (1842), this chapter situates natural scientific debates on the saltwater polyp (the organism that creates coral reefs) in relation to vitalist hypotheses, and explores how corals literally erupt from the decay of coral fragments (which Darwin argues form from a pile of broken masses on the ocean floor). Reading *The Coral Thief* as a historical fiction (its main protagonist, Daniel Connor, is to be read as Charles Darwin), I argue that the Paris basin that forms the backdrop of Stott's narrative is imagined as a

post-mortem terrain populated with chalk cliffs — the remains of sea lizards, oysters, and corals. The philosopher-thief, Lucienne Bernard, who hopes to capture and collect corals, believes that corals "know things we do not know…They know how life on earth began. They know how animals have changed down there on the seabed, the way bodies have mutated and transformed from fishes to reptiles. They've seen it. They know it" (73). Connecting the philosophy of Lucienne Bernard to the work of the French mapmaker in Stott's text, I argue that the creation of continents, cliffs, and seabeds in Stott's novel can be read cartographically, with Deleuze's geo-philosophy in mind. Seeing the subsidence of post-mortem fragments sink to the bottom of the seabed, the corals in Stott's fiction literally make worlds as they erupt through the strata of ancient remains.

Putting Stott's imaginative reinterpretation of Darwin into a discourse with art, I argue that the coral is the emblem *par excellence* of the Anthropocene. In the work of underwater sculpture artist deCaires Taylor, who produces life-size human forms in a mould of pH-neutral concrete and sinks them in oceans off the coast of France, Mexico, and most recently The Canary Islands, corals are produced in an attempt to halt mass bleaching. deCaires Taylor's environmental and artistic project serves as a creative ethical response to the impending crisis of the Anthropocene by literally re-creating reefs upon the decaying matter of the human form. Anticipating and affirming the decomposition of the human, deCaires Taylor's project revises Darwin's thought on the structure and distribution of coral reefs in order to attend to the crisis of the contemporary moment.

The fourth chapter, "*Fish* | Decomposing the Book of Life," explores how Richard Flanagan's *Gould's Book of Fish* (2001) and Jim Crace's novel *Being Dead* (1999) decompose the Book of Life. Exploring the natural history of fish in relation to colour theory and Darwin's

editorial work on fish (which appears in the fourth instalment of *The Zoology of the Beagle*), this chapter explores the intersection of word, image, and flesh in Flanagan's prismatic narration and and Crace's funeral ecology. While Flanagan's novel creatively rewrites and reproduces the story of the historical figure of William Buelow Gould (a convict of the Tasmanian penal colony in the 1830s) along with his watercolour sketches of native fish species, Crace's narrative represents the (dis)colourations of the corpses of two zoologists. Crace's novel, by contrasting traditional death customs and methodologies (such as the "quivering") with naturalistic funerary rites like Mondazy's Book of Life and his fable of the Fish, emphasizes a natural burial undertaken by the earth and its nonhuman inhabitants, where "death [is] cultivated, watered like a plant" (6). The fictional writer of *Being Dead*, Mondazy, who personifies death as a Fish that leaves behind a wake of scales and mucilage on the sheets of the deathbed, is foundational to Crace's inventive figuration of a funeral ecology that carries the two zoologists, Joseph and Celice, into a post-mortem existence on the sands of Baritone Bay.

Illuminating Darwin's decompositional mechanism in Gould's kaleidoscopic narration and in Mondazy's Book of Life, this chapter further demonstrates how Flanagan and Crace utilize postmodern writing techniques in order to produce a narration of the dead and dying. While Flanagan's fiction utilizes a juxtaposition of images (reprints of Gould's watercolours) with multi-coloured text, Crace's novel revises the classic elegiac form through the innovation of a number of styles and literary devices, including zoological realism, naturalism, the grotesque, black humour, irony, metafiction, figurative language (such as prosopopeia), fictional landscapes, and temporal distortion. Together, these devices and styles subvert depictions of the dead, thereby challenging traditional notions of personhood, subjectivity, milieus (or "worlds"), mortal timescales, living fossils, and senescence.

In the conclusion of this dissertation, "*Fungi* | The Decompinautics of Natural Burial," I gather together all of the threads of my chapters on exemplary organisms in order to address the philosophical significance of Darwin's decompositional aesthetics. I ask: how does this decompositional principle produce a philosophical knowledge of the invisible (as per Foucault) or get us beyond the transcendental schema of the modern humanist subject (as per Wolfe)? Why these decomposer organisms, and not others? Which concepts are subject to decomposition? In this rumination on fungi, I argue that being dead is otherworldly: it transforms the human into a "decompinaut" — a body that traverses the shaded underside of knowledge and being. It is here that I also make a case for natural burial as an ethical response to the questions of the Anthropocene and of environmental futures of the human. In dying and being dead, I propose that a "Post-mortem Posthumanism" defines a new set of ecological prospects in the face of global climate change and impending environmental collapse.

CHAPTER ONE | *worms*

A Post-Mortem Natural History

It is interesting to contemplate a tangled bank, clothed with many plants of many kinds, with birds singing on the bushes, with various insects flitting about, and with worms crawling through the damp earth, and to reflect that these elaborately constructed forms, so different from each other, and dependent upon each other in so complex a manner, have all been produced by laws acting around us. […] There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst this planet has gone circling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.

— Charles Darwin, *On the Origin of Species*

It is as if the earth is reborn again and again, passing through the bodies of worms.

— Adam Phillips, *Darwin's Worms: On Life Stories and Death Stories*

Embedded in the coastal Western hemlock zone of Tofino, British Columbia, a sodden copy of Charles Darwin's *On the Origin of Species* moulders in its mound of worm castings and pine-needled mulch. Its pages are swollen, rotted, and voluptuously wet with the morning's rain; a mass of pulp the consistency of *papier mâché.* The text beads with a resinous surge of sap. By mid-day, browsing pill bugs stride across the manuscript's wind-ravaged edges. An arachnid stationed across the page temperately sews the striated patterns of its delicate filigree upon the faded print, capturing its prey beneath the casted shadows of the salal's leathery leaves. Months pass. The scaled pages chap and curl, transforming Darwin's open book into what begins to resemble a tract of cross-sectioned earth. In this petrichor plot of soil, the book has itself become Darwin's *entangled bank*: a furrow of damp earth clothed in vegetation and crawling with worms.

Fig. 3. The *Origin* in Tofino, British Columbia. *decomp* 109.

Canadian Poets Stephen Collis and Jordan Scott have planted four other copies of Darwin's *Origin* into the sub-boreal layer of five distinct biogeoclimatic zones in British Columbia for the duration of a calendar year. In their poetic-photographic project, *decomp* (2013), Collis and Scott creatively experiment with what Darwin observed as the "grandeur" of life in the entangled bank. By interring Darwin's textual body into the rich humus of diverse ecological habitats, Collis and Scott's project literally decomposes the *Origin*, in turn showcasing the way in which evolution itself operates through a decompositional mechanism that continually de-stratifies and reassembles the codes of organic life. *decomp* exemplifies the metamorphosing forces of decomposition and the biological necessity of death and regeneration in the ever-evolving formation of species. As the poets "become as worms," they conduct a post-mortem of natural history that itself becomes a model for the creative iterations of biological matter across deep time.

Textual and artistic projects like Collis and Scott's *decomp* unearth a decompositional principle that expands the purview of natural history to include all living and dead species — and particularly long dead species that lie hidden from view. By re-examining Darwin's consideration of the "geological succession of organic beings throughout time" (*Origin* 4), I aim to advance a bold claim: that unlike natural history, which nominalizes the visible (as per Foucault's analysis of natural science in *The Order of Things*, 144), a post-mortem natural history historicizes

all matter; it views the entangled bank and its stratified sections of dead organisms as a play of traces between seen and unseen forces — the latter of which largely lay buried and beyond the scope of our vision. Among the worms and dirt, then, there is no strict divide between what is past and present, living and dead; all of life is necro-ecologically enmeshed. Darwin's insights in his earthworm treatise likewise show us that the wriggling worm labours as an emissary of decomposition, decoding meaning as it creates new and slimy pathways into language, thought, and natural history. In the mud of Darwin's entangled bank, a classificatory and temporal-spatial breakdown in thinking is accomplished by decompositional processes. Atom by atom, moment by moment, life expands outward in Darwin's sedimented vision of evolution as it builds upon the dead and extinct forms of the past.

As I have demonstrated in the Introduction, Darwin's divergence diagram is the key that unlocks the door to Darwinism's decompositional aesthetics. In this chapter, I show how this provocative re-reading of Darwin's visual model of life allows us to interpret the vermiform texts of Collis and Scott, along with A.S. Byatt's mouldering neo-Victorian diptych of novellas, *Angels and Insects*. By re-interpreting Darwin's work on worms through the lens of decomposition, I advance a critical contribution to the examination of time, narrative, and matter in vitalist philosophy that takes into account the principle of life that flows within, and beyond, the bounds of the post-mortem organism. Second, I present a reading of contemporary creative engagements with Darwin's final book, *The Formation of Vegetable Mould Through the Action of Worms, with Observations on their Habits* (1881),[7] arguing that these texts and images reimagine the decompositional aesthetics of evolution through the slow, ruminative re-routings of worms. I explore the impact of this timely re-evaluation of Darwinism's decompositional aesthetics for the

[7] Hereafter referred to as *Worms*.

contemporary moment, which continues to negotiate the entanglements of human and non-human animal life across the millennia. In these creative texts, the binaries of *hominid and annelid*, *human and humus*, *corpse* and *corpus*, *mould* and *mouldering* are recast in and through the ponderous burrowings of worms. With each turn of the worm, this chapter aims to demonstrate how each literary and poetic text might illustrate the productive potential of the annelid to serve as a decompositional agent in the natural historical narrative, as Darwin first thoughtfully discerned.

Natural History and the Vermiform

From the book to the bank of life, textual metaphors of evolution in the *Origin* vividly illustrate the perpetually-disintegrating record of life's evolutionary progress. Much like the tattered pages of the *Origin* in Collis and Scott's *decomp* project, the cross-section of damp earth described in Darwin's closing meditation on the entangled bank illuminates how the evolution of organisms from simple to elaborate constructions is understood to be a largely imperceptible process with unknowable chasms of severed and splintering text. Moreover, Darwin's *Worms* book connects to vitalist debates in the nineteenth century by contributing to the taxonomic breakdown of species. As worms pass the earth through their bodies, they perform the reproductive labour of the earth. This process of rebirth encloses all living and dead species into a vital system that operates not on the basis of classificatory divisions but on the principle of life's material creativity.

Charles Darwin's final text on the earthworm imparts a curious narrative of a world that has been passed through the illimitable tracts of worms. In the opening pages of his manuscript, Darwin writes that he is "led to conclude that all the vegetable mould all over the whole country has passed many times through, and will again pass many times through, the intestinal canals of worms" (4). This vegetable mould — described by Darwin as a "rich humus of great thickness"

on the earth (5), is the product of the humble worm's massive appetite for putrefying organic matter. Importing these materials into their burrows and digesting them, earthworms create a process of bioturbation that essentially re-works the very soils and sediments of the earth. In their collective labour, worms have shifted the foundation of Downe House (Darwin's residence) and even the great stones of Stonehenge; as archaeologists and undertakers, Darwin insists, worms have played "a more important part in the history of the world than most persons would at first suppose" (308).

While not a philosophical treatise, Darwin's "curious little book"[8] on the formation of vegetable mould was the first of its kind to critique the worm's "lowly" station in the animal kingdom. The project, initially presented as a paper to the Geological Society of London in November of 1837 and later published as a book-length monograph a year before his death in 1882, would become a life-long obsession of Darwin's[9] as he attempted to establish that worms have "souls"[10] and exhibit diminutive signs of intelligence and consciousness.[11] Gilbert White's

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[8] From a letter to German zoologist Victor Carus dated 21 Sept. 1880. Darwin later refers to *Worms* as "a very little book" (to J.V. Carus, 22 Nov. 1880 and to Fritz Müller, 22 Oct. 1881).

[9] In October and November of 1880, at the height of his worms research, Darwin writes in a letter to niece Sophy Wedgwood that he is "also becoming deeply attached to worms" (8 Oct. 1880). Later, Darwin asserts that his "heart and soul care for worms & nothing else in the world just at present!" (Letter to H.H. Johnson, dated 14 Nov. 1880) and that his "whole soul is absorbed with worms" (Letter to W.T. Thiselton Dyer, dated 23 Nov. 1880).

[10] To his son, William Erasmus, Darwin proclaimed: "I think that I will show that worms have much bigger souls than anyone wd [would] suppose" (31 Jan. 1881).

[11] While Darwin does not attribute the same level of intelligence to the worm as he might to other organisms, he does concede that the worm's display of decision-making, including their capacity to draw organic matter into their burrows sight unseen, demonstrates some level of intelligence. G.J. Romanes, a colleague of Darwin's, is more sceptical of this display, believing that their capacity to reason stands "just on the border-land" and that if they are intelligent, they are "not intelligent in a degree sufficiently high to admit of our certainty classifying it as such" (7 Mar. 1881). Nevertheless, George Levine writes, Darwin was convinced of "the continuity of being between worm and human…it is clear that he tries to attribute to worms, and finds experimental sanction for it, qualities of real consciousness and the capacity for choice" (149).

immensely popular *The Natural History of Selbourne* (1789) was in circulation years before Darwin's text, and was perhaps the first, according to Anne Secord, to overturn the earthworm's "reputation as a garden pest" (xix). Yet it was Darwin's work that would bring further credence to the worm's labours. Completed with his "customary thoroughness," as Jonathan Clements argues (134), Darwin systematically gathered data from friends, family, and colleagues around the world, and this worm data would prove to be of inveterate importance to natural science.[12] By building a large body of data on worms over many years, Darwin was "determined to observe the influence of worms not merely on a compost heap over a matter of weeks, but on the earth over thousands of years" (Clemens 134).

The enduring importance of Darwin's work on worms is due not only to its meticulous attention to detail but to Darwin's overarching interest in reconstructing history as a slow process of accumulated development. Along with Darwin's other evolutionary research, which would argue for slow and continued change over vast periods of time, *Worms*, Stephen Jay Gould writes, "illustrate[s] the general method that had validated evolution as well. Nature's mills, like God's, grind both slowly and exceedingly small" (125). Due to the worm's lack of a bony endo- or exo-skeleton, it decomposes quickly, leaving few — if any — traces in the fossil record. So instead, the extraordinary character of the worm comes down to its remarkable labours: the creation of expansive networks of underground routes and the production of massive quantities of vermicast that fertilize the soils of the earth and nurture botanical growth. By drawing attention to the

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[12] Darwin received worm castings and preserved specimens from South America, soil measurements from the Stonehenge sites by his sons and nieces, and innumerable letters from British countrymen and women who had heard of Darwin's interest in worms and wished to share their amateur observations. At times, Darwin's experiments were eccentric: his collection of worms in pots were serenaded with the trombone, subjected to experiments with light and sound, and their eating and burrowing habits determined by experiments with coloured paper cut out in triangles to resemble leaf matter. Perhaps more amusingly, Darwin also "had a small army, largely of women, poking knitting needles into worm burrows on hillsides all over the world to determine their angle," according to Darwin scholar Alison M. Pearn (51).

notable contributions of the worm, Darwin presents a new way of approaching natural history, as Gould goes on to conclude:

> How can we use the anatomy, physiology, behavior, variation, and geographic distribution of modern organisms, and the fossil remains in our geological record, to infer the pathways of history? Thus we come to the cover theme of Darwin's worm book, for it is both a treatise on the habits of earthworms and an exploration of how we can approach history in a scientific way. (123)

Advancing Gould's conclusion of the significance of Darwin's worm book, I propose that Darwin's augmentation of the disciplinary tenets of natural science is inspired by the worm's fleshly generativity, its collaborative interaction with the earth and its inhabitants, and its lively, material labours, which continually break down organic matter, renew the earth, and (re)write its narrative.

The impact of Darwin's (de)compositional vision in *Worms* is made apparent when situated within the context of the scientific revolution of the Victorian period, which was beginning to apprehend the breakdown of the taxonomic order and to recognize the deep time of the Earth based on emerging geological and paleontological evidence. Traditionally, the taxonomic classification of species and the development of comparative anatomy practices led by French naturalist and zoologist Georges Cuvier,[13] for instance, maintained that a certain unity existed between fossils and living organisms, and that no mutability of the species could be observed over time. Yet despite the attempt of Cuvier and other comparative anatomists to

[13] Cuvier is particularly well-known for his public dispute with fellow French naturalist Étienne Geoffroy Saint-Hilaire over Geoffrey's "unity of composition" principle and his defence of Jean-Baptiste Lamarck's transmutationist theories, while Lyell's *Principles of Geology* unequivocally denied the mutability of species.

systematically nominalize species, *it is important to note that the worm, and other vermiform organisms, presented a challenge and a direct threat to the order of nature*.

In her brilliant treatise on the vermiform in texts of the Romantic period, *Worm Work: Recasting Romanticism*, Janelle A. Schwartz determines that "from the time of Erasmus Darwin to that of Charles Darwin, worms were recognized as much for their figurative utility in the disruption of man-made systems like the classification of organisms and conventional aesthetic judgments. Worms were a taxonomic terror" (xv). The freshwater polyp or hydra, a regenerative vermiform species, created a dilemma for Swiss naturalist Abraham Trembley earlier in the 1740s, for instance, because of its ability to restore itself when cut apart. As Thomas L. Hankins suggests, the polyp's ostensibly immortal powers created a quandary for Enlightenment naturalists: "If each part of an animal could regenerate the entire animal, then where was its 'soul,' or organizing principle?" (122). By putting pressure on natural scientists to revise their mechanistic approach to organic structures in favour of an investigation of vital functions, the polyp serves as a prime example of the capacity of the vermiform to represent life's ongoing vitality. Contextualizing the polyp in the history of natural scientific practice, Schwartz insightfully argues that

> with its mostly tubular body, wormy behaviour, and extraordinary ability to regenerate, the polyp became quickly imbued with a significance beyond its physical existence. The traditional symbolic value of worms as harbingers or producers of death and decay was further complicated by the opposite value of regeneration and renewal being now not just allusion but material reality. This in turn allowed vermiforms to serve as ready figures of an instrumental paradox with which to envision nature as

> a process and to problematize and even reconfigure material and aesthetic categories. (20)

The entrance of the vermiform into the philosophical history of vitalism, starting with the polyp and later with Darwin's consideration of the earthworm's vital function (rather than merely its taxonomic structure) marks an incisive shift in the practice of natural science, whereby the continual change and dynamism of the natural order came to be progressively understood by naturalists. As Barbara Gates writes in her exposition of cultures of Victorian science, "nature, [which was] once seen as a hallmark of God's hand (as in Deism and natural theology) or as a sister category or replacement for God (as in Romanticism) now seemed mutable in ways unforeseen" (147). Beyond the static system imagined by earlier natural scientists, the Victorian period continued to prompt alternative considerations of the vitality and (re)generativity of the species.

Even further, the teleological structure of the Great Chain of Being, which was, according to Freidel Weinert, "cast in the image of a ladder, ranking all created forms from the brightest angel to the humblest worm in a descending order," and which had been temporalized as a narrative of progression to the human as per the Biblical chronology and Mosaic account (97), was beginning to degenerate as evidence for the Earth's "deep time" was discovered. While Cuvier was developing comparative anatomy techniques that correlated differences and similarities between living organisms and fossils, British geologist Charles Lyell was chiefly concerned with theories of the Earth and later, with the antiquity of the human as evidenced by geological science. Although Lyell, like Cuvier, did not fully subscribe to the theory of evolution, his volumes of the *Principles of Geology* were to greatly influence Darwin as he began his first voyage aboard the HMS *Beagle*.

Darwin embarked upon his voyage with a copy of the first volume of Lyell's *Principles*, but it is worth noting that geology was not, at the time, an established science.[14] Coming into view, nevertheless, was an interpretation of the planet that included fossils and minerals (understood as organic remains, rather than remnants of creation) and an interpretation of the earth's topography, stratigraphy, and denuded landforms. As a fusion between Enlightenment rationalism on the one hand and Romantic organicism on the other (Heringman 10), the *Principles* deciphered the magnitude of the earth's natural geological processes, operating as an empirical science that made inferences based on observable phenomena. This led to a shift in geological study, as Roy Porter elucidates, toward a "material history of the Earth, and especially in relation to strata" (183). Also, in its reiteration of themes of the earth's decay and renewal from James Hutton's *Theory of the Earth* (1788),[15] Lyell's *Principles* revealed its uniformitarian investment as it ruminated on organic remains and the existence of fossilized animal and vegetable matter in the earth's sediment as evidence of the earth's "perpetual cycle of decay and eruption" (Richter 26). In addition, the *Principles* includes observations about the curiously absent human fossil from some geological formations, indicating the human's "comparatively recent existence" (Lyell 84). Lyell's hypothesis demonstrates his interest in the recent appearance of the human in relation to the vast expanse of history, but furthermore establishes the particular

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[14] From about 1750 to 1830, Joseph Caroll writes, "geology had emerged from the realm of fantastic speculation, established itself as a progressive empirical science, extended the scale of geological time from thousands of years to thousands of millions of years, and provided a model for the idea of massive alterations of structure resulting from the accumulation of [minute] changes" (18).

[15] These themes appear in the works of a number of poets and novelists of the period, including Alfred Lord Tennyson and Matthew Arnold (as discussed by James A. Secord in *Visions of Science*, 138), in the poetry of William Blake and Erasmus Darwin (Charles Darwin's grandfather), and in the novel *Frankenstein* by Mary Shelley (as analysed by Schwartz). My chapter focuses on the appearance of these themes, along with the vermiform, in contemporary literature and poetry.

conditions required for preservation of organic remains to occur.[16] From cases of floods that have embedded human corpses underwater (Lyell refers specifically to the flood of the Nile in September 1818 and of the Ganges in 1763) to remains trapped in the earth due to earthquakes or other violent natural phenomena (320, 332-33), Lyell makes a case for the recency of the human while also illustrating the deep time of the earth and its necessarily incomplete record of the history of life. If the requirements for organic preservation need to be relatively precise (organic matter generally needs to be encased or embedded in the sediment in order to become a fossil), then, Lyell surmises, the earth's material record is clearly incomplete and fragmented. Thus, unlike other geologists who "dreamed of filling in the lost page in the book of life, Lyell believed that they should work under the assumption that almost the entire volume had been destroyed" (James A. Secord, "Introduction" xvii).

Darwin was deeply impressed with Lyell's observations about the fragmentary record of organic remains upon the earth in deep time. He pored over the *Principles* aboard the *Beagle* in 1831. Darwin's exposure to a narrative of geological progress led, according to Adelene Buckland in *Novel Science: Fiction and the Invention of Nineteenth Century Geology*, to the prospect of "unmaking the story of the world in prose" (130). As we have established in the introduction, the earth's record of the history of life can never be considered an unabbreviated source of knowledge for species adaptation, evolution, and extinction in Darwin's geological vision. Influenced by Lyell's insights, Darwin's theory of the earth is grounded in a circumspect awareness of what could be inferred about the past.

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[16] This hypothesis is further developed in Lyell's *Geological Evidences of the Antiquity of Man* (1863), which examines the case for the human's prehistoricity and explores the probability of ice ages.

How do worms make history?

—Jane Bennett, *Vibrant Matter*

So what is the significance of this taxonomic breakdown fomented by the vermiform, and how does this turn to the absent volumes in the history of the earth establish a post-mortem natural history? The answer is that in calling into question the Enlightenment notion of the Great Chain of Being as orthodoxy, the vitalism inherent to the vermiform aided in undermining the stability of the taxonomic order as scientific truth, and ultimately influenced the manner in which organisms came to be classified as living or non-living. The relative immortality or ongoing vitalism of the vermiform polyp suggests that an organism may "go on" in a new form or condition of being beyond clinical death, which in turn redefines mortality not as the definitive end or annihilation of an organism, but rather as a contingent juncture for life's continued expression.

We also need to recognize that the definition of the fossil itself is strictly tied to two factors: namely that it is materially preserved (a rare occurrence, as I have explained), and that which is "dug up." Cambridge historian Martin Rudwick writes in his magisterial treatise of the history of paleontology, *Scenes From Deep Time: Early Pictorial Representations of the Prehistoric World*, that from the inception of palaeontology as an established scientific discipline in the early nineteenth century, the fossil was simply understood as a thing (whether organic or inorganic) that was unearthed. The definition of the fossil, then, is necessarily hinged on a human observer, trowel and chisel in hand. I argue in my book chapter, "The Anterior Animal: Derrida, Deep Time, and the Immersive Vision of Paleoartist Julius Csotonyi"[17] that Rudwick's insights show us that the abundant remains of prehistoric organisms that presumably lie undiscovered and embedded in

[17] In *Seeing Animals After Derrida*. Ed. Sarah Bezan and James Tink.

the earth's vast layers of strata are not, properly speaking, fossils. More than that, the fossil cannot account for the immense and incalculable volume of dead organisms whose remains were scavenged, weathered, decomposed, or otherwise irretrievably lost forever in ways that the human can never perceive. Whatever fossils we do discover, dig up, and examine are therefore a small, static, and inert snapshot of an intensive process of variation across a vast period of time. The worm is similarly "lost" from the fossil record, given that it is materially redistributed into different organic configurations. Nevertheless, both the fossil and the decomposed, squishy flesh of the worm are equally a part of natural history, despite the limits placed on the natural scientist in observing the extent of the "ongoing historicity of matter" (Barad 821). A post-mortem natural history, then, is an examination of the seen and unseen bodies of the earth's paleontological record.

In calling into question the surmised power of natural scientific observation, a post-mortem natural history counters Foucault's claim that the nominalization of the visible serves as the precondition of natural science. A post-mortem natural history therefore accepts the breakdown of the observational gaze and of language itself, through which distinctions between species have been assigned. This framework therefore emphasizes *unity* over classification and *ecological connections in deep time* over hierarchical designations of life forms declared by natural science. All of this stretches and distends the anthropocentric continuum of time into a holistic view of evolution that begins to unhinge the human from its privileged position as a claimant of that which is deemed to be the "prehistoric" or "prehuman" past. As such, this framework does not confine itself to a normative temporal continuum, but interprets all encounters between past/dead/nonhuman organisms and present/living/humans as an inter-species assemblage.

Fig. 4. "Worm Tracks." Permian Rock. Westward, Cumberland. Binney Collection, Sedgwick Museum of Earth Sciences, University of Cambridge. Photograph of the author.

In the tracery of worm tracks upon the Permian rock exhibited at the Sedgwick Museum of Earth Sciences at the University of Cambridge, an inter-species assemblage is formed between the ancient worm and the audiences of the exhibit. When I first encountered this slab of rock during my research tenure at Cambridge University's History and Philosophy of Science Department, I was pulled in by the palpable presence of the worm's path, sketched so long ago — more than 250 million years earlier — during the Palaeozoic era. The tracks once etched by the diligent worm convey a sense of our ecological connection to these trace deposits across the vast expanse of time. This encounter is initiated by the worm's reverberating inscription, which evidences the process of evolution itself as a largely invisible and unfixed process.

The strangeness of this encounter with species across deep time is usefully elucidated by Timothy Morton, whose reading of Darwin's entangled bank in *The Ecological Thought* is explained as the "mesh" — a kind of connective tissue that — notwithstanding the intangibility and ubiquity of evolution — spreads across time, well beyond the scope of the human timescale,

and fuses organisms together. The mesh is a metaphor for the way in which "everything is connected with everything else" (26), from the "crushed liquefied dinosaur bones" that fuel our cars to the "fossilized animal bits" distributed upon the tops of hills and mountains and the "house dust" that is composed of our dead skin (22). Beyond this entanglement, however, post-mortem matter such as the fossil, as Morton argues in *Hyperobjects*, vibrates with a spatial and temporal magnitude too unfathomable to hold in mind (61). Read through the lens of object-oriented ontology, Morton reconfigures the paleontological object as a hyperobject that maintains a "sensuous connection" with the present even as it withdraws its "primordial reality" from humans (86). What this suggests is that the relative inexplicability of post-mortem matter initiates a classificatory, temporal, and spatial breakdown in thinking: as a hyperobject, the fossil pulls away from us, always somewhat out of view, and out of our grasp. Through the tracks of the worm, a play of traces is performed that productively unsettles coordinates of here and there, past and present, human and non-human.

Thinking with Worms

> *Just as we will become fodder for the worm, so should the worm be recognized as fodder: for us, worms are simply good to think with.*
> —Janelle A. Schwartz, *Worm Work: Recasting Romanticism*

> *…like a worm, you have got hold of yet another so good a leaf to drag into your wonderful store.*
> —G.J. Romanes to Charles Darwin, 7 Mar. 1881[18]

To understand the breakdown instigated by the tracks of the worm, it is important to recognize that the human is a compendium of dead matter, like all life forms. To trace an origin

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[18] In a piece of correspondence from G.J. Romanes to Charles Darwin, Romanes responds to Darwin's lamentation that "I tried to observe what passed in my own mind when I did the work of the worm. — If I come across a professed metaphysician, I will ask him to give me a more technical definition with a few big words, about the abstract, the concrete, the absolute, and the infinite." Romanes's reply suggests that Darwin does indeed "think like a worm," whose own powers of sight and observation are immaterial to the task of authentically engaging with matter in its natural milieu.

results in a paradox (Morton, *The Ecological Thought* 24), because there is no originary human. Elaborating on Jacques Derrida's commentary on the "trace" in *Of Grammatology* and his exegesis of the "heterogeneous and multiple border of the living" in *The Animal That Therefore I Am*, Jessica Mordsley argues that the human is inscribed with a play of chemically-etched traces of DNA from long-dead ancestors through an "infinitely complex process of differentiation" (92). When the dimension of time is introduced to the matter of the human, all spatial and classificatory boundaries dissolve. It is as if, as Eileen Joy suggests, "you are here, but a part of you is also somewhere else" (166). This is because "evolution jumbles bodies like a dream jumbles word and image" (Joy 160). So what, then, is our corporeal, temporal, and spatial alignment with—and attachment to—the worm and its etched traces? How do we unearth the continuity of being between worm and human, and how can we think when faced with the slimy slippages of being, time, and space?

Thinking with worms means entering into the muck and mire. It involves crouching in the dirt, getting on another level; on an even and equal plane with the nonhuman. In Jane Bennett's *Vibrant Matter*, which makes special mention of Darwin's *Worms* book as an example of vibrant materiality, this shift in position is described as an affirmation of a "nonhuman democracy of matter" (96). What Bennett means by this is that the worm's "intelligent improvisations" in the dirt effectively distributes agencies among the heterogeneous assemblages of innumerable worms that cover and fill the earth (96). The entitlement of the human as "superior matter," according to Bennett, is distinctly *undemocratic*. What we deem to be "human," Bennett argues, is really a static suspension of matter that merely indulges itself in thinking that it is distinguished from the matter of "lowly" creatures like the worm. As Jeffrey Jerome Cohen puts it, "human form is simply one composition among many, not the measure of the world" ("Elemental Environment"

12). Thus, by descending into the dirt, as Darwin does, (comically illustrated in the well-known *Punch* portrait of Darwin from 1881, pictured below in Fig. 5), we can begin to uphold a democracy of matter.

Fig. 5. Charles Robert Darwin, L.L.D., F.R.S. Punch's fancy portraits, No. 54, 1881. Accessed Dec. 2017 at DarwinOnline.org.uk.

A refusal to privilege matter in turn installs an ethics of bioegalitarianism in Braidotti's New Materialist framework. This ethical standard connects all beings together inter-generationally according to a timeline that extends to the realm of the prehistoric and pre-personal layers of existence (528). Bioegalitarianism is thus steadfastly affirmative in its recognition of the vital connections between organisms (529). Further, as "a materialist, secular, precise, and unsentimental response to transversal, transspecies structural connections" (530), bioegalitarianism shares a common ground with Latour's Actor Network Theory and Stacy Alaimo's concept of trans-corporeality, but is characterized by its infusion of the generative power of Life. This results in the creation of new assemblages, as per Deleuze and Guattari's geo-philosophy of becomings-animal, becomings-insect, and becomings-worm.

If worms are good to think with, as Schwartz intimates, then it is only because *we are fodder to the worm*. To think with worms is therefore to be oriented terrestrially, on a plateau, toward the mouldering underground. Such is the principle of post-mortem terrestriality, which arises from the way in which worms feed our thinking — just as our post-mortem bodies ultimately feed them. This is an orientation of thinking that is steadfastly horizontal, terrestrial, grimy, and low to the ground — if not in the dirt entirely, with what remains of Darwin, and with worms. Ultimately, to think with worms is to attend to an increasing (un)groundedness that breaks down the classificatory order, the continuum of time, and the materiality of the living and dead organism.

As I argue in the next section, the earthworm breaks down the coordinates of time and space in the natural historical record, while helping us to think through a decompositional aesthetics. In these poetic and fictional texts, the damp and musty earth becomes an active and agential site for generative, embedded, and collaborative inter-species relations. My reading of these texts contextualizes the inner workings of the worm as a bioegalitarian and democratic mode of breaking down matter and meaning. I argue that these wormy and (de)compositional texts present opportunities for material-discursive encounters that, in the words of Opperman and Iovino, "emerge from the intra-action of human creativity and the narrative agency of matter" (8). For Collis and Scott and for Byatt, the assemblages of hominid and annelid bring organic decomposition and vitalistic inter-species interaction to the forefront of the narrative of the natural world.

> *Now there was Darwin, grubbing away at the life of the earthworm,*
> *throwing up mould and humus all over the place.*
> —A.S. Byatt, *Angels and Insects*

A.S. Byatt's diptych of neo-Victorian novellas, "Morpho Eugenia" and "The Conjugial Angel" (1992), is characterized by a musty plot of literary remains and vitalist encounters with terrestrial organisms and the revivified dead. From her creative re-imagining of the vermiform larva of the butterfly to the mouldering return of Arthur Hallam, the subject of Alfred Lord Tennyson's *In Memoriam* (1849), Byatt draws on natural scientific, Darwinist, and spiritualist themes of the nineteenth-century to compose her narrative. While both of the novellas that make up *Angels and Insects* are principally concerned with marital unions (William Adamson of "Morpho Eugenia" discovers an incestuous relationship between his wife and her brother, and Emily Tennyson Jesse, the sister of Alfred Lord Tennyson, attempts to reach the departed soul of her dead fiancé Arthur Hallam in "The Conjugial Angel"), each novella reveals an underlying preoccupation with the natural cycles of birth, death, decay, and regeneration.

Byatt's novellas bring Darwin's decompositional aesthetics into view by utilizing a sedimented and stratigraphical narrative. In its metaphorical representation of natural history and geology, *Angels and Insects* shares some similarities with other stratigraphical narratives, such as that of Anne Michaels's *Fugitive Pieces*, Tim Robinson's *Stones of Aran*, and Graham Swift's *Waterland*. These three texts in particular are identified by Peta Mitchell in her article on "The Spatial Turn and the Multilayering of History, Geography, and Geology," and are characterized by a narrative foundation that "problematizes history and geography, time and space" (Mitchell 72). Byatt's novellas take up similar themes, but more specifically question the spaces and places of natural scientific study. Mobilizing a shift away from the observance of the natural history

collection and towards the striving energies of worms and insects, Byatt's novellas place their readers upon the striated ground of death and regeneration. As such, Byatt's novellas are structured around the narrative of natural history as a creative mode that explores the resilience of post-mortem matter.

Angels and Insects also creatively diverges from other "novels of the soil" such as D.H. Lawrence's *The Rainbow* and Patrick White's *The Tree of Man* (whose main theme is of the struggle of the human against the earth's natural forces) by representing humus as the originary substance of the human. Through the linguistic play of *human/humus*, which links the human with soil, Byatt represents life not as a struggle of life against nature, "red in tooth and claw," but as a rebirth of new and emerging forms. Exposing a view of Darwin's tellurian view of the vermiform as an expression of a decompositional aesthetics, Byatt's narratological technique displaces the conventions of courtship in the first novella, and of conjugial love in the second novella, in order to delineate the mouldering processes of natural decay.

The decompositional aesthetics of worms in *Angels and Insects* are sharply juxtaposed in "Morpho Eugenia" with the sexual/reproductive aesthetics of the young and beautiful Eugenia Alabaster, who Byatt personifies as one of the exquisite specimens of the *Morpho eugenia* butterfly that populate the Alabaster estate. By producing a "text within a text" in her narrative through the fictional story of Matty Compton, Byatt generates what I term the *understory of natural history,* which enables Byatt to turn her viewers away from the beautiful butterfly and instead to the coffin and cradle of the cocoon, which she writes is filled with a "yellow soup" that metamorphosizes the caterpillar into the butterfly — but only after decomposing it into "the decay of putrefaction" (133). In emphasizing the ooze of evolutionary origins, Byatt enacts a conceptual play between matter and metaphor, which Byatt references specifically in her essay,

"Still Life/*Nature Morte*," from her collection of essays *Passions of the Mind*. This concern with matter and metaphor is also a key characteristic of Byatt's other fiction, particularly in her novel, *Still Life* (1985) which features ekphrastic descriptions of artistic forms (and particularly of the still life painting). Byatt's novellas, in taking up "dead nature" as a vital, embryonic force for generating new life, portray the matter of life and death through the metaphor of rancid rebirths and malodorous moulderings.

The Grainy Gaze of Natural Science in "Morpho Eugenia"

"Morpho Eugenia" takes place two years after the publication of the *Origin*, at a time when, according to Jane Campbell, "the scientific and biblical versions of the world [were vying] for dominance" (152). The novella begins with the return of naturalist William Adamson to England after a natural scientific expedition in the Amazon. William soon becomes ensconced in the Alabaster family, initially because of his scholarly proclivities and his experience cataloguing specimens, and later because of his marriage to the beautiful Eugenia Alabaster (named after the radiant neotropical butterfly). Their initial romantic courtship exemplifies the evolutionary aesthetic principles of Darwin's theory of sexual selection, which culminates early in the novella in a proposal at the Alabaster conservatory. William breeds a collection of Emperor Moths, clothed in colours of "Grass-green, paper-white, creamy-yellow, [and] luminous grey" (52) as a surprise for Eugenia. Though initially charmed by William's gesture, Eugenia becomes engulfed in a cloud of butterflies that soon overwhelm her. The small furry-winged creatures

> advanced, a disorderly, driven army, beating about Eugenia's head,
> burring against her skin, thirty, forty, fifty, a cloud, the male Emperors
> propelling themselves out of the night towards the torpid female. More
> came. And more. Eugenia tried to push them off, she brushed her skirts,

> she plucked at those lost in her sleeves, in the crevices of her dress. She began to cry. (54)

Coming to her rescue, William explains that the male Emperors "are drawn by female in some mysterious way" (54). In this scene, Byatt signals the presence of Darwin's theory of beauty as a force of sexual selection in nature. Yet these conventional aesthetic depictions of the pulchritudinous Eugenia are supplanted by metaphors of decay and rebirth. In this same scene, William remarks that the newly hatching cocoons, which harbour what will soon be beautiful Emperor moths, are first bright green caterpillars, "banded with brown streaks and yellow hairy warts" encased in a kind of "formless custard" (52). Byatt's depiction of Darwinism's decompositional aesthetics proposes that it is from unsightly beginnings that beautiful forms emerge.

Veering away from a conventional theory of beauty in evolution, Byatt's novella tracks William's interest in Darwin, vitalism (including the '*forma formativa*,' or Vital Force that explains the growth of ant embryos, 86), and the classification of living and nonliving things—guided in particular by his "ruling passion" for insects (10). William's understanding of the natural world and its "vegetable greed and vast decay" (59) runs in counterpoint to the theological leanings of Harald Alabaster, who engages in lively debates with William about the order of divine creation. As William suggests to Harald, the mandate of matter's transformation means that "I grow, I decay, according to laws which I obey and cannot alter" (86), and further, that life continues with the body's metamorphosis into a "skeleton leaf, to be made humus" (60). In developing this earthy view of matter, William's adherence to the tenets of natural history—namely, its prevailing interest in the naming and ordering of living and dead organisms—wavers as he turns away from

the Alabaster family's mouldering collection of specimens and pursues an encounter with the gregarious ant and vermiform caterpillar.

In charting William's shift in gaze from the dust of Harald Alabaster's collection of specimens to the ant and caterpillar, Byatt presents each as a vibrant tableau: the first stations the reader in an upright, frontal relation to nature, while the second draws the reader into the underground. These tableaus are brought together with William's earliest exposure to the blood and guts of animal husbandry. We read in the opening pages of "Morpho Eugenia" that William "trained his eye in the farmyard and amongst the bloody sawdust of the slaughterhouse" (9) as a young boy. Here, he learned how to skin, mount, and preserve specimens as well as to observe "the ordering principle" of the wriggling blowfly eggs that were deposited upon the slaughterhouse floor (10). It is due in part to this early interest in the dead organisms that William later finds himself charged with the task of ordering Harald Alabaster's collection. In the Alabaster family's musty workshop, William pores over taxidermic, botanical, and entomological specimens, including

> monkey skins and delicate parrot skins, preserved lizards and monstrous snakes, box upon box of dead beetles, brilliant green, iridescent purple, swarthy demons with monstrous horned heads…crates of geological specimens, and packs of varied mosses, fruits and flowers, from the Tropics and the ice-caps, bears' teeth and rhinoceros horns, the skeletons of sharks and clumps of coral. (24)

Yet William quickly observes that some of the crates and boxes have been actively "reduced to drifting dust" due to termites or "compacted to viscous dough by the operation of mould" (24)—both of which ultimately hinder him in his attempt to catalogue the specimens. Even as William

sets about procuring cupboards, cabinets, tables, labels and ledgers for the Alabasters's collection, we read that "he could not devise an organising principle" (25). Abandoning this classificatory project and throwing himself into the chaos of nature, William finds himself engaging in nature rambles with the wiry governess, Miss Matilda (Matty) Compton. Together, they are ineluctably drawn into the lively underground world of Wood ants:

> Under his gaze the whole wood-floor became alive with movement, a centipede, various beetles, a sanguine shiny red worm, rabbit pellets, a tiny breast feather, a grass smeared with the eggs of some moth or butterfly, violets opening, conical entrance holes with fine dust inside, a swaying twig, a shifting pebble. He took out his magnifying lens and looked at a patch of moss, pebbles and sand, and saw a turmoil of previously invisible energies, striving…(37)

Along with the sagacious and co-operative tropical ants that William encounters during his earlier travels in South America (44), the Wood ant colony enthrals William due to its vitality, socialist labour, and egalitarian connections with other species—from the moth to the beetle and the worm. The Wood ant colony appears most lively in turmoil and most active in the conflagration of dung and eggs, worms and dust.

This tableau of decay is even more vividly described in a scene mid-way through the novella, during an "ant-watch" organized by Matty and William in the spring of 1862. As they observe the actions of ants as they scramble to collect crumbs and bits of food left behind by their guests, Matty and William observe the ants cleaning their nest: "convoys of ants flowed out to the huge rubbish mound bearing mouldered foodstuffs, unsavoury droppings and the corpses of their dead or dying sisters," while other works nourished the Queen in a flurry of activity that

included "carrying-off and nursing of eggs" (94). By encountering this vibrant tableau of these inter-species assemblages in the mud, William is led to abandon the vertical, imposing station of the cataloguing naturalist in favour of a view of the active, collaborative exchanges between organisms in their natural, earthy milieu.

In Byatt's characterization of William as an emerging naturalist of entomological species (one who must grovel through the dirt in order to analyze animal behaviour), the novella also makes a clear and thought-provoking reference to Darwin's *Origin*, which emphasizes the earth-oriented view of natural science in Darwin's passage on the eye. This stratigraphic image of glass and grains of sand is compellingly illustrated by Harald Alabaster in a discussion with William regarding the perfecting of the telescope. Harald pontificates that in this passage from *Origin*, "[Mr. Darwin] talks about the changes over the millennia to the thick layer of transparent tissue" of the eye, which Darwin argues is superior to glass (36). However, Harald discerns that Darwin "invites us to suppose that this intently watching power is inconceivable — that the force employed is a blind necessity, the law of *matter*" but that it is "easier for us to imagine the patient attention of an infinite watcher [that is, God] than to comprehend blind chance. It is easier to figure to ourselves shifts and fluctuations in transparent jelly with the image of the floating grains from the world of sand…one may almost come at the imagination of blind chance in that way — grain by random grain — infinitesimal yet cumulative" (36). In comparing glass with grains of sand (the foundation of glass-making and the primary component of all optical instruments, including the magnifying lens William uses to observe the Wood ant colony), Harald considers how the eye, similarly, is clouded by floating grains of sand, which he describes as the material of life. Although in favour of the figure of God, Harald reflects upon Darwin's observations in his *Worms* book in order to suggest that the laws of matter are exemplified by the aggregate powers

of minute species (like the worm), which infinitely and cumulatively amass the matter of life "grain by random grain" in order to produce a history of life.

Engaging in debates within scientific and religious circles during this period, Byatt's image of the grainy gaze of natural science corresponds with the views Darwin's contemporary Philip Henry Gosse, who writes in *The Romance of Natural History* (1860) that the drama of all of life is captured in a drop of water. This image, while a "hallmark of Victorian natural history" according to Sally Shuttleworth, produced existential anxiety for Victorians (150). The problem during this period, Shuttleworth contends, is that the image of a drop of water

> was precisely this form of close scrutiny of the minute forms of nature, encouraged by natural theology, that produced, in Darwin's work, an image of the autonomous, destructive, and evolving world of nature that completely overthrew the entire framework of history and theology. Celebrations of the static order and evidence of Divine Design were supplanted by a world of change and chance, random mutations, and futile waste. (150)

Byatt's neo-Victorian novel reproduces this existential anxiety but also presents readers with a creative provocation to reconsider Darwin's rumination on the minute labours of the worm and other organisms of the soil. In this image of the grainy gaze of natural science, Byatt's novella lays the groundwork for a sedimentary still life, set at the site of Matty Compton and William Adamson's hill of Wood ants and later in William's underground adventure in a plot of the garden.

The narrative's terrestrial orientation is prompted by Matty Compton's story, which figuratively suspends its protagonist in an underground enclave where names and static forms (the

distinctive relics of a natural history practice) instead become puzzles. In her fictional tale, Matty casts William as Seth, the insect protagonist of her fantastical short story, "Things Are Not What They Seem." After the crew of his ship are transformed into a variety of pig-forms by a malicious enchantress, Cottitoe Pan Demos (after Circe, the Greek goddess of magic), Seth escapes with the aid of a fellow ant, who transforms him into an insect (126). In his metamorphosis to the size of an ant, Seth begins "a terrible journey, through earthy tunnels" to an Edenic garden plot, where he hears "worms sliding by like slimy trains" (128) and encounters a frightening world of serpents and dragons (actually caterpillars). Notably, the vermiform caterpillar of the story, who is in the process of chrysalis (the metamorphosis into a winged specimen from the "formless custard" of its cocoon) is much like the Emperor moth that William observes hatching in the Alabasters's conservatory (52). And similarly, Seth—like William Adamson (the "son of man")—claims to come from a place of "namegiving" (131), where names are used as a mechanism for weaving the natural world together (132). However, the process of naming in the Edenic garden is undermined by the continuous changes organisms undertake: "like all true caterpillars, they will change into winged beings. And then their names are added to and changed again" (132). This multiplicity and mutability of names serves as the riddle of the story and the key to Seth's return home. When a great moth takes Seth to the larval butterfly, Madame Sphinx, she asks: "What is my name?" (138). In response, Seth insists, "How can I name you, who have more names than all the creatures…How can I name you, when you are hidden behind a veil, and you spin your own hiding-place, and make your own light? What would any name I choose be, to you?" (138-9). Seth's release from the garden is predicated on a collapse of nominalization and a reversal of gazes. As Seth departs on his homeward journey in the concluding paragraph of Matty's story, Madame Sphinx warns: "I hold you small in my gaze,

Seth…Everything is single and double. Things are not what they seem" (139). The pupa of the metamorphosing larval caterpillar earlier encountered by Seth is doubly described as both a cradle and a coffin—a "mummy-case" filled with "the decay of putrefaction" that, hidden from observation in its casing, composes "the stuff of life and rebirth itself" (133). As a symbol of death and regeneration, the larval caterpillar is represented as an oozing (de)composition of the elixir of life.

In recognizing the vitalist principle of the recirculation of matter in the vermiform, Matty's protagonist fortifies a newfound sense of relationality and affinity with the insect on a nonhuman plane of being through the process of becoming-insect. While Seth's becoming does not fully initiate an act of flight outside the narrative frame (compared to Kafka's Gregor Samsa, who Deleuze and Guattari argue takes on a zone of indiscernibility between the insect and the human, thereby creating a minor literature), his recognition of matter's ongoing expressions, taken together with the futility of naming in Matty's story, forms the terrestrial, fermenting understory of Byatt's novella. This understory signals a horizontal shift in perspective that facilitates new possibilities for William as he engages with the natural world.

We learn in the final paragraph that Matty and William decide to leave behind the Alabasters and their mouldy collection of monkey skins, snakes, and skeletons in order to embark on an adventure in the Amazon forest. As they climb aboard Captain Arturo Papagay's ship, they discover a Monarch butterfly that had been caught in the rigging, wings "still dusty with life" (160) despite having been carried hundreds of miles off course. The novella concludes with a meditation upon the vitality of the butterfly and its capacity to establish surprising new pathways in the world. As a metaphor for William himself, the butterfly's transformation from the

vermiform is representative of the unfailing vitalism of matter and its capacity to instate a terrestrial shift in perspective for the natural scientist.

Posthumous Mould(er)ings in "The Conjugial Angel"

Hinging on this theme of death and vital transformation, Byatt's second novella, "The Conjugial Angel,"[19] turns to occult spiritualism to recover the dead and (de)composing afterlives of authors and their literary remains. The natural scientific vision of the preceding novella is complimented in the "The Conjugial Angel" by the representation of the dead's mouldering forms (both corporeal and literary; corpse and corpus) and by the dead's palpable re-appearance in a transitional state that lies somewhere between (im)materiality and (in)humanity. The problem of the matter and spirit of the dead, thought by Victorian practitioners of the occult to be uneasily resolved due to what they perceived as the miasmic vital presence of the soul (exhibiting an empirical weight and energy force, like the sun, as Stephanie LeMenager suggests, 404), is therefore taken up by Byatt to consider the cyclical nature of textual materiality and the persistence of the post-mortem as a material presence.

"The Conjugial Angel" intensifies Byatt's project of dismantling the barrier that separates matter and metaphor. In portraying the material presences and immaterial absences of death, the novella proceeds from the representation of "nature, red in tooth and claw" in the previous novella to a depiction of the "vast, wandering grave" of the dead. In "The Conjugial Angel," Byatt navigates through the mouldering actions of the worm and the dirt in producing strange, supernatural encounters with dead and decomposing bodies. Together with the first novella,

[19] Although the concept of marriage lies beyond the purview of this chapter, it is nevertheless worth noting that "The Conjugial Angel" follows Emmanuel Swedenborg's theological treatise on the afterlife, which discusses whether or not marriage continues after death.

"Morpho Eugenia," this novella re-orders natural history as a primary engagement with grime and vast decay, thereby presenting a bold portrayal of Darwin grubbing away in the dirt.

As the narrative unfolds, we learn that the "matter-moulded forms of speech" (267) in the poetry and prose of Byatt's work arises from an engagement with the moulding of Darwin's earthworm treatise, which is briefly referred to in a scene of Byatt's novella where Alfred Tennyson reflects on *In Memoriam A.H.H* (1849), his poetic tribute to Arthur Henry Hallam (1811-1833). In this scene, the fictional Alfred considers the moulded clay of the human,[20] which has now become the mould of humus. Comparing the moulding of man with the clay of the graveside, Byatt's text envisions "Darwin, grubbing away at the life of the earthworm, throwing up mould and humus all over the place. Of the earth, earthy, humankind" (270). Alfred, who interprets his own poetry through the insights of Darwin, concludes that "he had made his poem beautiful with Arthur's death," but "was afraid that that very beauty was something inhuman, animal and abstract at once, matter-moulded and shadowy" (271). Along with the mould(er)ing of language, the entanglement of matter, inhumanity/animality, and spectrality further appears in the textual fragments left behind by Arthur Hallam himself, whose published letters and ethereal writings on Dante and divine Love, simply entitled *Remains*, are conflated with his own animal blood and flesh. For Emily Jesse (née Tennyson), Arthur's *Remains* remind her, "always and sickeningly, of that terrible letter" (220) sent by Arthur Hallam's uncle, Henry Elton, to inform

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[20] The passage upon which Tennyson particularly reflects is from a dedicating poem entitled, "*To —. With the Following Poem*" [The Palace of Art], 1832. Here, Tennyson writes:
"…Not for this
was common clay taken from the common earth
Moulded by God, and tempered with the tears
Of angels to the perfect shape of man."

the Tennysons of Arthur's un-timely death in Vienna.[21] The fragment, "his Remains come by Sea from Trieste," runs parallel, in the mind of Emily, to the fate of Arthur's "flesh and blood Remains" (220), which, together with his abridged writings, mark Arthur's own untimely and premature departure into an otherworldy, non-human existence.

Further elaborating on the corpse and corpus of Arthur, and of Alfred himself, Byatt's historiographic novella thereby imagines Arthur's tangible, material, and embodied return from the company of the dead. Out of the members of a séance group, including Alfred, Emily, and mediums Sophy Sheekhy and Lilias Papagay (the latter is the wife of Captain Arturo Papagay mentioned in the conclusion of "Morpho Eugenia"), it is Sophy who has a vivid, material encounter with the dead Arthur Hallam. As a medium, Sophy believes first and foremost in the unity of life and death processes, as depicted by the action of the worm: "It is all one. Alive and dead. Like walnuts," she tells the mournful Mrs. Hearnshaw, who has recently buried another infant daughter, and who laments to the group that she "'give[s] birth to death'" (180). Sophy envisions Mrs Hearnshaw's dead babies as "little forms, curled in little boxes, like the brown-skinned white lobes of dead nuts, and a blind point like a wormhead pushing into light and airy leafage" (180). For Sophy, who is often inundated with such images of moulded regeneration, communication with the dead is met with a distinct and striking materiality that wriggles its way into the community of the living.

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[21] This letter, dated 1 Oct. 1833, reads (in part):
My Dear Sir —
At the desire of a most afflicted family, I write to you because they are unequal from the grief into which they have fallen to it themselves. Your friend, Sir, and my much-loved Nephew, Arthur Hallam, is no more — it has pleased God to remove him from this his first scene of Existence, to that better world for which he was Created. He died at Vienna, on his return from Buda, by Apoplexy, and I believe his Remains come by Sea from Trieste. […]
I am, dear Sir —
your very Obt. Servt.
Henry Elton

Thus, when she encounters the departed Arthur Hallam in her bedroom, he first appears as a "sudden gust of odour, not rose, not violet, but earth-mould" (249). Yet this mouldy apparition bears a tangible weightiness. While the ghost of Arthur appears to "swell and contract as though sucked out of shape" (249), he is nevertheless a palpable presence, even as he is thin, tremulous, and caked with clay (250). When Arthur crawls into bed with Sophy, she feels his weight upon her bosom: "the weight, more or less, of a living man, but a man not breathing, a man inert like a side of beef" (251). Caught somewhere between here and there, human and something other than human, the dead and yet materially-embodied spirit of Arthur makes an impression upon the living community for the first time since his death, when the connection once expressly felt by those around him began to fade. We read, for instance, that since his death, "Arthur had died inside [Alfred's] own body and soul, gradually, gradually, like the slow death of a tree, an inch here, a string of cells there." (256). Remaking this organic, corporeal, and material connection with the living world, the clay-caked Arthur exemplifies what Alfred earlier imagined as the moulded clay of the human turned humus. What is more, the vital matter of clay and the act of moulding that Alfred considers ultimately serves as an apt illustration of the writerly impulse to revivify the dead through poetry and prose. As Alfred remarks on the vitality of his poetry, he admits to himself that he is

> proud of the good phrase 'matter-moulded forms of speech'—that said in a nutshell what he wanted to say about the stubborn body of language, and so of his poem, Arthur's poems. Now 'mould' was a good word, it made you think. It made you think of the body of this death, of clay, of things mouldering away. It was art, it was decay….Mould, moulder-ing.

> God livening the clay. God, or whatever it was, breaking it all down again. (267)

By breaking down the human into humus, Byatt's text reconfigures the process of engagement with both literary and corporeal remains in terms of its potential for mould(er)ing into new vitalistic forms. Such a tellurian vision not only emphasizes the earthy afterlives of literature, which are made and remade as if from clay, but illuminates the fundamental relationship between humanity and soil.[22] This enmeshment of dirt and humanity effectively breaks down the surmised superiority of the human, and of language. As humus, we learn from Heather Sullivan in her article, "Dirt Theory and Material Ecocriticism," all organic life becomes "fully ensconced in material environments, which shape us just as vividly as we shape them" (528). To reflect on this principle is to therefore enact an imaginative temporal shift that renders the meaningful transference of dirt to flesh, and flesh to dirt. Understood this way, where does the human—and for that matter, literature—originate if not from the dirt, nestled amongst the worms?

The precondition of creativity in Alfred's vision, to be sure, is a renewed perspective of life and death that is deeply material, earthy, and relational. In this sense, mould and mould(er)ing is about the creative capacity to think new things—and by extension, the worm is that niggling force that meanders its way through the blind spot of matter to generate new connections and ecological communities. And it is this turn to an ecologically-oriented connection between the communities of the living and the dead, the human and other than human, the past and present, that underscores the final chapter of "The Conjugial Angel," and which binds together an overarching theme of *Angels and Insects* that is of importance to a post-mortem natural history.

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[22] As David R. Montgomery explains, "the Hebrew name of the first man, Adam is derived from the word *adama*, which means earth, or soil," while "the Latin word for human, *homo* is from humus or living soil" (27).

While the spiritualism of Byatt's second novella makes possible a community of the living and the dead that looks beyond "the paralyzing realization of our alterity to and within ourselves, e.g., the human as corpse, the abject" (LeMenager 409), it also dissolves the divide that is often drawn between matter and spirit, past and present, human and non-human. In a "still life" scene that best exemplifies this understanding of vital and material entanglements amidst the cold clay of years past, Alfred makes a stunning reflection upon his own old age. Recalling a moment years before, Alfred

> had once, walking in London, nearly fainted and fallen under the sudden realisation of the whole of its inhabitants lying horizontal a hundred years hence. Men now saw what he saw, the earth heaped and stacked with dead things, broken bright feathers and shrivelled moths, worms stretched and chewed and sliced and swallowed, stinking shoals of once bright fish, dried parrots and tiger skins limply and glassily snarling on hearths, mountains of human skulls mixed with monkey skulls and snake skulls and asses' jawbones and butterfly wings, mashed into humus and dust, fed on, regurgitated, blown into the wind, soaked in rain, absorbed. You saw one thing, nature red in tooth and claw, the dust, the dust…(262)

Bearing a resemblance to the jumbling description of Harald Alabaster's mouldy specimens, what Alfred imagines is the becoming-humus of all organic matter over time. To be sure, this collection of heaps and stacks of dead things is none other than Morton's mesh—the intimate entanglement and bioegalitarian democracy of assemblages of living and non-living things in the earth's natural record. As we learn from this closing vision of the mesh, taken together with the shift to a horizontal, terrestrial orientation in "Morpho Eugenia" and the transformation of

human to humus in "The Conjugial Angel," the vermiform wittingly installs the vitalistic breakdown and mould(er)ing of matter and meaning in the natural historical record. For Byatt, the worm is, by all accounts, the generative agent of earthly (un)groundings in thought and creative production, which in turn recasts Darwin's treatise on the worm as a captivating case study for a decompositional aesthetics.

Writing with Worms

We will be as worms.

—Collis and Scott, *decomp*

If Byatt's *Angels and Insects* inaugurates a post-mortem vision of the earth that unites eco-logical communities and champions language as an interminable process of mould(er)ing, the found poetry project conducted by Stephen Collis and Jordan Scott in *decomp* (2013) presents a collaborative writing project with worms that literally rots the book. In (de)composing poetry, Collis and Scott's innovative collection comes out of a process that methodically renders new poetic forms out of the tattered textual fragments of five weathered copies of Darwin's *Origin*—each left to decay for a year in five distinct ecosystems of British Columbia, Canada. Lodged in between granite boulders on mountaintops and buried underneath the fermenting layers of vegetation on the forest floor for a calendar year, Darwin's rotting corpus is enclosed in the earth and left open to a synergetic partnership between annelid and hominid.

Successive to the turn of the worm, Collis and Scott's project opens up questions about the significance of human observance and its bearing on the construction of narratives of natural history and the practice of poetics. Similar to the representation of corpse and corpus in Byatt's *Angels and Insects*, Collis and Scott's decomp is concerned with the inter-relations between corporeal and textual bodies, along with the act of (de)composition as a literary method and philosophy. However, by effectively producing a kind of book-fossil, Collis and Scott engage with

complicated notions of deep time and its relationship to the coordination of space (such as the poets's employment of a GPS and the tracking of the local characteristics of biogeoclimatic zones). As I will argue, the (de)composition and fossilization of Darwin's *Origin* initiates a self-reflexive commentary on the process of autopoesis that interprets the natural record's absences and fragmentations through the self-creative narrative agency of matter. Interpreted as a set of material-discursive encounters, Collis and Scott's project allows for the agency of non-human procedures of writing and reading that in turn submit the matter of the human to the service of soil.

First and foremost, *decomp* instinctively advances a commentary on "nature writing" through its methodological approach to writing via the vermiform. In an interview with Jillian Harkness for *The Puritan: Frontiers of New English*, Collis and Scott disclose that their critique of ecopoetics is founded upon "decomposition — that very messy, broken, dissolute aspect of natural cycles" which was for them a "perfect 'trope to trope us out of tropes,' a method to take on writing about nature as a messy writing in/through nature." Additionally, their interest in challenging ecopoetic practice arises from the proclamation that lies embedded in the text: "we will be as worms" (*decomp* 90). Collis and Scott explain to Harkness that in taking on language again and again—much like a worm drawing in material through its intestinal canal— they endeavour to bring about a shift in poetic perspective: "There's a lowering of our own position/ perspective…(just like worms, we simply passed Darwin's decayed text again and again through our writing)." The fermenting under-story of *decomp*, following the horizontal re-orientation of its authors, is the poet who lays his body down—that is, lays his book down—in the dirt.

Fig. 6. Photograph by Collis and Scott. Excerpt from *decomp* (81).

Generating space for collaborative "writing" within the five ecosystems they selected, Collis and Scott make a point of disappearing (that is, relinquishing Darwin's text for a year; see Fig. 6 above) and of making their marginal involvement transparent (as exhibited in Fig. 7, below). In doing so, the two poets strive to redefine the book outside of the traditional conventions of authorship. As Jonathan Skinner writes in his foreword to the project, *decomp* reframes the axiom of whether or not a tree can be heard falling in a forest. Instead, Collis and Scott ask, "If a book decomposes in a forest, will anyone read it?" (4). The two poets answer in the affirmative. Yet the ecosystem, they insist, "is a unit of composition" (132) in which "*worms are reading us too*" (134, my emphasis).

The agency attributed to the worm in *decomp* is what signals Collis and Scott's shift into the contemporary poetics of the vermiform. From the necropoetic works analysed by Jed Rasula to the theme of the necropastoral identified by Joyelle McSweeney, contemporary poetry that features putrefaction, death, and the worm is chiefly concerned with strictly textual encounters between the communities of the living and the dead. In Jed Rasula's analysis of necropoetics in *This Compost: Ecological Imperatives in American Poetry*, for instance, he notes that necropoetic texts enact a "pledge…between the dead and the living" (65). For Rasula, necropoets write out of a kind of "clutter and debris" that correlates with bodily remains (67). Like the impression of worm tracks or the trace deposit in ancient rock, the poetics of death in nature are the intermediary signals between the minority of the living and the predominantly post-mortem

community. The hollowness that resonates at the outer limits of the living, Rasula intimates, is "re-soundingly provocative" in the poetry of Walt Whitman (1819-1892) and Gary Snyder (1930-present), for instance. In their compositions, poetry survives and grows out of the mounds and moulded mulch of the fictional dead.

Fig. 7. Self-portrait of Collis/Scott. Excerpt from *decomp* (105).

On the other hand, Joyelle McSweeney examines non-human modalities and "strange meetings" between the worm and the dead in her work on the necropastoral. Examining the war poetry of Wilfred Owen, for example, McSweeney defines the necropastoral as "the manifestation of the infectiousness, anxiety, and contagion occultly present in the hygienic borders of the classical pastoral" (3). As such, McSweeney goes on, "the term 'necropastoral' remarks the pastoral as a zone of exchange" (3) and as a space of "hole-making" and "strange meetings" between the living and the dead (7). For instance, the strange meeting of the worm and the poet in Owen's "The Show" is characterized by a "decomposing, mucoid substance" that cleaves together "the living and the dead, the not-quite living and the not-quite dead, the wounded, the bleeding, the moan, the worm, Death, the poet" (13).

Yet unlike these texts, the commingling of worms, words, and bodies in contemporary poetics is made palpable when the poet him/herself creates a productive node for the narrative agency of matter. In other words, what the necropoets of Rasula's and McSweeney's examinations demonstrate is arguably a limited encounter between these commingling entities, which is owed in large part to the predominance of the human observer/composer. Contra these necropoetic works, *decomp* asks: what about nature's own iterations, resonances, and self-disclosures? While the poet is never fully extricable from the poem, I nevertheless contend that Collis and Scott's attempt to moderately recuse themselves from the process of textual composition is what ultimately makes experimentation and collaboration with non-human organisms possible.

This process is exemplified throughout the collection in a series of juxtaposed sections entitled "THE READABLE" and "GLOSS." In these sections, Collis and Scott enact a performative play on the shredded textual remnants of *Origin* that merge together to create new meanings. Certainly, the intentional paradox of their use of *Origin* is not lost upon readers in these sections. As Skinner points out in the foreword, Darwin's evolutionary writings are best known for exploring the question of how "some bodies [get] to somebody" (3). Further, as I have discussed in detail in this chapter, the *Origin* itself actively engages with the problem of the unreadable and precluded sequences that make up the story of natural selection and evolution. In lending further speculation about the incomplete fossil record through the literal representation of *Origin*'s missing text, the sections on "THE READABLE" and "THE GLOSS" toy with the idea of "species tracking sequences" (74). In the copy of *Origin* from the Bunchgrass Zone (Nicola Lake), for example, the fragment "species" lays "amid long ponderosa pine needles" (17; see Fig. 8). Collis and Scott write: "a species laying its body down on this bed to observe the

decomposing limits of its semantic and genetic expression. Darwin is an eye amid graphed genera, seeing the web it is woven thereof. A matted scrap of printed material, shit, soil and leaf rot—all dried, bleached, and curled up at the small edges" (17). The act of reading, tracing sequences, and seeing the word itself in the photograph is of course complicated by the fray of rot, yet Life's continued iterations are a part of the vitalist impulse of the poetry itself, which "partake[s] in selection and variation, wending toward the matter of th[e] book" (19). The matter of the poem, rife as it is with errant particles and remnants of text and sequence, is naturally selected by the poets. In doing so, Collis and Scott inquire: "What is readable, monstrous and unreadable? Everything is code, with which and within which we decompose" (19). A case in point is Collis and Scott's rumination on the word "Natural," which they refer to in the "GLOSS" as the nomenclature of errancy (21). A natural history, according to *decomp*, is a matter of recomposing the "genetic trace through looms of our weaving and unweaving" (19).

Fig. 8. "Species" fragment. Excerpt from *decomp* (14).

While acknowledging their own intervention in attempting to weave together the disintegrated pieces of the *Origin*, Collis and Scott nevertheless credit Life with the power to galvanize new meaning through the intermingling of text, pine needles, the dried dung of cows, and the rough tufts of sage that make up Nicola Lake's scrubland. Yet what is notable about this section in particular is the interplay between materiality and discursivity. Iovino and Opperman's

re-articulations of Karen Barad's theory of agential matter illuminates how literature (and in this case, poetics) can be understood to "emerge from the intra-action of human creativity and the narrative agency of matter" (8). Reading *decomp* as a material-discursive encounter, it becomes possible to understand how narrative is produced even outside the purview of the withdrawn poets, and beyond what we deem to be human and animate. The annelid that disperses its trail of castings upon the text, as we see most impressively in Collis and Scott's photos from the Coastal Western Hemlock Zone in Tofino (see Fig. 9), both reads and writes the *Origin*. In this way, decomposition is the product of an encounter between the vitality of matter and the vertebrate hominid.

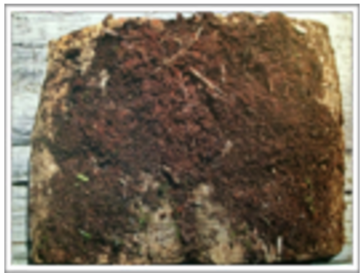

Fig. 9. The burial of the book in worm castings and humus. Excerpt from *decomp* (106).

Curiously, though, the natural decomposition of the copies of the *Origin* reaches a certain threshold where it becomes self-creative and autopoetic in its own right. At this point, the poets write that there is "no poetry after decomposition, but a minute ecological process in which we have no part but intrusion" (92). With humour, and even some facetiousness, Collis and Scott write: "This is what we do. Not a whole lot" (74). Increasingly enveloped in organic matter and humus, the poets furthermore assert that "the book is buried and we cannot read a thing" (116); "the forest buries us" (119). It is at this juncture that the book becomes a fossil, embedding its impressions in the ground (41) and executing the entropic collapse of the poet.

The becoming-fossil of *decomp* is, in a basic sense, artificial: the copy of *Origin* that has been strategically jammed between two boulders in the Engelmann Spruce/Subalpine Fir Zone of Kootenay Lake (see Fig. 10) is set on a timer for collection in a calendar year's time. But the fossil is always in temporal and material excess of itself because of the vital production of matter in deep time. For even while Collis and Scott (who are accompanied by fellow poet Fred Wah and his wife Pauline Butling) insist that their copy is composed "in the long wake of decomposition, anti-entropic" (67), this confidence shifts back to uncertainty in the wake of the fragmented "fosl [fossil]" and its "endless rot patterns" (69). In their reflections on "THE READABLE" portions of the Kootenay Lake copy, Collis and Scott indicate that ongoing independent forces have worn away the text through an "interminable sifting of words" (69). Here, the poets ask:

> What has taken place outside? This is not for us to say. Things disappear, rot, shift and de-cay; this is known. It's the system out there—aimless against the text, a forbidden presence in the moss; and such are these fungal refusals to come into the word—'I' become carnal where a word wanders in recess, curls as a leaf, frays as stuck fibre. What once was in our hands, now its own shadow…(69)

In its susceptibility to the petrification, solidification, and the dismantling of formations of language, the book is no less a fossil now that it sits in a box in Collis's office. The calendar year imposed upon the project, in other words, is no match for the generativity of matter in deep time; the writing and reading, likewise, do not begin or end with the book's printing, distribution, collection, or publication—or even with its relegation to a dusty, neglected banker's box. The death of Darwin, the recirculation of his remains, and the remnants of Collis and Stephen's five

copies are validation of the ongoing creativity of matter and of language, and it is this fact that truly grounds the poet's entropic collapse.

Fig. 10. Copy of the *Origin* at Kootenay Lake. Excerpt from *decomp* (63).

The dank and mouldy book is a site for the vital and generative production of matter and meaning. As literal post-mortem matter, the book-as-fossil is also a play on the remains of Darwin, whose corpse lays rotting in the earth (as Collis and Scott's colleague, Roger, observes, 89). More importantly, the worm's consumption of Darwin's textual body—drawing it again and again through its intestinal canal—is in *decomp* an apt portrayal of a natural history and a narrative of time's passing that has been broken down through the post-mortem. The book-as-fossil, which is on the one hand precisely oriented in space through GPS coordinates and characterized by its unique biogeoclimatic zone (a fact that imbues the text with an environmental awareness in the face of encroaching pipelines and other imminent threats to the equilibrium of these systems), is on the other hand both temporally and spatially extended by the synergistic partnership between annelid and hominid. This is a view of natural history that is expansive and horizontal: it is, to follow Deleuze and Guattari's geo-philosophical method, a rhizomatic plateau that follows the becoming of the event (*Aion*) as a contingent unfolding without origin or end, thereby countering the linear logic of the arborescent order and its timetable of chronological events (*Chronos*) (*A Thousand Plateaus*, 7). Through the becoming-humus of the poet, this understanding of a post-mortem natural history as the vital dynamism of matter

in deep time creates a rich vermicast that is none other than "the topology of our unknowing" (24). It is the worm's earthy subversion of the very foundations of knowledge that creates slow, ruminative routes forward in pursuit of an inclusive and collaborative ontology of being, time, and space that continually elaborates on matter and meaning in the story of the earth.

Conclusion: The Topology of Our Unknowing

> *We are humus, not Homo, not anthropos; we are compost, not posthuman.*
> —Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*

In his original essay on Darwin and his worms, Stephen Jay Gould writes that the final irony of Darwin's death is that he "wished to be buried in the soil of his adopted village, where he would have made a final and corporeal gift to his beloved worms," but was given a State Funeral and laid within the "well-mortared floor of Westminster Abbey" (133). However, Gould insists, the "worm will not be cheated, for *there is no permanence in history*, even for cathedrals" (133, my emphasis). This fact is further accentuated by the ubiquitous presence of Darwinist thought across the Western world, and in particular by the creative texts examined in this chapter. By taking on a post-mortem recovery of Darwin, literary and poetic works like *Angels and Insects* and *decomp* bring a newfound salience to Darwin's thinking about natural history and the unfolding of the evolutionary process.

In re-examining *The Formation of Vegetable Mould Through the Action of Worms* in particular, we can further our understanding of the station of the human as the embodiment of a resonant and dynamic planetary history. To do a post-mortem of natural history is therefore to inclusively expand (and at times, destabilize) the language of borderlands, chasms, and animal "worlds" that permeate the philosophy from Jacques Derrida to Cary Wolfe, by navigating through the spaces

and places (both real and conceptual) of the dead. In chasing the earthy compost-smell of taxidermic breakdown fomented by the vermiform, coupled with its mouldering presence in the fragmented volumes of the history of the earth, we find that the vermiform establishes a foundation for a post-mortem natural history that subverts spatial and temporal coordinates, thereby revealing to us that the living human is far from hygienically separated from the history of matter's vital unfolding.

This post-mortem natural history, in advocating for a bioegalitarian and democratic treatment of matter, also breaks down and inverts the natural order of the Great Chain of Being, which classifies angels at the top and worms at the bottom. But by levelling their readers, spreading out their narratives and poetic texts upon a plane of decomposing matter, both Collis and Scott and Byatt chart a new decompositional territory of Darwin's aesthetic theory. The minute labours of the blinded worm slowly and dutifully create a vastly different topography of the *human* and *humus*. This is, as Collis and Scott insist, the "topography of our unknowing," which navigates the productive and generative orientation of the human's unseeing, unknowing orientation on earth. If the topography of knowing is located in an upright, objective observance of the natural order, then a topography of unknowing ploughs our epistemological and ontological assumptions into the dirt, cultivating them anew into as an equal and egalitarian plane of the organic and inorganic, human and nonhuman, living and dead.

Taking this topography of unknowing as a new set of coordinates for interpreting and composing creative texts, this chapter concludes that a subterranean, embedded, and decompositional view of the Tree of Life conducts us into a renewed and ecologically-connected relationship with all past and present species. The creative practice of Collis and Scott and of Byatt involves directing a post-mortem of Darwin, and of Darwin's natural history, that takes up

his corpus and turns it again over and over, like the ever-obliging and industrious worm, in order to actualize the fundamental truth of the earth's continual regeneration. It is through this post-mortem vision, amidst the motes of dust and the coldness of clay, that we can learn to think, read, and write with worms.

CHAPTER TWO | *molluscs*

The Decompositional Tableau of Creative Evolution

Tables are plentiful in Peter Greenaway's cinematic and artistic œuvre. As with the stark autopsy slabs of his 1988 film *Death in the Seine*[23] and the sumptuous still life compositions of fowl, fruit, and a roasted corpse at Albert Spica's gourmet restaurant in *The Cook, The Thief, His Wife, and Her Lover* (1989), the table of *A Zed and Two Noughts* (1985)[24] is a strategic tool in Greenaway's repertoire of aesthetic devices. Characterized by strobing lights and sounds of shutter-clicks — the kinaesthetic images and intonations of a time-lapse decompositional photography project that captures multi-species decompositions — the table of *Z&OO* features a manifold variety of experiments with rot, beginning with an apple and a bowl of prawns, and leading further up the food chain to an angelfish, a crocodile, a zebra, a swan, a Dalmatian dog, and ultimately, a human corpse.

The opening sequences of *Z&OO* draw viewers into Oswald Deuce's laboratory at the Rotterdam Zoo. Upon the tabletops and lining the rows of wooden shelving are innumerable natural scientific samples; a standard collection for any zoologist. The *mise en scéne* of the laboratory includes the clutter of these dead specimens. The tapered leaves of a blossoming tropical fern cascade over the partitions of varied flora and fauna, which are juxtaposed sharply with a somber collection of indurate fossils and a single jarred wet specimen positioned on Oswald's desk. A dolly shot also captures a murky aquarium, an empty glass enclosure, and an

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[23] The catalogued cadavers of *Death in the Seine* are elsewhere depicted from an aerial point of view as a grid of tables. Exemplary pieces include three 81 x 107 cm cards, entitled "Twenty-Three Corpses" (acrylic, 1989), "Sixteen Reds" (mixed media, 1989) and "The Twenty-Three" (mixed media, 1989) in *papers/papiers: Peter Greenaway*.

[24] Hereafter referred to as *Z&OO*.

impassive taxidermy cow, all of which are dimly cast, save for the flashbulb orbs of light that are rhythmically emitted from a fixed assembly of time-lapse cameras. As the movie camera zooms in further amidst a cacophony of shutter clicks and chirping birds, a high angle shot settles on a series of black and white photographs of a unipedal gorilla that have been scattered atop an illuminated photo light box.

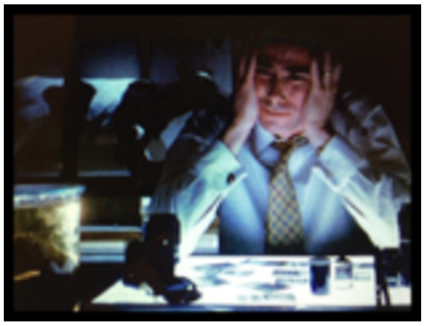


Fig. 11 and Fig. 12. *Z&OO*. BFI Film Stills, 1985.

Oswald's gridded slide, magnifying loupe, and focalizing lens appear upon the photo light box, a reminder of the implements utilized in the observational practice of zoological specimens. Yet in the successive scenes of *Z&OO* (which are staged at the fatal crash-site of Oswald's and Oliver's wives), these implements begin to serve a new purpose: namely, to measure, amplify, and reproduce images of decay. Throughout the film, Oswald and his brother Oliver grapple with the grotesque asymmetries of death and decomposition, plummeting into what they call the "ooze, slyme, [and] murk" of evolutionary origins and endings.

Navigating through the ooze of origins and endings, what interests me in this chapter is how the zoologists's time-lapse decompositional project advances a critique of the classificatory schemes and visual cultures of zoological science through the model of the cinematograph. Operating as a figure for Bergson's theory of knowledge and of life in *Creative Evolution*,[25]

[25] Noted hereafter as *CE*.

Greenaway's film (and the film of Oswald and Oliver Deuce) exemplifies decay's structural dissolutions, which the film illustrates both through its *content* and *form.* While on the one hand the structure of time-lapse photography and cinematography models the human's perceptive apparatus (which apprehends the process of evolution only in inert snapshots), on the other hand, the content of decaying matter (tabled in the still life) expresses the continuity of decomposition as a process and procedure of life's protraction. Like the works of A.S. Byatt and Stephen Collis and Jordan Scott analysed in the preceding chapter, which develop a practice of reading and writing with worms that explores the deep time of evolution and the unseen material forces of decay that evade human observation, Greenaway's film features multi-species decompositions as a collaboration of the human and nonhuman, organic and inorganic, living and dead, on an expansive timescale. But while these vermiform authors present a case for a post-mortem natural history that produces a decompositional aesthetics of mouldering and other autopoetic expressions of worms in the dirt, this chapter explores how *the zoopoetic putrefaction of snails in Z&OO takes the creativity of decomposition to its absolute limit: the nothing*. Greenaway's film creatively engages with "ooze, slyme and murk" as a primary substance that stimulates the rise and fall of living forms in the earth's natural history, which generates nothing other than the assurance of more death and regeneration.

Greenaway's pageantry of putrefaction unfolds as the Deuce brothers undertake a decompositional photographic/filmic project that utilizes grids and scaffolds to measure the putrefaction of dead zoological specimens — and ultimately their own corpses. Yet this time-lapse project is ultimately foiled by the slow, plodding progress of snails, which interrupt Oliver and Oswald's final experiment and arrest the taping of their decay. The invading escargatoire of snails serves as an exemplary model for the primordial sludge that characterizes life's beginnings

and contingent productions, which are strikingly featured throughout Greenaway's film in the form of interspersed clips from the BBC's *Life on Earth* series. Tracing alternative routes across the natural scientific table with their muculent trails of slyme, Greenaway's snails enact a decompositional tableau that I read in this chapter as a radical reinterpretation of evolutionary theory and zoological practice. Attending to these moments of decomposition, I argue that Greenaway's creative engagement with evolution in *Z&OO* and in his 18-tableaux biopic, *Darwin* (1992), utilizes the slippage between *table/tableau/tabula rasa* in order to present a provocative critique of natural scientific methods of representation, observation, and knowledge. Through decompositional time-lapse photography and cinematography, *Z&OO* also offers an inventive re-interpretation of Charles Darwin's consideration of time, natural history, and life by correlating the primordial soup of life's inception with the measured processes of decay. In utilizing the multiple registers of the *table/tableau/tabula rasa* (which I correlate with the classificatory, performative, and ontological coordinates of the film), the scenes of decomposition in Greenaway's film represent an alternative to natural scientific practices of observation and speculation, and furthermore emphasize Darwin's interest in the creativity of genealogical evolution and in the spontaneous generativity of aberrant species like the snail. Greenaway's filmic practice illuminates how Darwinian theory emerged from an intensive engagement with these anomalous forms of life — a fact that lends renewed insight into the unique contribution made by Darwin's evolutionary theories in the history of vitalist debates from the nineteenth to the twenty-first century.

Following the suppurative emissions of the snail, the research questions raised in this chapter are shaped by the tensions and parallels engendered by the intersections between table/tableau/tabula rasa. The classificatory scheme of the table, first and foremost, calls into question

problems of representation. How is taxonomized life represented from the nineteenth century to the present? In particular, how do the classes of *molluscs* (snails) and *cirripedia* (barnacles) present a challenge to taxonomic practice in Darwin's time? In what way, more importantly, do these invertebrate species contribute to the zoological puzzle that preoccupied Darwin, and how does the hermaphroditic snail model the vital temporality of evolutionary progress? In contextualizing Darwin's contribution to the visual cultures of biology in the nineteenth century, what can we learn of the legacy of Darwinism in twenty-first century science and in the historical development of the zoological garden as an institutional framing of exemplary species in *Z&OO*?

Responding to these questions, the first section, *I. Table: Representing and Classifying Life*, explores how Greenaway's decay sequences counter the conventional taxonomic illustrations of life prior to the nineteenth century, which presume the relative fixity of species in and through their static visual representations. Alternatively, I argue that Greenaway's decay sequences in *Z&OO* depict the animate vitality of decomposition, showcasing the contingent mutability of evolutionary processes and their perpetual escape from the natural scientific and artistic frame. Greenaway reproduces these natural scientific and artistic frames through his references to the still life genre and the evolutionary epic, which has been set on the natural historical stage of the zoological garden. Yet as an institutional relic of the taxonomic scheme of natural science, the zoo operates as a stage of the static and inanimate portrayal of representational species, carefully ordered according to a gridded layout of the history of life, and observed according to the key principles of scale and scope that are inherent to both natural scientific and artistic practices. In its representation of the still life composition (*nature morte*) and the evolutionary epic of the eight-part BBC *Life on Earth* series narrated by Sir David Attenborough, Greenaway's film invites us to revisit Darwin's own ethological practice (namely, his microscopy from 1837-1854, and his

taxonomic work on barnacles) in order to explore how Darwin engaged with visual cultures of natural science. Yet the creative, ongoing, and contingent mutability of life hums at the periphery of the artistic and filmic genres referenced in Greenaway's film, exemplifying what Foucault articulates in *The Order of Things* as the table of knowledge: the "primary grid of things" which acts as "an indispensable link between representation and things" (xxv), but which ultimately represents the world in a state of inanimate suspension. Critiquing the limits of the representational modes of natural science, the decay sequences of *Z&OO* call for a reinterpretation of the visual lexicon of the zoological garden in its practice of ordering and quantifying life in the table of knowledge. The active agency and performativity of the hermaphroditic snail in Greenaway's film is proof of Darwin's own insistence on a genealogical (rather than classificatory) interpretation of life. Unlike the fixed coordinates of the taxonomic table, the performative tableau of the snail installs an ethology of creaturely putrefaction that effectively destabilizes the dualisms that frequently attend zoological practice: namely, the articulation of difference that is foundational to understandings of the human, life, and the classified specimen.

The section on *II. Tableau: The Performance of Zoopoetic Putrefactions*, explores how the cinematic tableau vivant of *Z&OO* (read in conjunction with Greenaway's documentary *Darwin*) interrogates the interstices of life and death, along with past and present, by foregrounding the performative zoopoetic putrefactions of snails. Operating at a slow speed, the snails intercede in the Deuce brothers's time-lapse project by modelling the very ooze of life's decompositional processes. In my reading of this decompositional tableau, I illustrate how the film enables a cinematographical play with time and movement that in turn exemplifies the vital temporality of creative evolution. This section contextualizes *Z&OO* within wider debates of the animal in film

in order to scrutinize the impact of the film's denouement, which sets up a neo-grotesque theatre of zoopoetic putrefaction. In so doing, the film posits the spontaneous hermaphroditic regeneration of snails as a counterpart to the vitalist processes of evolutionary progress and a model for Darwin's genealogical representation of the Tree of Life.

In addition, the performative structure of the tableau incites practices of observation. In reading the reverberations of Darwin's thinking in *Z&OO*, I chart the characteristics of a decompositional aesthetic. This Darwinism of the post-mortem invites us to ask: how are audiences meant to respond to Greenaway's time-lapse decompositional photography and film of decaying animals? Unlike Animal Studies scholars Jonathan Burt, Akira Lippit, and Anat Pick, who together emphasize the vulnerability, reproducibility and spectrality of the animal (and especially the dead animal) in film, I inquire if it is possible to affirm an alternative politics of a post-mortem animal embodiment in the moving image. How might the hermaphroditic generativity of snails and the animated tableau vivant of the film's final scene enact a politics of performative agency? In addition, how does the slowness of snails work to decelerate and distort time, and what can this moderation of progress disclose to us about techniques of animal observation, both in the contemporary zoo and in the grand narrative of evolution?

The third variant of the table, the tabula rasa, structures an inquisition into the operations of epistemology and ontology in Greenaway's film-philosophy. If the slowness of snails presents a critical model for interpreting observational methods, how does the film-philosophy of Greenaway invite a reassessment of the cinematic form itself? In referencing Bergson's analysis of "nought" in the final chapter of *Creative Evolution*, how does Greenaway pair cinema and considerations of evolution, and to what effect? When we read deeply into Bergson's concept of the cinematographical method in philosophy, what do we discover about the evolutionary

narrative and the aim of natural scientists to condense and capture the complex unfolding of living forms across the millennia? Moreover, what, aesthetically speaking, remains when the natural scientific gaze and the cinematic apparatus break down?

Navigating through this structural collapse of the schematics of art and natural science, *III. Tabula (rasa): An Exegesis of the "Nought"* offers an in-depth critique of Greenaway's engagement with Bergson's cinematographical method. In this section, I articulate how *Z&OO* creatively imagines the incommensurability of cinematic and evolutionary time. Following Bergson, and later Deleuze, I explore how cinema "thinks" evolution, along with the ways in which the cinematographical method in Bergson's analysis serves as an exemplary prototype for the problem of duration and becoming. How does film serve as a thinking processor for evolutionary progress? What does it mean in Greenaway's film to contemplate the nought? Like Bergson, who argues that the nought is "the invisible mover of philosophical thinking" (*CE* 275), the film's ending (which also mirrors the ending of the Deuce brothers's film) returns to the problem of being and time that Bergson deems fundamental to the primal function of the negative, the zero, or the "nought." I explore how the significance of Greenaway's fascination with the origins of life (which have emerged, in the words of Sir David Attenborough, "apparently out of nothing") is tethered to the aporetic crisis of death in relation to both *organistic-being* and to *species-being* in deep time.[26] In challenging the seemingly stable narrative of evolution that Attenborough's nature documentaries posit, this section shows how Greenaway's persistent return to the decompositional tableaux of material decay takes his audience to the periphery of what can be seen, and consequently, of what can be known. Ultimately, *Z&OO* showcases the unseating of the

[26] By *organistic-being*, I refer to the individual corporeal experience of a human or non-human animal in its own timescale. By *species-being*, I refer to the evolution of species over thousands and millions of years. Geneticists would define these distinctions as *ontogeny* (an organism's individual development) and *phylogeny* (a species's evolutionary history).

scientific observer and the failure of the cinematic apparatus itself, indicating that a narrative of evolution exists on a creative register outside the empirical purview of the human gaze, and more importantly, beyond the parameters of any system that would submit the diversity of living and non-living corporeal forms to a classificatory frame.

My methodological approach for this chapter is to closely attend to the foundational principles of film analysis and film history (Edward Muybridge's early work in motion pictures; the conventions of the BBC nature documentary), along with the representational strategies of painting, the vital histories of the *tableau vivant* and still life, and the philosophy of creative evolution. I also carefully interpret and consult Darwin's archive (including his barnacles monograph, some of his letters of correspondence, his divergence diagram, and his notebook of experiments) in order to situate his visual representations in context with the history of evolutionary pictorialization in the last two centuries.[27] Through this methodology, I aim to make two main interventions. The first is to demonstrate how the visual lexicon of natural science advances a particular definition of life. To do this, I demonstrate how Greenaway's decompositional aesthetic expands this definition to include the generativity of putrefaction. While some historians and cultural critics of the life sciences have outlined how scientific images, models, and metaphors have been utilized in the past two centuries years to make sense of life, this chapter will suggest that from the scale and scope of Darwin's microscopy to the subterranean representation of the great Tree of Life in his divergence diagram, the concept of life in his thinking is based on life's mutable shift from death and decomposition and back again to renewed life.

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[27] Two key texts include Evelyn Fox-Keller's book *Making Sense of Life: Explaining Biological Development with Models, Metaphors, and Machines* (2002) and Sebastien Normandin and Charles T. Wolfe's co-edited collection, *Vitalism and the Scientific Image in Post-Enlightenment Life Science* (2013).

As I have previously stated, the narrative of evolution is marred by gaps and lost archives. With the small exception of Janelle Schwartz's *Worm Work: Recasting Romanticism* (briefly discussed in the last chapter), scholars of Literary Darwinism have not yet accounted for the ways in which the visual apparatus of biological and natural science influences evolutionary and vitalist theory. Remedying this oversight, the objective of this chapter is to highlight Darwin's own highly visual ethological practice with barnacles (a species only differentiated from the mollusc for the first time a decade prior to Darwin's barnacles monograph), along with his wide-ranging interest in anomalous species, from the earthworm to the invertebrate marine organism.

In addition, I endeavour to show how critics of Peter Greenaway have, despite a great deal of superb analyses of his filmography, neglected to explain how his work reconciles natural scientific and artistic practices. While the decompositional time-lapse film and photography of animal decay is not unique to Greenaway,[28] his film-within-a-film approach (the Deuce brothers's film and the film of the BBC's *Life on Earth* series) enables a critique of cinema itself. The mechanism of the moving picture, in particular, distorts time by creating a cohesive narrative out of successive, intermittent snapshots. Furthermore, in making the snail a key performer in the final decompositional scene, Greenaway endows the mollusc species with the role of symphonic conductor, setting the tempo for a new mode of slowness that can be directly linked to Bergson's analysis of creative evolution. In its consideration of Bergson's exegesis of "nought,"

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[28] Other British filmmakers, including Stan Brakhage (*Sirius Remembered*, 1959) and Sam Taylor-Wood (*A Little Death*, 2002), utilize time-lapse photography and video of dead nonhuman animals in their respective films. Brakhage's mournful epithet to his deceased dog in *Sirius Remembered,* however, shares the same affective register as Sally Mann's photography project (*What Remains*, 2003), which similarly returns to the post-mortem body of her dog (a greyhound). Alternatively, Taylor-Wood's short film and Greenaway's *Z&OO* engage specifically with the still life genre of painting. As I will explain in the next section *I. table*, this reference to the still life genre signifies an important transformation of the static and fixed table of the still life into a fluid and variable expression of decay.

Greenaway's film-philosophy emerges from an explicit project: to promote a paradigm of Darwinian decompositions through the spectacle of the snail's zoopoetic putrefactions.

I. Table: Representing and Classifying Life

On this there is agreement: tables are a multifaceted extension of Greenaway's abiding fascination with organizational systems (lists, collections, charts, writing tablets), art-historical concerns (the still life genre, the *tableau vivant*, English landscape paintings, the *trompe l'œil* practice of seventeenth-century Dutch painter Johannes Vermeer), and the mechanics of cinematography (frames, timed sequences, Muybridgean grids). As we learn from the opening scene in Oliver's laboratory, however, the classificatory structure of zoology is invariably on the verge of ruin: the table that imposes and regulates uniformity in the one moment will, in the next, come to nought. As Paula Willoquet-Maricondi and Mary Alemany-Galway attest, Greenaway's films are punctuated by a central thesis: that "organizational systems are useful fictions that ultimately break down and collapse" (xvi).

In Oliver and Oswald's intensive program of experimentation with time-lapse decompositional photography and film, the table appears to viewers of *Z&OO* in Greenaway's quintessentially palimpsestic style as an apparatus deeply encoded with references to the domains of both natural science and art. As I will show, Greenaway draws together the lavishly-set table of the still life composition (*nature morte*) and the grand narrative of the evolutionary epic with visual cultures of nineteenth-century natural science in order to emphasize the key principles of scale and scope that characterize each representational scheme. What we learn from the table of *Z&OO*, however, is that these natural scientific and artistic practices proceed from a specious supposition: that all of life is reducible to a stationary and immobile set of processes that can be charted into a tidy narrative of evolution or enclosed within the microcosm of the zoological

garden. As a mould within which organistic-being and species-being must fit, the taxonomic table operates as an spurious tool for organizing the creative iterations of matter in deep time. For this reason, the grid cannot capture the vital temporality of evolutionary progress, nor can it contain the ooze of decay that seeps between the borders of life and death.

Fig. 13. *Z&OO*. BFI Film Stills, 1985.

Greenaway references visual cultures of art and science with meticulous precision, emphasizing how the representation and classification of life depends on an unvarying projection of nature. For instance, the still life compositions of seventeenth-century Dutch painting, which Greenaway deems to be "an early forerunner of cinema" (Ciment, "Interview with Peter Greenaway" 32), often relegate death and decay outside the frame in order to portray the splendour of flowers, fruit, fowl, and game at their peak. But in comparison to Oliver and Oswald's decay sequences, the snail's torpid advancement across the dewy petals of a pastel-pink gerbera daisy in one of the film's opening still life scenes (pictured above in Fig. 13) self-reflexively discloses the operations of the genre itself, which develop the visual optics of 'liveliness' in painting and cinema by representing material life in a fixed photographic (and cinematic) frame.

This frame relies on optical illusion, as well as on manipulations of time. For instance, Joanna Woodall writes that the still life "constitute[s] a dense, mutable pictorial field in which the horizontal laid table…interact[s] with the vertical pictorial table" (980). This table is in turn

heavily "invested with the presence of the *camera obscura*" and the optical illusions of the *trompe l'œil* style, both of which were mastered by Dutch golden age painter Johannes Vermeer in an attempt to project three-dimensionality and other forced perspectives into his work (Woodall 980). The genius of Greenaway appears in the multi-layered encoding of these visual optics: the still life's mirroring of nature can be compared to the lens of the camera obscura, which is also a precursor to the technological advancement of the motion picture. What is significant is that each of these mediums halts temporal progress and distills the processes of life into a minute fragment of time that can be preserved in perpetuity. While a great deal could be said here about the art-historical significance of Greenaway's film-philosophy, what I want to emphasize is how these representational schemes are guided by the "semantic order of resemblance" — a theory that is integral to Foucault's analysis of natural historical methods in *The Order of Things* (20). What natural science and the history of art share, in other words, is a manipulation of temporal scale and scope that creates a mimetic image of the natural world. As Foucault inquires of natural historians, so might Greenaway's film inquire of still life painters: "Which is the reality, and which is the projection?" (Foucault 22). Greenaway's representation of the still life composition showcases the procedures by which life becomes an abbreviated, limited, and invariable representation of reality in both natural scientific and artistic representations.

Greenaway's decision to feature the snail in his film is undoubtedly the result of the snail's prominent position in early modern zoological history. Visual cultures of the mollusc in the baroque period of the seventeenth century, for instance, illustrate the extent to which snails and other gastropods are steeped in cultural discourses of life's origin and natural order. Conchology, as natural historian Karin Leonhard carefully observes, is important for Aristotle's theory of spontaneous generativity as well as for the insurgence of still life painting in the baroque period,

during which curiosity cabinets featuring the radial lines and bands of shells, along with their distinctive colourings and markings, began to appear in painting and sculpture. Shells and gastropods, Leonhard writes, "were studied against the background of theories concerning the origins of life and cosmological evolution" (191) which included Aristotle's argument that mollusc "shells could be generated by the sun warming up the sea bed — a *creatio ex nihilo* which brought dead material to life" (177). Following Aristotle's philosophy of life, seventeenth-century artists compared the range of pigments, patterns, and markings of shells, which in molluscs grow discontinuously (in unpredictable fits and starts), as a veritable prototype of historical time. According to Leonhard, "molluscs became a paradigm for the passage of time and historical growth — space-time made visible" (181). Combining the still life painting and the tradition of the curiosity cabinet, Leonhard's analysis echoes Giovanni Aloi's observation (outlined in the preceding chapter) that visuality serves as an epistemological tool of the natural scientific order and the key to representations of evolutionary progress over the past several centuries.

In referencing these visual cultures of the shell still life and the optical illusion of moving images, Greenaway enables a critique of painting and cinema, but also of the schematization of life in the realm of natural science. Jonathan Crary writes that the optical devices employed in the still life and in the history of painting (such as the camera obscura) serve as "*a philosophical metaphor, a model in the science of physical optics*" (29; my emphasis). Furthermore, for Crary, the use of the camera obscura in the paintings of Vermeer — who also appears prominently in *Z&OO* in the character of Van Megeren — is "the interface between Descartes's absolutely dissimilar *res cogitans* and *res extensa*, between observer and world" (46). These same visual strategies guide the representational systems of natural science, from Carl Linnaeus's ordered taxonomical columns in *Systema Naturae* (1735) to Cuvier's zoological chart of animal kingdoms in *La Règne Animal*

(1828), and later to the models of biology that were later widely utilized by Darwin and his contemporaries in the nineteenth-century.

The Scale and Scope of Life in Darwin's Vision

Formulating a link between the observer and the natural world, the representational systems of the arts have, particularly over the last two centuries, greatly influenced the life sciences. Yet unlike his colleagues, Darwin wittingly worked against the notion that life could be reduced to a microcosm or a fixed set of processes. Darwin's own visual illustrations and experiments provide proof of this dynamic vision of evolution. While his barnacle work resulted in a classical taxonomical treatise following his researches on the HMS *Beagle* between 1831-36, his correspondence, notebook scribblings, and microscopic studies reveal a consideration of life in deep time that is both spontaneous and generative. As I will demonstrate, Darwin's insight into the dynamism of life emerges from vitalist debates at the time that centred on the taxonomic distinctions between barnacles (*cirripedia*) and snails (*molluscs*). For Darwin, the anomalous characteristics of the hermaphroditic invertebrates like the snail, worm, and coral polyp made it possible for these species to evade the capture of taxonomic schemes.

Once thought to be part of the same phylum, the minute differences between barnacles and snails were observed by John Vaughan Thompson, a marine biologist and army surgeon, whose *Zoological researches and illustrations* (1828) demonstrated that adult barnacles were, as Rebecca Stott writes, "most like crustacea, not molluscs which they had previously been thought to be" (xxiv). Vaughn's manuscript was taken aboard by Darwin on the second voyage of the HMS *Beagle*, lending credence to the theory that Darwin was actively engaged in debates surrounding aberrant species like the snail and barnacle. The works of both Richard Owen and Robert Grant, in addition, were also of interest to Darwin, who followed Grant's mollusc studies

with avid interest. Retracing Darwin's place in these debates, Stott suggests that "for Darwin, anomalies like these raised all sorts of questions about the classification systems themselves. What makes a barnacle a barnacle?" (xxi). In an interview with Vernon and Marguerite Gras, Greenaway further reiterates this observation, arguing that "there are hundreds of snail species but what distinguishes them is infinitesimal and recognized only by zoologists" (40). The squishy forms of marine invertebrates, their shared embryological development with the plant kingdom, and their minute and multiplicitous differences from other marine organisms made the barnacle a curious borderline creature to natural scientists in Darwin's time. What we learn from this is that anomalous species like the barnacle and snail ultimately contributed to the shift in visual cultures of science away from stiff taxonomic grids in favour of somewhat more mutable and variable interpretations of the evolutionary narrative.

Much of Darwin's work with borderline species has been documented by scholars of natural history, who have emphasized Darwin's engagement with vitalist debates in German biology during the 1830s (Sloan), persuasively proved that Darwin's thinking on barnacles was definitively genealogical rather than classificatory (Padian), and determined how Darwin became an expert microscopist in his barnacle studies (Jardine). What I would like to propose, in addition, is that Darwin's microscopic study of both living and fossilized *cirripedia* on the microscopic stage enabled Darwin to establish a genealogical link between generations of *cirripedia*, which in turn combatted the static classificatory table that was so prominently featured in natural scientific research prior to the nineteenth century. Furthermore, Darwin's analysis of the homological similarities between these generations of *cirripedia* arguably influenced his own evolutionary thinking. In short, I suggest that hermaphroditic invertebrates like the snail and barnacle model the vital temporality of evolutionary progress, sparking a shift from the orderly table of natural

scientific knowledge to a dynamic *tableau vivant*, or living image, of animate and inanimate components.

Fig. 14. Plate XXV, *Living Cirripedia*. Darwin Online.

While I will further detail the operation of the *tableau vivant* in the next section, for now I will note that Darwin's microscopic studies and monographs of *Living Cirripedia* (1851) and *Fossil Cirripedia* (1851) — (outlined above in Fig. 14) — provide Darwin scholars with insight into how the visual model of the great Tree of Life's continuous branchings was made possible by Darwin's own manipulations of scale and scope as an expert microscopist. First of all, the infinitesimal differences between the *cirripedia* and *mollusca* are unobservable without the powers of magnification, which as Philip Sloan points out, would have otherwise never raised the question "about the deeply complex problem of limits and definition of individuality" (384). Darwin's writings on vital particles earlier in his *Zoology Diary* (1854), for instance, regard the particles, granules, or "living atoms" shared by invertebrate species — which can be split apart and regenerated as brand new organisms — as the basis for transmutationist theory (Sloan 392). As Sloan concludes, the microscopic granules of invertebrate species revealed to Darwin the relative indistinguishability of the plant and animal kingdoms, along with their astonishing "diversity of structure" (421). Aligning with Sloan's conclusions, Stott's work on *Darwin and the*

Barnacle determines that Darwin's observation of the vitalist principle, which made its appearance under the microscopes of zoologists later consummately infused the entirety of his evolutionary thinking in his work on the *Origin*.

Although the microscopic stage and magnifying lens are undoubtedly the tools of zoologists like Oliver and Oswald Deuce, Darwin's insight into the burgeoning and blossoming outgrowths of individual organisms — and even of entire species — effectively detonates the parameters of scale and scope that define his microscopy praxis. This is perhaps why Darwin lingers on the apparatus of the eye in *Origin*: what Darwin sees on the microscopic stage of living and dissected *cirripedia* is plain enough, as Fig. 14 illustrates, but what is unseen are the transmutations and evolutionary changes of these organisms across geological epochs — that is, its species-being. The zoologist can magnify his specimen, overlay a scale and a micrometer upon the stage, and examine the minute differences between species, but *the eye cannot apprehend the temporal expanse necessary to produce these infinitesimal changes*. As Darwin scholar Peter Dear explains, Darwin's rumination on the apparatus of the eye is an attempt to "consider the incomprehensible periods of time within which such a process must occur — time that […] the 'mind cannot possibly grasp' and which was "fundamentally different from those of everyday, experienced time" (6). The time of the quotidian and the time of evolutionary development, when filtered through the ocular apparatus, are determined to be incommensurable. What we learn from Darwin's musings on the eye and the vast temporal scale of evolution, then, is that much of what we see of the natural world is necessarily framed by artifice: it is, as we learned from A.S. Byatt's Harald Alabaster in "Morpho Eugenia," consubstantial with the "grainy gaze" of natural science, which is characteristically opaque and layered with the effusive sediments of species's contingent and multifarious adaptations.

ZOO=OOZ: Decomposing the Zoo

If Darwin's microscopy is a limited practice that measures the scale and scope of species variation, then the zoological garden (which slowly overtook the place of the taxonomic table in the nineteenth century) is merely another gridded space. Nevertheless, the zoo reflects a shift in methods of representation to a circumspect awareness of methods of observation. Despite the striations of iron bars, the artificial lighting, and the ordered partitions of animals in the zoo, audiences are invited enter into the "unencumbered spaces" of the herbarium, collection, and garden as if returning to a primal Edenic scene (Foucault, *The Order of Things* 143). But the zoo's exhaustive designations of living specimens undoubtedly reproduce a natural world in distorted miniature. John Berger famously observes that the view in the zoo "is always wrong. Like an image out of focus" (33), while Randy Malamud writes that "zoos are not a microcosm of the natural world but an antithesis to it" (30). Life is ordered and divided into classes, but the zoological garden reveals the very duplicity of the taxonomic table, which reflects its own artifice back upon the human observer.

It is this artificiality, first poignantly described by Darwin in the *Origin*, that becomes an important focus of Greenaway's zoological film. Revealing the restrictive limits of what the human can observe and comprehend of natural life in the zoological garden, Greenaway instead turns to film as an analogue for thinking through evolutionary progress. Oliver and Oswald's still life decompositions of dead animals, along with their foray into the English woodland to record their own decay, enables Greenaway to explore the murky omissions of the evolutionary narrative and to break down the semantic structure that is encoded within the zoo by the means of bestiaries and other nominalizational schemes. In particular, the evolutionary epic of the BBC's *Life on Earth* series, which sustains a modern vision of the Romantic sublime, becomes in *Z&OO* a

submersion into a decompositional aesthetic. From the sublime to slyme, Greenaway remakes the zoological garden into a performative stage for the ooze of decompositional processes.

Rather than inspiring wonder and awe at the sublime splendour of the natural world depicted in the zoological garden, the decay sequences of *Z&OO* ostensibly inspire a grotesque fascination with the murky processes of life and death. Unlike the evolutionary epic, which advances a grand narrative of teleological progress that erroneously deems the human to be the pinnacle of evolution, Greenaway's decompositional evolutionary epic demonstrates the extent to which the origins and endings of life are far beyond, and before, the scope of the human. This decompositional view is practically profane when compared to the BBC's *Life on Earth* Series, which upholds the sacred vision of the Romantic sublime. As Bernard Lightman argues, the evolutionary epic is an enduringly "popular narrative format, first used in the wake of Darwin's discoveries but pursued across various media and in different contexts right up to the present day" (169). Lightman goes on to describe the evolutionary epic as a "grand organic vision in which humans and animals alike are presented as fighting out the struggle for survival in accordance with nature's laws" (170). However, along with the still life composition (which reveals its mechanisms of perceptive manipulation), the evolutionary epic produces an artificial and necessarily incomplete narrative of evolution that faultily places the human as the author — or even primary character — of the earth's natural history.

To interpret how Greenaway breaks down the evolutionary epic and deconstructs the zoological garden into a stage of zoopoetic putrefaction, it is helpful to recognize that the still life and evolutionary epic operate within the prescribed bounds of sight and speech. To creatively reinterpret zoological science, then, is to begin with Darwin's own observances: which are, to recapitulate the main arguments of the last chapter, that the purview of the eye is limited in scale

and scope, and that the narrative of life is interminably fragmented and missing entire volumes. Correspondingly, Foucault's assertions about the taxonomic table as a space of reflective inquiry (the operative site of *autopsy/autopsia*: or seeing oneself) as well as a semantic space of composition, lend further insight into Greenaway's decay sequences. We know from Foucault, for instance, that the table is the "nickel-plated, rubbery table swathed in white" (xviii-xix) as well as a surface upon which thought "operate[s] upon the entities of the world, to put them in order, to divide them into classes, to group them according to names that designate their similarities and their difference — the table upon which, since the beginning of time, language has intersected space" (xix). Thus, in order for *Z&OO* to decompose the zoological garden as an interrogative site (*autopsia*) and a semantic space, Greenaway must reveal the grotesque asymmetries of its classificatory schemes — that is, the ooze that cannot be contained by language or observed by the human.

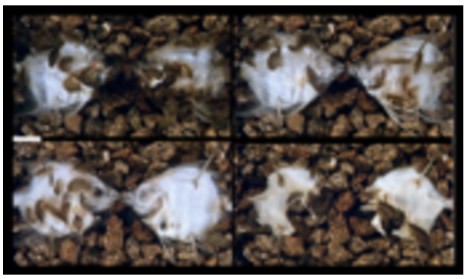
The nursery game that reappears throughout the film (the naming of a bestiary from A to Z) is one such practice of codification that highlights the breakdown of the classificatory table. The film language of *Z&OO* is characterized by what Greenaway himself describes as a "subversive, or an anarchic" use of classifying and listing animal life (in Hacker & Price 210). Along with the one-legged gorilla, the stripes of the zebra, and the spots of a Dalmatian dog, Greenaway represents these off-kilter optics through a number of dualisms — namely, that of black/white, balance/imbalance, symmetry/asymmetry and composition/decomposition. For instance, the puzzling refrain of *Z&OO*, as repeatedly articulated by Venus de Milo, is whether a zebra is "black with white stripes" or "white with black stripes." The question cuts to the heart of the table's representational scheme — where is the fine line between one species and another, and between a species's own evolution and dissolution? The endless bifurcations and divisions of

taxonomy are revealed as absurd: they produce nothing. As Foucault insists, the blank space of the grid is "waiting in silence for the moment of its expression" (xxi). Thus, while language is protractible (intended to fill in such gaps in meaning), the visual optics of the grid efficaciously make plain the nought, or the nothing. In foregrounding the Deuce brothers's tools of analysis and their engagement with the taxonomic table, Greenaway enables his viewers to understand how such ordering operations demonstrate "the vain, absurd attempts to create objectivity and meaning in the world" (Greenaway in Hacker and Price, 190).


Figs. 15 & 16. Screen shots from *Z&OO*.

Emphasizing the nominal quality of classificatory schemes (in which to see is to name, and therefore to apprehend), the alphabetical bestiary of *Z&OO* becomes the initial target of Oliver and Oswald's time-lapse decompositional project. The starting point for the Deuce brothers is the primordial apple, endowed with all of the biblical allusions to knowledge and the origins of life. With the apple, Greenaway secures an inter-referential scaffolding for a decompositional filmic narrative that encodes the evolutionary stages outlined in the eight-part *Life on Earth* series with eight unfolding decay sequences. These decay sequences are inspired during Oliver and Oswald's visit to the mausoleum where their wives lay buried. Discussing the speed of decomposition, Oswald asks Oliver: "What is the first thing that happens?" Oliver replies that *bisicosis populi* bacteria "is set to work in the intestine," and further explains that "there are supposed to be 130,000 *bisicosis* in each lick of a human tongue, 250,000 in a french kiss — first exchanged in the

very beginning of creation when Adam kissed Eve." Oswald quips that perhaps Eve kissed Adam. Oliver replies that this is "unlikely: she used her first 100,000 [bacteria] on the apple." Uniting the bacteria of the Edenic scene with the decay of their wives, Oliver and Oswald set the stage for their decompositional project, which appears throughout the film as a procedural record of the effects of time on decaying life forms.

Figs. 17 & 18. Screen shots of the apple and angelfish from *Z&OO*.

The Deuce brothers's time-lapse decompositional photography and film appear in sharp contrast to conventions of the wildlife documentary *Life on Earth*. In its reproduction of the evolutionary epic, Sir David Attenborough's voice-over narration creates what film studies scholar Anat Pick regards as the "palatial rendering of nature" (24). In addition to the paternalistic and disembodied male voice-over narration style that emphasizes nature cycles in a sublime world devoid of humans, the nature film is also noted for its "seeing is knowing" ideology, according to Luis Vivanco (111). The nature documentary, Vivanco further notes, regards the omniscient and invisible scientific observer, and the filmic or photographic images recorded, as incontrovertible sources of knowledge (111). But as Greenaway knows all too well (particularly since his time working at the British Government's Central Information Office, where he learned of the partiality of seemingly comprehensive and objective presentations of truth), documentaries are as incomplete as they are interested in communicating a particular kind of message about their represented subjects. David Keesey asserts that Greenaway specifically

chose Attenborough's film "in order to show up the limitations of this 'authoritative' voice and this 'comprehensive' multi-part film," in which "Nature is cut and spliced into a seamless narrative of orderly evolution," but which willfully "leaves out the possibility of devolutions" (Keesey 37). As I argue, it is precisely into these devolutions that Greenaway descends. Along with apples and angelfish, Oliver and Oswald's decay sequence of prawns documents an evolutionary return: they are "on their way back," Oswald says, "to where they came from: ooze, slyme, murk."

As we see in *Life on Earth*, which begins diachronically with clips from a bubbling swamp (representative, seemingly, of a primordial soup of hydrogen and oxygen), life originates with simple compounds, and becomes increasingly more complex and sophisticated over the millennia. Yet this seemingly coherent narrative skips entirely over the dissolution of species and organisms. As Jean Petrolle rightly points out in her analysis of Greenaway's postmodern and post-structuralist cinema, Attenborough's film proceeds by "following the narrative from single-celled animals through reptiles and birds and mammals to humans" — or in other words, "by showing us 'knowledge'…literally as narration" (168). In doing so, Petrolle continues, Greenaway "calls attention to the narrative basis of scientific knowledge that, when presented without a self-reflexive methodological and linguistic savvy, masquerades as absolute, unremediated Reality" (168). With this in mind, Greenaway's ethology of rot and putrefaction enables the creative disassembly of the organized structures that make up the great chain of being, while also challenging the mortal time-scale of the human.

The zoologists's experiments, which began with time-lapse photography and cinematography of vegetable matter, and then of zoo animals, follows an organizational structure right up to the human body (or, more accurately, their own bodies). Mimetically mirroring the

eight stages of evolution featured in the BBC documentary, these decay sequences proceed along the great chain of being, but only as if to jeer at the narrative of teleological progression and to heighten the aesthetic response to the ultimate taboo: that is, to the decomposing human bodies that both initiate and close Greenaway's film. By countering the zoological practice of observing live zoo animals and overturning the conventions of the nature documentary in its reproduction of evolutionary progress, *Z&OO* instead questions how the natural scientific gaze can also, when reproduced through film, "destabilize, dissemble, [and] jostle" systems of knowledge, in the words of Adrian Ivakhiv (3).

II. Tableau: A Zoopoetic Pageantry of Putrefaction

For Greenaway's viewers, this record of the decay of zoological specimens culminates, rather dramatically, in Oliver and Oswald's complete descent into ooze and decay. In a scene that foregrounds the tableau vivant of snails, the brothers's final trip to the English countryside of Muscargo speaks to the unrepresentability of death but also to the generative, communal, and ecologically-oriented aspects of decomposition. In moving away from the sterile and divisive classificatory scheme of zoological and natural science, the Deuce brothers's increasingly brazen attempts to record the decay of life forms (and ultimately themselves) succeeds in breaking down narrative structures and shifts away from static taxonomic representation to zoopoetic performance. By enacting this shift in the film's denouement, Greenaway affirms an alternative politics of post-mortem embodiment in the moving image, and furthermore exemplifies how the hermaphroditic generativity of snails can initiate an animated tableau vivant of performative agency. The snails of the final scene are exemplary in their spontaneous deceleration and distortion of time, which has all along served as an obstacle to breaking free from the moderated progress of the evolutionary narrative.

While it is impossible to say for sure (based on what is available in Greenaway's various interviews with film critics) that Greenaway intended to make a clear connection between the tableau vivant of snails in the final scene of *Z&OO* and the performative tableau of his biopic, *Darwin* (released eight years later in 1993), I read the tableau vivant of each film as a provocative strategy for re-thinking evolutionary theory. So in what way, and for what purpose, does Greenaway take on the tableau vivant?

Historically, the tableau vivant serves as an inter-relational art form that brings together multiple genres, styles, and components. Given Greenaway's cinematic and artistic proclivities and his vast knowledge of art history, his utilization of the tableau vivant is hardly surprising. Beyond his own art-historical interests, though, Greenaway employs the tableau vivant in three particular ways, all of which work to challenge and countermand the expectations of his viewers. The first is to recreate what Brigitte Peucker identifies as a key convention of the tableau vivant: that is, a "meeting point of several modes of representation, constituting a palimpsest or textual overlay simultaneously evocative of painting, drama, and sculpture" that thereby "translates painting's flatness, its two dimensionality, into the three-dimensional" (310). As with much of Greenaway's cinematography, the tableau vivant emphasizes the inner workings of its own form and its imitative representation of reality. Secondly, Greenaway takes advantage of the tableau vivant's temporal flexibility, which is regarded for its "inherent oscillation between movement and stillness," and therefore as "a metaphor for the tension between life and death" (Jacobs 96). This temporal flexibility operates in the manner of a Bakhtinian chronotope, slowing time and disordering historical narratives. Lastly, and perhaps most importantly, Greenaway employs the tableau vivant in order to emblematize the conflict between the performativity of bodies and the inanimacy of their poses. These three key components of the tableau vivant work together to

advance a performative decomposition of the evolutionary narrative, making it strange and unfamiliar to Greenaway's audience.

Figs. 19 & 20. Screenshots of *Darwin* (1993). Youtube.

In the tenth tableau of *Darwin*, Greenaway sets all of these elements of the tableau vivant in motion, working to emphasize Darwin's resistance to traditions of natural history that would sustain a view of nature's order, singularity, and the teleological advancement. A male voice opens the tableau, which carries over a moving set (similar to the theatrical stage of *The Cook, The Thief, His Wife, and Her Lover*) that contains all manner of living and dead animal forms. A noisy parade of animals — from sheep to a three-humped camel — are guided in and around the tables, which have been lined with skeletonized fossils, a taxidermy shark and bird, and rows of miscellaneous bone fragments and other preserved species that appear to have been hauled out of a natural history museum's dusty storage closet. The stark deadness and immobility of the tabled specimens emphasizes the temporal chasm between the extinct forms and the living animals that congregate around them. In this tableau, listed on the scene inter-title as "*Tableau Ten: In Which Darwin Considers Some Principles of Evolution*," the voice-over narrator states that at the dawn of the nineteenth century, "scientific examination of the world in all its specious variety had primed the necessity for a theory of unity and development — a strategy to examine how all the clamorous cacophony of the animal kingdom fitted together." But as the audience observes in the tableau, which pans from left to right and then zooms in aerially over the spotlighted figures

of Darwin and a nude male (a figure for Adam, the first man) on a raised platform, the significance of Darwin's "own particular evolutionary arc" does not lead, as his contemporaries had hoped, to the pinnacle of the human. Rather, through the theatricality and obvious fabrication of this curious tableau, we observe that Greenaway's interpretation of Darwin opposes the view that evolution "produced" the human as the apex of evolutionary progress. The tenth tableau of *Darwin* instead represents evolution as a three-dimensional play of living and dead forms across deep time. Undulating between life and death, movement and stillness, performance and inanimacy, the *Darwin* tableau emphasizes the performative aspect of life's creative iterations, which extend outside the Genesis story, and beyond the human time-scale.

Given Greenaway's later work on Darwin's biopic as an inauthentic staging of evolutionary progress, it strikes one that at the junction of the table and the tableau vivant, a progressively chaotic and yet somehow more coherent interpretation of life's creative iterations becomes possible. By initiating their own death by suicide pact before their movie cameras, the brothers Deuce perform their own decay, without comprehending where the decay of their bodies will take them. The post-mortem operations of their material bodies enact their own performativity, and this performative action, perhaps more importantly, occurs slowly, outside of their own human time-scales, without an outside (human) observer, and with no demonstrative purpose (such as the sexual reproduction of the human, or its triumph in the pageantry of the "survival of the fittest"). Their deaths are productive, yet do not yield a product. Put another way, the dark underbelly of Darwinism is not about natural selection or the advancement of superior species, but is rather about vitality in and through death. As we learn from Oliver and Oswald's decay sequence of prawns (outlined earlier in their return to "ooze, slyme, murk"), there is nothing produced in death other than the continued processes of decay and regeneration. But while true,

this fact is nonetheless aggravating to Oliver and Oswald's colleagues, and perhaps also to Greenaway's viewers. When the zookeeper and his staff examine a blackening bowl of prawns in Oswald's laboratory, the groundsman cries: "What value or conclusion can be reached with all this rotting meat?! Nothing!" Life and death, we see in the decay sequences, produce nothing other than more life and death: an ongoing, contingent, and creative process that extends both before and beyond an observer.

The Collaborative Agencies of Greenaway's Pageantry of Putrefaction

But what makes these deaths lively? What is it about zoopoetic putrefaction that enables the continuance of regenerative and creative processes? The key to understanding the impact of Greenaway's pageantry of putrefaction is inter-species collaboration — a component that is missing from the taxonomic table and its artistic and natural scientific representations. The clips from the *Life on Earth* series, for instance, portray living forms as a set of intersecting (but nevertheless distinct) puzzle pieces, arranged and assembled into a grand narrative by a human interlocutor, Sir David Attenborough. But what makes *Z&OO* a truly eco-cinematic art form, contra the BBC nature film, is its subversive critique of the Romantic sublime, which positions the human observer on a pedestal. Unlike the nature documentary, Greenaway's pageantry of putrefaction demonstrates the intersection of all of forms of life in the earth's natural history, and brings the human zoologist down into the muck. This interconnectedness of living and nonliving forms, along with the acerbic critique of the human, is the primary objective of ecocinema, Anat Pick and Guinevere Narraway emphatically argue in *Screening Nature: Cinema Beyond the Human*. In their analysis, ecocinema is

> ecologically oriented and zoomorphic: it expresses the interconnectedness of human and other forms, our implication in and filtering through

> material networks that enable and bind us. Film practice, history, and theory need to address the zoomorphism of the cinematic medium, not in order to undo the human in a bid for naive 'renaturalization,' but because human exceptionalism makes for poor cinema, for a less interesting and certainly less relevant art. Ecocinema at its best, we would argue, interrogates the chafing of the human against (and along with) everything else. (5)

In their cinematographical play with time and movement in their decay sequences from the apple to the zebra, the Deuce brothers depict not only the death of each organism but also the inter-species collaborations and interconnections that make their decay possible: the bacterial growth, the hatching of maggots, and the assembling necrophagous organisms that respond to the call of the mouldering corpse.

Modifying Eadweard Muybridge's classic studies of motion, Oliver and Oswald utilize a grid to measure the decay of their zoological specimens, as well as the activities of other burgeoning forms of necrophagous life. In accordance with the work of Muybridge, whose classic studies of motion in early cinema measure the movement of living forms in a sequential grid, the twins's decay sequences capture this activity in condensed time-lapse snapshots. Yet Muybridge's stop-motion productions were perhaps most distinguished by their appropriation of the animated body: that is, by the technological ability to capture, frame by frame, the movement of the living body in time. The *Horse in Motion* (1878), which was produced a few years before Darwin's death, is perhaps the most iconic of Muybridge's stop-motion productions. These studies are a source of fascination for Oliver and Oswald Deuce, but their time-lapse decompositional film project diverges from the work of Muybridge by showcasing decay as a

stage of zoopoetic performative action. Upon each of their chalky black-and-white grids, they measure the dissolution of each specimen, along with the industrious work of the maggots that tend to their bodies. As Figure 21 illustrates, this collaboration of maggots enlivens the Deuce brothers's decay sequence, creating an ecocinema of ooze that actively records the inception of new forms of life.


Figs. 21 & 22. Screen shot of "Crocodile" decay sequence and Muscargo scene in *Z&OO*.

What this ecocinema of ooze delineates is not merely a theme of decay or an image of abject bodies. Rather, these decompositional grids emphasize the form and structure of life's transitions from singular organisms to genealogical species, and from the individual deaths of these organisms along with the death of whole categories of species that go extinct, rotting and falling from the Tree of Life like dead and brittle branches. As we learn from Eugenie Brinkema's penetrating analysis of Greenaway's (dis)gustatory affects in *The Cook, The Thief, His Wife, and Her Lover*, "criticism errs in taking rot as a fixed, concrete, knowable thing made available in film as an 'image of' or an abject object" (155). Rather, for Brinkema, "putrescence is a structure in process, a textually constituting gesture that must be read for" (155) in Greenaway's film-philosophy. Honing in on these innovations of form in *Z&OO*'s decay sequences, I think the cinematograph and the camera for Oswald and Oliver Deuce enables us to read decomposition as a transversal structure of interlocking bodies that tempers time not in the condensation of cinematic or photographic images but in the viscous suspensions of the snail's mucilage, which slow down and

arrest time and movement. This initiates a new temporal structure of slowness, along with a literal and conceptual switch from the light (of reason) into darkness. A new set of percepts and affects emerges in the film's final scene as Greenaway's viewers are met with a chorus of frogs and the shadows of dusk. In an ecocinema of ooze that embeds the human in its murky processes of decay, audiences are presented with the *percepts of the swamp* — outgrown, wild, and wet —and the *affects of the snails* — quiet, slow, and substantively slimy.

While the tenth tableau of *Darwin*, as we have already established, stops short of advancing a decompositional aesthetic, the final scenes of *Z&OO* make decomposition possible by making the film itself stop short. Both *Darwin* and *Z&OO* utilize the tableau vivant, but *Z&OO* enacts a pageantry of putrefaction that actively engages with the cinematic form, dramatizing the capacities and limitations of film in its representation of the vitality of death. In this final scene, we observe Oliver and Oswald walking together to a platform that they have assembled in the swampy woodlands of Muscargo. Mounting the stage and pouring a drink for them both, Oliver turns on a record player that plays a cheerful rendition of the "Teddy Bear's Picnic," another ode to the nursery games that have influenced their decompositional project. They undress, inject one another with a deadly serum, and rather promptly die. The stage is set for their decompositional film: they are laid upon a Muybridgean grid, and the rhythmic pulse of lights and shutter clicks (capturing thirty frames-per-minute at two-second intervals) operate with resounding certainty as the snails invade. Yet all along, Oliver and Oswald's decay sequences have self-referentially determined the representation of decomposition: the time-lapse camera has sped up the passage of time by capturing hundreds of frames and condensing days and perhaps even weeks of decay into mere moments. By interceding in the film's taping, the tableau vivant of snails demonstrates to Greenaway's viewers how the movie camera generates this fragmented and partial

visualization of decay, in which life and death processes are ultimately unrepresentable, much like the evolutionary narrative itself. In the place of a record of the Deuce brothers's decay, snails instead cover their bodies, the filmic apparatus, and the gridded stage, becoming the primary actors in a zoopoetic pageant of putrefaction.

This tableau vivant of snails and slyme arrests the apparatus of film, and indeed of all other perceptive tools, in order to amplify the paradoxical crux of Greenaway's film-philosophy. In Greenaway's creative engagement with the post-mortem Darwin, life is understood as a surplus: it is a self-generative, extensive, and spontaneous impulse that pulsates in and through the matter of the living and nonliving form as it ceaselessly *becomes*. Dramatizing the contingent and inventive characteristics of evolution, Greenaway's decompositional tableau of snails allows us to re-interpret evolution not as a static narrative rehearsed by a human interlocutor, but as a collaborative, spontaneous, and ongoing iteration of life's creativity.

III. Tabula (rasa): An Exegesis of the "Nought"

What all of these oozy progressions of the snail have illuminated for Greenaway's viewers is that film — even when it is breaking down — enables us to think with sensations, rather than with concepts. Bergson states in the opening pages of *Creative Evolution*, for instance, that "We do not think real time. But we live it, because life transcends intellect" (46). The jarring end to Greenaway's film (as well as to the film of Oliver and Oswald's decomposition) therefore opens up the question of how to *think* matters of life and death. Analogous to the autopoetic expressions of worms, which open up a topology of our unknowing in the preceding chapter, film provides us with an alternative set of concepts for interpreting Darwinism's decompositional aesthetics in relation to Bergson's conceptualization of the "nought." With the tableau vivant of Greenaway's *Darwin* biopic, for example, the theatricality of the film-stage can alert us to the mode of

expression utilized — be it sped up or slowed, staged or spontaneous. Case in point: when arrested by the snail, the high angle shots of Oswald and Oliver's decay sequences shift from an aerial mode to a terrestrial mode, situating the horizontal pictorial field of the table (previously juxtaposed with the vertical pictorial frame, as per Woodall's analysis) on an even plane of human and gastropod bodies. This arrest of motion in the film, as a difference of sensation in the space and time of the film, allows us to think through the slow and insuperable progress of the decompositional tableau of creative evolution.

In my analysis so far of the intersections of table/tableau/tabula (rasa) in *Z&OO*, I have aimed to delineate a set of representational schemes for art and science, but also for philosophy. The operations of these schemes are distinct from one another. As Stephen Zagala affirms in his analysis of Deleuze and Guattari's ethico-aesthetic paradigm, "philosophy is concerned with the form of concepts, and science with the function of knowledge, [while] art is concerned with the force of sensation (Deleuze and Guattari, 1994: 216). Which is to say, *thought* is not co-extensive with *knowledge*: philosophy thinks with concepts, science thinks with functions, and art *thinks* with sensations" (21). Proceeding from Zagala's insights into the percepts of film and the concepts of philosophy, the next question that arises is: how does Greenaway's film-philosophy enable us to think through the concept of life?

Greenaway's film-philosophy engages with Bergson's theory of the cinematograph in *Creative Evolution*, illustrating how film models the perceptive apparatus of the human. Yet it also cues us to re-examine Bergson's insights on the importance of snails (and in particular of the mollusc eye), which navigate the problem of species-being in relation to the evolutionary adaptations of the *mollusc* species. In the section that follows, I outline Bergson's theory of life and

knowledge in the model of the cinematograph, and then turn to the significance of light in producing the species variations of snails.

First, in his critique of scientific praxis, Bergson's *Creative Evolution* begins with a joint inquiry into the theory of knowledge and the theory of life. For Bergson, the notion that the human emerges with a "blank slate" (or tabula rasa) to be filled with knowledge based on the mind's phenomenological access to the empirical realm (via the apparatus of perception) is a false empirical presupposition that is fuelled by the central tenets of scientific inquiry. However, Bergson describes these two theories as inseparable, "push[ing on] each other unceasingly" (*CE* xiii). Bergson's conception of life (*élan vital*) as duration links being and time with ceaseless invention and "the continual elaboration of the absolutely new" (*CE* 11). The cinematographical method in particular enables Bergson to advance a critique of how we can possibly think through these continual elaborations, and it is this philosophical problem that Greenaway himself similarly ponders in his own film-philosophy. The two noughts in *Z&OO* (the O's stand in as zeros) signal astute viewers of Greenaway's cinematography to explore how the problem of being and non-being appears in Bergson's treatise.

As Bergson goes on to insist, "philosophers have paid little attention to the idea of the nought. And yet it is often the hidden spring, the invisible mover of philosophical thinking" (275). In the history of Western ontology and epistemology from Plato to Descartes and Kant, the notion of existence is foundational to thinking. But Bergson emphasizes that to think through being, one must start with the Nothing, or non-being. To do so is to imagine or conceive of the nought, which is achieved through the image and is exemplified best by the cinematograph. In Bergson's philosophical treatise, the cinematograph captures instantaneous views of a form upon a screen. Unlike a photograph, which is immobile, the cinematograph is an apparatus of

movement, and therefore capable of modelling thought. In this model, Bergson explains, we take snapshots of reality, which become situated upon the apparatus of knowledge. In short, he affirms, "the mechanism of our ordinary knowledge is of the cinematographical kind" (332). But intriguingly, in both Bergson and Greenaway's engagements with the cinematographical apparatus (and in Deleuze's analysis of Bergson's *Creative Evolution* in *Bergsonism*) the mollusc or snail produces another facet to the problem of knowledge and perception.

The Eye of the Mollusc

In his discussion of the evolutionary adaptations to the apparatus of the mollusc eye, Bergson notes that "though mollusks and vertebrates have evolved separately, both have remained exposed to the influence of light" (78). According to Bergson, the problem of light instigated an evolutionary change in the mollusc. But why is this a problem? In *Bergsonism*, Deleuze elucidates that the response to the problem of light by molluscs and echinoderms can be seen as "a setback for the *élan vital*" because it shows that "Life as movement alienates itself in the material form that it creates; by actualizing itself, by differentiating itself, it loses 'contact with the rest of itself'" (104). Ultimately, Deleuze continues, this adaptation demonstrates how every species is "an arrest of movement; it could be said that the living being turns on itself and closes itself" (104). Deleuze's interpretation of disjointedness, ruptures, and arrests of motion reveals an important truth about the perceptive apparatus. Marvellous as the eye is, Bergson insists, vision itself is divided "into a mosaic of cells" (90), meaning that *reality is decomposed and recomposed by the apparatus of the eye.* The mollusc, then, is an exemplary organism in Bergson's analysis, demonstrating both a departure from the ocular mode of perception and an arrest of motion. Taking Bergson's observations of the mollusc eye into consideration, I find further proof that Greenaway's tableau vivant of snails (which arrests the taping of the twins's descent into

decomposition) intends to demonstrate an inventive alternative to conventional modes of perception and traditional narratives of evolution. In the final scene of *Z&OO*, snails arrest the motion picture in order to illustrate the events or states of becoming that the human observer apprehends. Uniting matter and mind, the decompositional tableau of the film's denouement invites the audience to reflect on the problem of life as duration, which we only ever perceive in instants, snapshots, and discrete moments.

Conclusion: Thinking Creative Evolution

The nought in Bergson's analysis, and in *Z&OO*, offers an alternative way of thinking about the fallacy of origins and endings, the artifice of representational systems, and the limits on methods of observation and perception. Life, as Sir David Attenborough points out, appears "apparently out of nothing" in the narrative of evolution, and this spontaneous eruption of life emulsifies our epistemological and ontological coordinates.

Similarly, positioned as we are now in a moment of the Anthropocene, an ending is something we can only imagine, even as we are confronted with a flood of snapshots as it unfolds. In order to understand our organistic-being and species-being in deep time, we must think and enact slowness, like the snail. We must find ourselves unseated, arrested. The parameters of our own individual timescales, and of the longevity of the human species, are ultimately ordered and disordered in this slow, ruminative distortion and distention of time. To apprehend this is to affirm that the creativity of evolution exists on a register outside the reach of empiricism, and beyond the borders of any natural scientific or aesthetic system that would submit life to a classificatory frame. It is to acknowledge that our attempts to fully capture the operations of creative evolution will always come to nought: that is, to the renewed production of endless decay and regeneration.

CHAPTER THREE | *corals*

The Geo-Vitalism of Coral Reefs

Fifty feet below the surface of the Caribbean shoreline, a verdurous spray of encrusted fan algae oscillates in the current, its base adhered to a concrete human form that has become a habitus for protrusions of yellow staghorn coral and the porous columns of violet-hued sponges. This is a post-mortem underwater world; a decaying Atlantis harbouring the submerged remains of the human in the pelagic expanse of blue water, teeming with the flittering schools of parrotfish and the scuttling of crustaceans. The striating patterns of light that shift kaleidoscopically in this aquatic gallery illuminate the vibrant assembly of marine organisms that congregate and disperse upon the ocean floor. Life pulsates here.

The extraordinarily beautiful figures that populate the seabed of Jason deCaires Taylor's underwater museum provide the infrastructure for a flourishing assembly of marine organisms, making possible the regeneration and reclamation of reef formations that have been decimated by mass coral bleaching and ocean acidification. As a site for the renewed growth of coral reefs, the human form is represented as an abode for coral species in deCaires Taylor's eco-artistic project. Yet these eroding figures, colonized by all manner of sponges, algae, and coral polyps, eerily resemble full-body death masks. In this project, *the survival of corals is predicated on the demise of the human as we know it*.

Fig. 23. "The Silent Evolution." Jason deCaires Taylor, 2012. underwatersculpture.com

The models for deCaires Taylor's bio-artistic installation are local fishermen, school children, and residents of coastal towns: representatives of the human communities most exigently affected by the decline in coral reef ecosystems. In using these human forms for his sculptures, deCaires Taylor gestures to the embeddedness of the human in oceanic ecosystems, but he also advances an astute critique of the human activities that have contributed to global warming and its mounting threats to species biodiversity. As we well know, the future of coral reefs is precarious. While we have witnessed the decline of coral reefs across the globe — from the Great Barrier Reef of Australia to the formations of fringing reefs off the coasts of Cancun, Mexico — we have been slow to respond to their systematic disappearance, and our efforts at conservation have been grievously insufficient. With each passing year, coral reefs (and the ecological networks they support) are increasingly under the threat of extinction.

Drawing attention to the impending collapse of coral reef habitats, deCaires Taylor admonishes his viewers to "*think deep*" — to immerse ourselves in an underwater otherworld where fireworms scrawl messages as they feed, tunicates explode from faces, sea urchins plod, and purple sponges "breathe water like air."[29] This is a shift to a submarine perspective — reflective

[29] Jason deCaires Taylor, "An Underwater Art Museum: Teeming with Life." *TED* Talk. Oct. 2015. Accessed Jan. 2017. https://www.ted.com/talks/jason_decaires_taylor_an_underwater_art_museum_teeming_with_life

of Darwin's subterranean view of life — where we consider what it means to "think deep" in a time of environmental crisis. deCaires Taylor's eco-artistic project reminds us of some of the urgent questions we face in the present era. What happens, for instance, when the coral polyp's reef structures no longer serve as a habitus for life? How does the well-being of the earth's coral reefs set the precedent for a future of planetary health, including the future of the human species? What place does the human have in protecting coral reefs from the effects of global climate change?

Contextualizing Darwinism's decompositional aesthetics in an era of ecological uncertainty, this chapter interprets creative representations of the past, present, and future of coral reefs through the lens of Darwin's coral theory, which I read as an affirmative study of the *geo-vitalism of coral reefs.* Reprising the significance of Darwin's findings for the present day, I define the geo-vitalism of corals as the creative capacity of the coral polyp to generate life-sustaining structures through the productions of barrier reefs, fringing reefs, and coral atolls. I show that in contemporary literature and art that engages with Darwin's coral theory, coral reefs are depicted as a central figure in the earth's natural history and in the as-yet-unwritten narrative of the Anthropocene.

Like the worm and the mollusc, the coral polyp's material expressions enable a post-mortem poiesis: an active and creative re-arrangement of inorganic and organic elements by necro-ecological agents. But unlike the worm and mollusc, *the coral reef has a unique architecture that sustains life itself through its constructions and disintegrations*. I outline the features of Darwin's coral theory in the first section of this chapter, which reviews Darwin's landmark study *The Structure and Distribution of Coral Reefs* (1842) along with images of Darwin's coral reef maps. I further analyze the importance of Darwin's coral research in relation to vitalist studies of the period, arguing that

Darwin's curious interest in the coral's calcium exoskeleton (rather than in the coral polyp itself) highlights a deviation in vitalist debates from the "lively" coral polyp to the seemingly "dead" and decomposing coral reef structure. Contrary to natural scientists of the eighteenth and nineteenth centuries, who debated the vitalist properties of the polyp, Darwin sees coral reef structures as vital and life-giving geological formations. Building on this premise, I propose that Darwin's geological study of reef structures becomes the basis for a vital materialism that is engendered by multi-species decompositions and by the organic minerals (namely calcium carbonate) that are integral to the formations of the coral reef. Darwin's presentation of a geological theory of coral formations demonstrates that coral polyps, much like the worm, participate in the making of the world through their infinitely slow, small, and cumulative contributions. Following from Darwin's insights into the geo-vitalism of coral reefs, I reason that the sepulchral limestone structures of the polyp are a post-mortem monument and a fabulation of life on earth from its earliest beginnings to its forthcoming inscriptions in the Anthropocene.

In defining the geo-vitalism of corals as the creative world-making capacity of the coral polyp to produce life-sustaining geological formations, this chapter turns to contemporary creative representations of coral reefs, each of which provocatively captures the vital, life-giving architecture of the continually (de)composing coral reef, as first apprehended by Darwin in his early geological study. Rebecca Stott's historical fiction *The Coral Thief* (2009) and Jason deCaires Taylor's underwater sculptures (2007-present) engage with Darwin's coral theory in two distinct ways. For Stott, the coral is the central figure of the planet's natural history and the "key" to interpreting species divergence. Her novel maps the remains of the primordial coral in the limestone quarries of early nineteenth-century Paris in order to explain how the coral serves as the prescient observer of the origins of life on earth. For deCaires Taylor, on the other hand, the

coral is the emblem *par excellence* of the Anthropocene; it is a chronostratigraphic organism (or an "index fossil") that chronicles an organism's life cycle, akin to the maturing rings on a tree. In my analysis of four of deCaires Taylor's coral reef sculptures, I argue that these undersea exhibits are characterized by a decompositional aesthetics that is created by a diverse assembly of aquatic organisms that effusively colonize the porous buds of the coral polyp's calcium exoskeleton as it endlessly erodes and settles into new geological formations. The health of coral ecosystems in this immersive gallery is contingent upon the decay of these concrete human forms, which are remade into a residence for successive generations of marine organisms. Thus, in deCaires Taylor's sunken sculpture gallery, the seascape is chiefly marked by the decomposition of the human into new and nutritive forms that foster both human and non-human life. Like the mouldering ground of Byatt's *Angels and Insects*, the leaf litter of Collis and Scott's *decomp*, and the boggy swamp of Greenaway's *A Zed and Two Noughts*, the ocean for Stott and deCaires Taylor mobilizes lively human-animal assemblages that thrive in decay. However, the basis of this inter-species collaborative art practice is the construction of hospitable homes for other forms of life, supporting Darwin's poignant assertion that all of life that grows from the great Tree of Life sprouts from the base of its dead and decomposing branches.

Each of the following sections expand upon these claims. The second section of this chapter, "The Engraved Embankment: Cartographies of *The Coral Thief*," is devoted to evaluating the structure and distribution of coral reefs in the limestone embankments of the Paris Basin. Exploring how the trope of keys and maps track the time and space of evolutionary progress in Stott's novel, I argue that Stott fictionally maps the stratified and sedimented layers of what remains of ancient coral reefs in nineteenth-century France (utilizing actual maps from the period). In doing so, Stott advances a minor Darwinism that follows Darwin's descent into "a

heady underworld of thieves, émigrés and startling new ideas" — as the book's back cover proclaims. I further show how Stott's Neo-Victorian narrative, like Byatt's *Angels and Insects*, presents its readers with a sedimentary plot line that introduces the limestone quarries of the Paris Basin as the declining backdrop for the protagonist's natural scientific studies of ancient aquatic species. Yet as a *roman à clef* (a novel with a key), Stott's historical fiction represents its protagonist as the personage of Charles Darwin, staged in a subversive world of Parisian robbers, transmutationist thinkers, and a geological archive of coral reef remains. According to Stott, Darwin is an infidel: an enigmatic thinker whose ideas on theories of transmutation and the mechanism of natural selection detonated the parameters of natural science in the Victorian period. By drawing her protagonist into the quarries and chalky cliffs of Paris in 1815 (at the time dominated by the taxonomical work of Baron Georges Cuvier), Stott's novel redirects her readers away from the conventional sites of natural scientific practice — such as Paris's illustrious *Jardin des Plantes* and its archive of natural history specimens — and into the sedimented layers of coral fossils. In doing so, Stott re-imagines the city of Paris as an ocean, replete with "unmapped cave[s], monsters, pearls, things undreamt of, overlooked by everyone else" (55). This post-mortem cartography of corals reveals a subterranean otherworld swarming with the remains of plesiosaurs, sea turtles, and the creative expressions of the splendid coral polyp. It also enables Stott's readers to contemplate the resounding impact of Darwin's interpretation of deep time (the multi-millennial timeframe), which for some of his contemporaries confounded the time of the quotidian and shattered the narrative of creation found in Genesis. As a fictionalization of Darwin's great Tree of Life from the *Origin* and of Darwin's engagement with Cuvier's comparative anatomical studies, *The Coral Thief* plays with the evolutionary time and space of

coral reefs, illuminating the ways in which these exemplary organisms initiate the earth's decompositional processes while leaving behind a chalky limestone "map" of its labours.

The next section of this chapter, "Sub/Merging with Corals: deCaires Taylor's Coral Sculptures," analyzes how the decompositional aesthetics of deCaires Taylor's coral sculptures are grounded in the creativity of contingency. deCaires Taylor's work engages implicitly with Darwin's coral theory by producing alternative mappings of the ocean floor that regenerate coral ecosystems that have previously succumbed to mass bleaching. deCaires Taylor's bio-artistic project models the evolutionary principle of creative contingency, in which new forms are made and unmade according to the pressures of a number of external stimuli, from the temperature and acidity of the water to the impact of pollution and oil spills. Submerged upon the seabed off the coasts of France, Mexico, and the Canary Islands, deCaires Taylor's installations emphasize the contingent forces that shape the earth's underwater vistas and valleys. How the sculptures will appear after five years, five decades, or five centuries under the sea is a matter almost entirely up to chance.

Following from these analyses of Stott and deCaires Taylor, the final section, "Coral Chronostratigraphies: Mapping the Anthropocene," interprets Darwin's early insights on the geo-vitalism of corals in relation to the convergence of evolutionary theory and ecological responsibility. In this section, I aim to bring Darwin's evolutionary thinking into conversation with discourses on mass extinction and the impact of global climate change upon the health of aquatic ecosystems. I also explore how in spite of the environmental crises that oceanic ecosystems face today, the coral reef structure is inherently futuristic: its design is intended to furnish marine organisms with a home made from the "dead" matter of the coral polyp's calcium

exoskeleton. Based on this fact, I understand the coral as a model for mapping the coordinates of the evolutionary past, present, and future.

In interpreting the coral as an engineer of life-sustaining structures and as a stenographer of past geological epochs, we might question whether it is possible to predict the unwinding outgrowths of an Anthropocenic era that has not yet completely inscribed itself into the earth's strata. This chapter responds to this concern by critiquing the positioning of the human at the centre of the modern epoch of the Anthropocene, and by replacing it instead with an examination of the futurity that is characteristic of, and integral to, the structure of coral reefs. In the same way that the first chapter of this project expanded the view of natural history to the planet's post-mortem past through the vermiform, this chapter investigates how the coral reef incites us to imagine an *evolutionary hereafter.*

Working against an anthropocentric view of a planetary future (in which the human orchestrates the apocalyptic narrative of the Anthropocene), this chapter instead asks: If coral reef structures sustain life, how might we read corals affirmatively, in terms of *what they have yet to do*? As we learn from Darwin, the calicles (or calcareous limbs) of the coral reef are the remnants of the buddings of life out of past generations of coral polyps, but they are also an abode for a diverse assembly of future generations of aquatic species *still yet to arrive*. As geo-vitalistic organisms, corals are exemplary necro-ecological agents because they shape the geological formations that nurture new forms of life. The coral demonstrates to us that the work of evolution is always in progress, even if it is precariously caught in a narrative of its own possible extinction.

Given that Darwin's geo-vitalistic theory assumes the futurity of coral reefs, the research questions that arise in this chapter pose a critical intervention into Anthropocene Studies.

Following Donna Haraway, who questions the efficacy of the term "Anthropocene" for capturing the diverse inter-species networks of the future of the planet in her book *Staying With The Trouble: Making Kin in the Chthulucene*, I ask whether the Anthropocene is a locatable process, given that it is still currently writing itself. Is it not in motion, and if so, how do we map it? Is it a stratigraphic threshold? If the coral reef can be read chronostratigraphically (that is, as a material record of geological epochs past), then how do we understand the time and space of the Anthropocene? How might we set the parameters for what constitutes a geologic "interval"? Furthermore, how does the art and literature featuring the labours of corals enable us to imagine the preservation of human and nonhuman animals in the earth's strata, readable hundreds of millions of years from now? These research questions push us to reconsider the past, present, and future of coral species, along with our frameworks for interpreting evolutionary time.

By detailing the significance of these coral productions in Darwin's thinking, I resolve in the conclusion to this chapter that "thinking deep" in the Anthropocene necessitates an undersea submersion, fathoms below the surface of that which is familiar to us as a terrestrial species. Undertaking a submersion below the surface, this chapter therefore responds to Stacy Alaimo's call for "models of new materialisms across the vast, liquid, and barely known expanses of the seas," and alternative "modes of knowing and being and acting" in oceanic ecocriticism (489). In their creative representation of the geo-vitalism of corals, Stott and deCaires Taylor seize upon our fascination with nonhuman forms of life that inhabit the ocean. But unlike Alaimo, however, who argues for "a transcorporeal, oceanic ecocriticism [that] floats in a productive state of suspension, between terrestrial human habitats and distant benthic and pelagic realms" (490), this chapter advocates for full submersion: an ablution of the brain, a baptism, a shock to the system by cold water. Following the model of the coral, which is in a continuous state of subsidence

(expanding and sinking), I contend that the works of Stott and deCaires Taylor embark on an odyssey into the post-mortem planetary past, pulling us into a deeper relationship with marine organisms, both living and dead.

This revision of the cultural and historical narrative of corals in natural science and especially in the study of literary geology ultimately produces another fold to what esteemed marine anthropologist Stefan Helmreich calls the "durable, multiple, and porous inheritances of coral" (2). More specifically, by unravelling the coral reef as a form of vital materialism in Darwin's evolutionary musings —from his research notes and correspondence to his corals manuscript and its accompanying illustrations — I argue that we can discern how decay operates in the wider purview of Darwinism's decompositional aesthetics. As we bring Darwin's coral theory into the present era, we can also examine how the coral for Darwin emblematized living processes in deep time as a conflagration of vegetable/animal/mineral, and how it today serves as the key image of an incipient, still-unrecorded narrative of evolutionary futures.

Darwin's Coral Theory

> *The tree of life should perhaps be called the coral of life, [its] base of branches dead; so that passages cannot be seen.*
>
> — Charles Darwin

> *These tiny animals en masse could light up the sea or make islands or conquer the sea. Accumulated labour and immense time…Corals were animals, but they were also islands.*
>
> —Rebecca Stott, *Darwin & the Barnacle*

The simplicity of the coral polyp, coupled with the impact of its additive labours over thousands of years, enthralled Darwin during the course of his voyage on the HMS *Beagle* from 1831-36. The humid islands of Mauritius and frothy shores of Cocos (Keeling) in Australia were among a number of anomalous formations that provoked much discussion in scientific circles throughout the nineteenth-century. Moreover, the coral polyp was at the centre of vitalist debates

due to its status as a "boundary organism" that intersected life and death (soft, vulnerable polyp body and hard calcium exoskeleton), along with the categories of animal/vegetable/stone (Helmreich 2). Adding a geological perspective to these vitalist debates, *The Structure and Distribution of Coral Reefs* was the first of many brilliant scientific treatises written by Darwin throughout his lifetime, but was unique for its focus on three key geological formations: the fringing reef, barrier reef, and the low-lying coral atoll. In identifying these three structures, Darwin offered a compelling explanation for the construction of landscapes over vast periods of time — a theory which would further develop in complexity in *The Origin of Species* and in his final manuscript on earthworms in 1881.

Unlike Darwin's worms book, however, *The Structure and Distribution of Coral Reefs* is rife with cartographical illustrations that document the characteristics of elevation and subsidence and outline complex intersections of strata that appear in the cross-sections of coastal mountains. Sketches in his *Santiago* (1834) and *Despoblado* (1835-36) notebooks, which served as an early outlet for his coral observations, feature a series of maps from the west coast of South America that outline a hypothesis of volcanic eruption and coral reef subsidence. Closely analyzing these landscapes, Darwin highlights his conclusions in the preface of his book. "Briefly," he writes, "this theory is as follows: That — as the polypes [sic] cannot live below a depth of 100 feet, and are killed by exposure to sunshine and air, and could not therefore have grown upward from those vast depths to which the coral masses extend — each atoll began as a fringing-reef, then became a barrier-reef, and at last appeared as a ring of coral with a central lagoon, owing to slow but progressive subsidence of the site on which the polypes first began to build" (x).

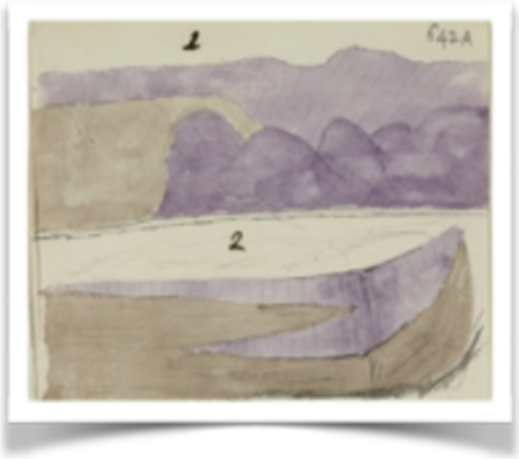


Fig. 24. *Beagle* Field Notes. DAR37.642A. *Darwin Online*.

In four subsequent chapters of *The Structure and Distribution of Coral Reefs*, Darwin goes on to delineate the process by which coral debris gathered by the waves heaps together a sandy beach composed of "finely triturated fragments of stony zoophytes" (23). In some cases, this process leads to the immense structure of the atoll, which is "filled up with banks of mud and fields of coral, both dead and alive" (28). Darwin describes wading through these fields of dead branching corals (such as might be identified in area B' B' in the diagram below), which were "still upright, but entirely dead…of a brown colour, and so rotten, that in trying to stand on them I sank halfway up the leg, as if through decayed brushwood" (31). In Darwin's observations, these structures were composed of an immense quantity of biomass generated by molluscs and other vermiform animals feeding on the coral.

We learn from Darwin's explanation of decaying reefs that the coral, much like the worm and mollusc of the preceding chapters, opens up a radical alternative to the taxonomical and classical nomenclature of natural science. Unique to the coral, according to Darwin, are the dead and decomposing calicles that are created by the industrious activities of the soft, tubular polyp. While the labours of the earthworm are evident in the humus and castings it leaves behind, the coral produces limbs of porous calcium buds that are ideally suited to the residence of *zooxanthellae* (protozoans that share a symbiotic relationship with the polyp, giving corals their

vibrant colouring). And similar to the shell of the mollusc, whose whorls and spirals represent the visualization of space and time (as I outlined in the previous chapter), the coral tells a story of the planetary past in its maturing rings of calcium. Defying categorization as a composite of animal, vegetable, and mineral, and creating symbiotic partnerships with other marine organisms in and through the post-mortem productions of their calcium exoskeletons, the coral is a taxonomic anomaly. It is, in Darwin's reading, a natural historical record of vast geological epochs that have transformed coastlines and shaped and re-shaped the sandy terrains of the ocean floor.

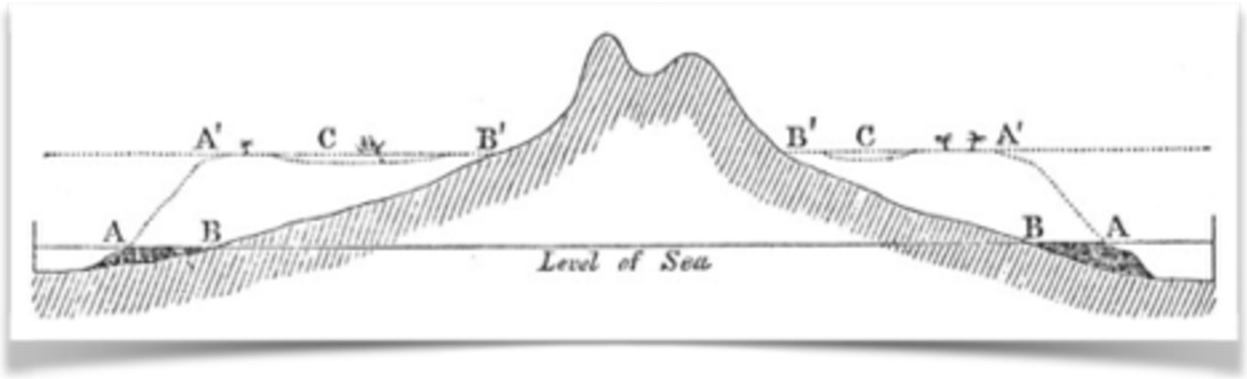


Fig. 25. Atoll Diagram #4. *The Structure and Subsidence of Corals* (98). *Darwin Online*.

Along with mapping the time and space of marine life over protracted periods of time, the decayed shells and sediments of these structures make possible a thriving habitus of living forms. A community of tiny polyps, each no larger than a few centimetres in diameter, can collectively shape hundreds of square miles of the seabed and create a home for an extensive array of aquatic organisms.[30] It is perhaps because of the life-giving capacity of polyps that Darwin once viewed the coral as an analogy for life itself: "The tree of life should perhaps be called the coral of life, [its] base of branches dead; so that passages cannot be seen."[31] With its

[30] In "Coral Reefs in the Anthropocene," Charles Birkeland argues that coral reefs host "at least 30 phyla of animals" (1).

[31] *Life and Letters of Charles Darwin*, Volume 1, page 368.

webbing and branching structures, *the coral is a model for the life of an organism but also for the very formations that sustain life itself*.

Fig. 26. "Coral of Life Diagram." Charles Darwin's Notebooks, 1836-1844.[32]

Philosophers and historians of science still uphold Darwin's consideration of the coral as an apt metaphor for his philosophy of life. Yet today, nearly two centuries after the publication of coral treatise, these scholars have largely overlooked the vital materialism of the coral reef structure. While Darwin's attentive study of coral reefs made an important contribution to natural and geological science in his time, his approach to coral reefs, according to Helmreich, was eventually supplanted with debates on the liveliness of the polyp in modern natural scientific debates (2). This chapter remedies this oversight by showing how Darwin's maps capture the lively world-making capacity of corals. They are lively, I argue, because of their unique capacity to actively map the earth: they encircle sunken volcanoes in order to create lagoons, they embroider intricate fringing reefs along coastlines, and they thrust the seabed upwards with every sprouting branch. The coral is arguably the planet's original cartographer. It is a species that sketches oceanic blueprints, carrying out feats of engineering that propel life forward. Our review of Darwin's coral maps illustrates how the coral reef's vast and expansive transformation of the ocean floor fills the seabed with soft and muddy sediments of dead branches and with the vibrant

[32] Barrett, Paul H., et al., eds. *Charles Darwin's Notebooks, 1836-1844*. Ithaca: Cornell UP, 1987.

limbs of reefs newly propagated by the industrious polyp. It is this mapping of the coral reef's material expressions upon the ocean floor that helps us to further understand Darwinism's evolutionary aesthetics as an art of organistic decay.

The Engraved Embankment: Cartographies of The Coral Thief

Cuvier is a man of Power and Terrain.
—Gilles Deleuze and Félix Guattari, *A Thousand Plateaus*

Stott's narrative subsides into the depths of the entangled bank of Darwin's *Origin*. Transplanting the embankment of Darwin's beloved county of Kent[33] into the limestone quarries of the Paris Basin, *The Coral Thief* re-imagines the grandeur of life at the junction of water and earth, life and death, origins and endings. Once the underwater terrain of a Triassic seabed approximately 250 million years ago, the Paris Basin is now a shallow and capacious hollow of dirt, lined with sedimentary rocks and marine fossils. As Daniel and the coral thief Lucienne Bernard traverse the trenches of the former seabed, they discover the etchings of ancient madrepore fossils upon the embankment walls. Corals, Lucienne proclaims, are the first observers of the origin of species; they are the "missing link" that explains the transmutation of species in evolutionary biology.

Characterized by a geological plot line that is ordered into storeys/strata/stages of the natural historical record, *The Coral Thief* is a "sedimentary" or stratigraphical novel that maps the principle of common descent in evolutionary theory upon the figurative descent of the natural

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[33] The entangled bank is reportedly a real place, according to Darwin's great-great-grandson, Randal Keynes. Arts Correspondent Vanessa Thorpe reports that "The great, great grandson of Charles Darwin, Randal Keynes, is preparing a book of fresh evidence uncovered in the family's former home. Documents found by Keynes directed him towards Down Bank, in Kent, and a hillock called the Orchis Bank. 'This was well within Darwin's daily range and he walked around it for the 40 years he lived and worked in the area,' Keynes told *The Observer*. 'There is strong evidence to suggest that the wonderful passage at the end of *The Origin of Species* refers to this bank of foliage. It is a description that is easily remembered because it encapsulates everything Darwin was trying to say about his theories of natural selection and the struggle for life.'" https://www.theguardian.com/uk/2000/oct/22/booksnews.peopleinscience

scientist into the ancient seabed. Just as Darwin (Stott's protagonist, Daniel Connor) descends into an underworld of thieves, émigrés, and subversive scientific theories, so too does the reader descend into the literary and cartographical layers of the text. In Stott's sedimentary narrative, the stratified layers of cross-sectioned earth that have been shaped and formed by the coral reefs of the Paris Basin become the key to interpreting species divergence.

Stott produces a "minor" Darwinism in her novel that de-stratifies the multiple "molar" Darwinisms that have circulated in past two centuries. In Deleuze and Guattari's geo-philosophy, these molar Darwinisms work to bring order to the chaos of nature. On the other hand, a minor Darwinism is characterized by its multiplicities, its shifting boundaries, and its coupling of individuals and Uexküllian miles on the stratum (48). Cuvier's natural science, according to Deleuze and Guattari's "geology of morals," provides a way of "giving form to matters, of imprisoning intensities or locking singularities into systems of resonance and redundancy, of producing upon the body of the earth molecules large and small and organizing them into molar aggregates" (40). The molarity of Cuvier's natural science of "Power and Terrain," therefore, does not account for the eruptions and disturbances of matter. In their critique of geological strata, which they describe as layers or belts that perform "acts of capture" (40), Deleuze and Guattari argue that strata must always come in pairs: it is the double pincer or double bind (41). Through their memorable axiom, *God is a lobster* (bearing double pincers), they argue that "it is an illusion to believe that structure is the earth's last word," for strata are always "continually being shaken by phenomena of cracking and rupture" (55). Moving away from the ordering mechanism of Darwin's theory of natural selection, the minor Darwinism of Stott's narrative presents a post-mortem cartography of corals in which fossils of organisms long dead erupt into the present. While Cuvier's Museum orders fish fossil specimens according to a rigid taxonomical

scheme, the minor Darwinism of Stott's narrative recognizes the exemplary model of the coral's *stratifying* (reef building) and *de-stratifying* (fragmenting, sinking) processes. In short, Stott's historical fiction delves deeply into a minor Darwinism by sinking into the mud: by becoming untethered in the messy, churning swarm of water and turf, caught between the branchings of the coral reef, and enmeshed in the strata of once-living forms.

Although Stott is intimately familiar with the canonical Darwin of natural science in her role as a Professor of English and Creative Writing at The University of East Anglia and an affiliate of The University of Cambridge's History and Philosophy of Science Department, her narrativization of a minor Darwinism emphasizes how Darwin broke his fidelity to the conventions of Victorian science in order to explore his own theory of life. Staking new theoretical ground, Darwin begins his fictional descent into the subterranean landscape of the Paris Basin during a time in which the transmutationist theories of Lamarck and the taxonomical projects of Cuvier were beginning to give way to new and as-yet unexplored natural scientific territories. With this in mind, Stott situates her work within the genre of the "geological narrative" popularized in the nineteenth century by equipping her readers with multiple maps and keys to interpret these intersecting natural historical theories. Following in the footsteps of Darwin, who enters into the earth's strata searching for clues, readers embark on a descent into the remains of ancient corals and primitive sea creatures in search of a theory of life.

Stott innovates the geological narrative genre by emphasizing the multi-millennial mappings and deterritorializations of Darwin 'the infidel.' To do this, Stott subverts the ordering mechanism of conventional nineteenth-century literary geology. As we learned from Adelene Buckland in the first chapter on worms, geologists in the Victorian period viewed form and narrative as useful strategies for organizing evolutionary history. While literary forms eventually

came under suspicion as a scientific device, early geologists viewed narratives "as a powerful tool for captivating and converting new readers to geology" (Buckland, "Losing the Plot," 12). Elsewhere, in her analysis of maps in geological literature, Buckland insists that "the study of stratigraphy and the production of maps and surveys forcefully redirected geological attention from the causal relationships between geological events to a consideration of the structure and order of the earth's strata ("Thomas Hardy," 2). As we have already established, maps were critical for Darwin's evolutionary theory because they enabled him to back up his narrative of life on earth with material substances: strata, coral fossils, and other geological measurements. His map from *The Structure and Distribution of Coral Reefs* (Fig. 27 below), for example, outlines the material outspreading of the coral's labours across the globe and over the millennia, during which time reef structures supported all manner of primitive forms of life. However, by re-mapping these spaces in the subterranean depths of the Paris Basin, Stott presents a post-mortem cartography of ancient coral fossils that encapsulates the colossal and ultimately unknowable multi-millennial timescale of evolutionary progress.

Fig. 27. "Coral Map." *The Structure and Distribution of Coral Reefs* (1).

True to the *roman á clef* form, the "key" to reading these maps and stratified layers of text in *The Coral Thief* is interpreting the main protagonist, Daniel Connor, as the historical personage of Charles Darwin: a man who "steps into the undergrowth, where branchings and forkings

chance along a different axis, where he might begin to see the sublime contingency that is at the root of all things" (1). As a young medical student from Edinburgh, Daniel is travelling to Paris to take up an internship at the *Jardin des Plantes* under the supervision of the acclaimed natural history professor Georges Cuvier. However, in the opening chapter of the novel, Daniel encounters a beautiful woman well-versed in transmutationist theory who steals Daniel's precious fossil specimens, and later sweeps him into a criminal world of coral thieves, locksmiths, and map-makers.

Lucienne Bernard, the coral thief, holds a subterranean vision of the deep past that compels Daniel to explore the significance of corals in the history of life on earth. While on board an overnight train to Paris, she tells Daniel:

> Everything you see from there to there, the entire Paris basin, was underwater thousands of years ago. Paris was just a hollow in the seafloor then. There were cliffs of chalk over there, see, where the land began. Picture it — giant sea lizards swimming around us, oysters and corals beneath us, creatures with bodies so strange we couldn't possibly imagine them, crawling across the seabed. Later, when the water retreated, the creatures pulled themselves onto the rocks to make new bodies with scales and fur and feathers. Mammoths wandered down from the hills to drink from the Seine, under the same moon as this one, calling to one another. (4)

Lucienne believes that all of life is in flux, and that corals in particular are the missing link in the puzzle of evolution. In her collection of rare and invaluable coral specimens from around the world, Lucienne is guided by a philosophical interest in evolutionary theory. "'Corals know things that we do not know,'" Lucienne tells Daniel, "'they know how old the earth is…they know how

life on earth began. They know how animals have changed down there on the seabed, the way bodies have mutated and transformed from fishes to reptiles. They've seen it. They know it'" (73). For Lucienne, the coral is the key to understanding the history of life on earth.

This trope of keys and maps resurfaces throughout Stott's narrative as Daniel and Lucienne become entwined in a plot to break into the *Jardin des Plantes* to steal a precious diamond that will further fund their nefarious schemes and novel theories. Unaware of this heist, Cuvier and his attendants are busily cataloguing fossil fish specimens — a subject close to Cuvier's heart (Dobbs 20) — in preparation for the publication of Cuvier's colossal treatise, *Le Règne Animal* (1817). Lucienne, however, proclaims that Lamarck's colleague, French naturalist Étienne Geoffrey Saint-Hilaire, erroneously views fish species as the *chaînon manquant*: the missing link. Lucienne explains that when Geoffrey dissected a fish from the waters of the Nile, "he found bronchioles that look like the lungs of a human. It changed everything for him. It made him finally see we've all come from one form. I kept telling him it was the Red Sea corals we should be looking at. Further back. They're the key, professor I'd say, not the fish" (85). Without this key, Cuvier and his fellow anatomists at the *Jardin des Plantes* are barred from finding an explanation for the mechanism of evolutionary processes. According to Lucienne, the map of evolution remains unchartable for the natural scientist who is unable to obtain the missing key.

Taking into account Stott's innovation of the geological narrative genre, it is clear to see how the maps and keys utilized by Daniel and Lucienne enable a descent into a post-mortem underworld. The blueprints developed by French naturalist Joseph Deleuze (1753-1835), we learn, allow Lucienne and Daniel to secure an aerial impression of the *Jardin des Plantes* and to later develop a plan to enter the quarries following the diamond heist. However, the map drafted by Deleuze is curious not only for its labyrinthine coordinates but also because of Deleuze's

interest in animal magnetism and the "vital fluid" of organisms. Since we are also meant to interpret the character of Joseph-Philippe-Francóis Deleuze as an historical figure, it is significant to our reading of Stott's novel that the mapping of coral life intersects with the dusty quarries, catacombs, and sodden pathways of Paris's National Museum of Natural History, where the historical figure of Joseph Deleuze served as the leader of the animal magnetism movement.

As a popular theory of the 1780s-1830s, animal magnetism focused on the regenerative properties of animals by interpreting the action of one body on another as an expression of will. Joseph Deleuze's *Practical Instruction in Animal Magnetism* (1843) outlines the practice of magnetization, focusing particularly on the communal relationships between human and nonhuman animal bodies. Joseph Deleuze argues, for example, that "Nature has established a communion or a physical sympathy between certain individuals" (24). The practice of magnetism is therefore about the *seen* and *unseen* connections between bodies, which are themselves swimming with the spark of life and its vital currents. This vitalist view of organisms and their ecological influences guides readers of Stott's novel to more freely interpret the structures of Deleuze's map as open-ended entryways into the visible and invisible coordinates of ecological networks that are forged in and beyond the National Museum of Natural History.

Fig. 28. Jardin des Plantes, map drawn by Joseph Deleuze. *Histoire et Description du Museum Royale d'histoire naturelle*. Paris, 1823.

Along with Deleuze's mapping of the Natural History Museum and the underground, the "heist" map developed by Lucienne and Daniel is both multidimensional and unrestricted, guiding them in their literal and metaphorical journey into the geological puzzle of corals in the frame of multi-millennial time. As Lucienne and Daniel plan their break-and-entry into Cuvier's Museum, for example, they superimpose alternative maps and lists on top of Deleuze's carefully drawn oblong map (Fig. 28 above). Utilizing the numbered components of Deleuze's key (or map legend) to make connections to his own list, Daniel assembles a route through the maze of buildings, including "the beehives, the labyrinth, the cedar of Lebanon, a dairy, the park and hut for the zebra, the garden for experiments, borders for aquatic plants, flowers for ornament, greenhouses, hot frames, seed gardens" (165). Daniel also makes another map depicting the layout of Cuvier's laboratory according to "a prose description written by Joseph Deleuze" (166). These overlapping maps in turn, Daniel says, "took us further in, further down, further into the heart of things" (166). In their downward climb through the maps of time and space, Daniel and Lucienne de-stratify one map by heaping it upon another. Like the coral polyp, which stratigraphically produces layer upon layer of its calcium exoskeleton, Lucienne and Daniel's map serves as a geological model that takes them deeper into the strata of the earth.

This becoming-coral via a descent into the seabed sheds new light onto the seen and unseen operations of life's evolutionary processes in Darwin's entangled bank scene. Yet unlike the birds and worms of Darwin's muddy bank, the fossils of the quarry as the fragmented lines in the narrative of the deep past. Lucienne and Daniel interpret the post-mortem fragments embedded in the walls of the quarry "as if they were books or clocks" (229); they are drawn, as if magnetically, to the vital spark of these post-mortem fragments. Daniel contemplates the sublime grandeur of the primitive coral fossil as he runs his fingers along the "powdery limestone…

remembering that it was made up of the remains of thousands of sea creatures that had died on some seabed millions of years beyond my own rememberings" (220). As the narrative comes to a close with each successive dig into the strata of the quarry, Lucienne and Daniel discover that the fossil embedded in the embankment wall offers a material testimony of the vast and invisible proceedings of evolution.

Stott's narrative demonstrates the significance of the fossils's stratification and destratification in the storeys/stages/narratives of the earth's geological record. Unlike the catalogued and carefully sequenced collections of the ground-level Natural History Museum, the quarry is an underground labyrinth of cross-sectioned earth that enables Lucienne to observe the assembly of fossil fragments and their contiguous relationships to fossil remains both above and below. When interpreted in layers, it becomes possible to understand the scale and scope of the world-making capacity of corals over the geological epochs. Lucienne, for instance, points to a figure etched in the stone: "'See the madrepores, the circles here and here, and these sea creatures here, mixed in amongst the shale. Their bodies made the continents, over millions and millions of years'" (188). Through this portrayal of the geo-vitalistic labours of corals, Stott dextrously wields the multifaceted meaning of the strata as a storey, stage, or story (218). Combining metaphors of elevation and subsidence, temporal progression and performance, and a narrative of natural history, Stott's sedimentary plot line outlines measures of space, of time, and of narrative. Correspondingly, the embedded madrepore coral fossil in the embankment wall is represented in the text as a scaffolder, stratigrapher, and stenographer; an organism uniquely qualified to record the creative material iterations of coral bodies over the millennia, and deep into the earth.

As a minor Darwinism in *The Coral Thief*, Stott's geo-vitalistic portrayal of Darwin's entangled bank provides us with an alternative framework for thinking through the impact of Darwin's temporal and material engagement with evolutionary theory. By bringing Darwin into the dusty pathways of the Paris Basin, Stott emphasizes a minor Darwinism of messy materialities and the immense scales of time and space. Such an interpretation of Darwin invites us to conduct a post-mortem of Darwin's writings, returning to *The Structure and Distribution of Coral Reefs* in search for the map and key that will allow us to re-interpret Darwin's insights into the exemplary contributions of corals.

Sub/Merging with Corals: deCaires Taylor's Underwater Sculptures

> *Compounded of sediments and telluric cogencies, a maker of heterogeneous aggregates, stone accretes, contains, conveys.*
>
> —Jeffrey Jerome Cohen, *Stone*

> *Perhaps art begins with the animal, at least with the animal that carves out a territory and constructs a house.*
>
> —Deleuze and Guattari, *A Thousand Plateaus*

If the minor Darwin of the post-mortem teaches us that the world is alive and creating itself through the slow, cumulative contributions of corals in the depths of the seabed, then the artistic productions of Jason deCaires Taylor demonstrate how coral formations both make and sustain life. Creating a habitus for corals and their ecological networks, deCaires Taylor's artistic project literally structures and re-distributes coral reefs, in turn demonstrating how evolution is shaped by contingent processes. In my analysis of deCaires Taylor's *The Lost Correspondent, Un-Still Life*, *The Silent Evolution*, and *Anthropocene*, this section brings Darwin's evolutionary theory into contact with the environmental aesthetics of the Anthropocene. As a model of the coral polyp's death and regeneration, the habitats of deCaires Taylor's underwater sculptures are made possible through the revivification of coral ecologies. Considering the future of these artificial structures (which are designed to survive just long enough to ensure that the coral can sustain

itself independently), coral habitats invite us to deconstruct the Anthropocene as a stratigraphic concept and a "locatable" process. What deCaires Taylor's work proposes is a productive revision of this concept to include the potential of the human to reform the life-giving and life-sustaining structures of the coral. While launching an urgent call for a response to human-initiated global warming, deCaires Taylor's aquatic museum illustrates how dismantling the human as we know it can open a vital aperture into discussions of how human and nonhuman animal species can co-habitate and sustain future forms of life. As I will argue, the decompositional aesthetics of deCaires Taylor creates a surplus in which *life creates life*: but it is up to the human to nurture habitable territories. To create this shift from environmental desecration to ecological subsistence, we need to "think deep" — to sub/merge with corals. Following deCaires Taylor's imperative to "detach your imagination from the confines of the terrestrial world" (*Artlantis*), this section undertakes a post-mortem and posthuman plunge into the Anthropocene.

Contextualizing Environmental Art for the Anthropocene

deCaires Taylor's artwork participates in a wider turn in the art world known as "Earthworks" or "Land Art." The biography page of deCaires Taylor's underwater sculptures website explains that this artistic practice is combined with environmental activism: it is

> a new form of art that maintains aesthetics (in a traditional sense) but is also conceptually-based, aim[ing] to raise awareness of the broad health of the environment or highlight specific concerns. Building on the foundations laid out by the Land Artists, a new generation of artists has emerged that place environmentalism at the forefront of their practice, each with unique concerns and ways of addressing these concerns to draw the attention of the viewer. The art of Jason deCaires Taylor is

> situated within this emerging environmental paradigm of art, taking the viewer to the depths of the ocean. (n.p.)

Composed of pH-neutral cement, these artistic forms are non-toxic, which enables the sculptures to serve as the centrepiece of local ecosystems as coral larvae attach and grow. What is unique about this artistic practice is its location outside the collections of museums and the exhibits of galleries. These underwater sculptures are intended to propagate new life, rather than to preserve the art form as a static and eternal object.

The ephemerality of deCaires Taylor's project is the key to its success. The time of day dictates the visual spectrum of colour that radiates through the water, while the temperature of the water and the cycles of the ocean (which change with the seasons) influence the kinds of organisms that will spawn and take up residence upon the pH-neutral marine grade cement. As deCaires Taylor contends, "No two visits to any given sculpture will be quite the same." From the gallery to the ocean habitat, the installations of coral sculptures that have been submerged below the water's surface create a new frontier of aesthetic practice and aesthetic consumption.

Environmental art for the Anthropocene, from the representational art of Marco Casagrande's architectural installation *Sandworm* (2012) and the crochet-corals of Margaret and Christine Wertheim to the remediative projects of Dutch sculptor herman de vries, such as *Sanctuarium* (2013), adequately addresses the devastating effects of pollution, over-fishing, ocean acidification, and other threats to biodiversity. A number of these artists, like deCaires Taylor, take their cue from some of the first proponents of Land Art during the 1960s. According to Brian Wallis, Land Artists during this period were "disenchanted with the modernist endgame" ("Preface" xxi) and instead worked to produce "site-specific sculptural projects that utilize the materials of the environment to create new forms or to adjust our impressions of the

panorama" and which "are concerned with the way both time and natural forces impact on objects and gestures" (xxx). Integral to these site-specific projects were the forces of decay and ruin, which were often mapped with aerial photographs that would, much like the time-lapse decompositional photography of Peter Greenaway's *A Zed and Two Noughts*, record the impact of wind and water upon the installations.

Land Artists's engagement with site-specific projects mobilizes a critique of the cosmopolitan spaces of the museum and gallery, and also reconfigures the use of maps as a political tool. In *Undercurrents: Experimental Ecosystems in Recent Art* (written by curators of the Whitney Museum of American Art and published by Yale University Press), editors Anik Fournier, Michelle Lim, Amanda Farmer, and Robert Wuilfe outline the keywords of environmental art practice, including the "map" and the "site." They write that "historically, mapping was fundamentally understood as a way to grasp and chart the vast, otherwise unknowable world" but that in the context of eco-art exhibitions, the map is used as both a *noun* and a *verb* in order to deconstruct the politics of place (132-33). Ultimately, they argue, Land Artists approach cartographies and the politics of place through a critical lens that reconfigures the ecological agents that make up these spaces. Notable examples include Michael Heizer's *Nine Nevada Depressions* (1968), which replaced desert soil of a dry lake bed with jagged lines that erode with time, or Robert Smithton's *Spiral Jetty* (1970), which dumped 6.783 tonnes of basalt and earth upon the beach, creating a spiral jetty that eventually disappeared with the tide.

Yet few environmental artists could claim that their productions literally propagate and revivify life-sustaining formations like the coral reef.[34] Although Smithson's *Sunken Island* (1971) became encrusted with small slimy plant life and sponges called "deadman's fingers" during its time in a Florida lagoon, Smithson's intention was not to recreate fringing structures that sustain life, but rather to utilize water, vegetable and mineral matter as a composite whole for his ephemeral art project. With this in mind, what is perhaps most intriguing about deCaires Taylor's artistic philosophy is its collaboration with coral larvae. Yet deCaires Taylor's sculptures are unlike the collaborative paintings of Olly and Suzy, for example, who paint images of sharks in blood and deliver the pieces to hungry sharks, but who retrieve their artworks and hang them in temperature-controlled galleries. By contrast, deCaires Taylor does not sanitize or protect his sculptures, but offers them up to marine life in an act of abdication and inter-species collaboration.

Bio-Fouling: Organistic Decay in Eco-Art

While the art object is typically protected in such spaces in order to preserve its material integrity, deCaires Taylor's sculptures are expected to decay and erode in order for a wild and unwieldy assembly of organisms to take over and re-make the sculpture. This is known, at least in art-historical circles (and in pejorative terms), as "bio-fouling." Phillippe de Montebello, Director of the Metropolitan Museum of Art, claims that entomological, bacterial, and other organic presences in the gallery can "attack" artistic objects. "No work of art," Montebello states, "is immune to microbial attack. Microbes, being cosmopolitan, are a threat to art collections

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[34] One notable exception is eco-artist Colleen Flanigan, whose "Living Art Sculpture" fosters mineral accretion reefs through seascaping compositions that emit a low-volt DC electricity. While her art, like Taylor's, literally generates reefs, her "metal matrix" places less emphasis on the human form as a habitus for life in the context of the anthropocene. http://www.colleenflanigan.com/lss1.html As I will explain, Taylor's reasons for utilizing life casts of the human form incite an important critique of the Anthropocene that Flanigan's work neglects to address.

worldwide, as they are always present in the environment, lying dormant, and waiting for the right conditions to occur so they can flourish" (9). Cyanobacteria, black yeast, lichens, rodents, and other "pests" are considered a factor in the "aesthetic impairment" of artifacts, which can cause their material structure and stability to become altered. While Deleuze and Guattari might assert that art preserves only insofar as "it lasts no longer than its support and materials — stone, canvas, chemical color, and so on" (*What is Philosophy?* 163), they also proffer an alternative: that "perhaps art begins with the animal, at least with the animal that carves out a territory and constructs a house" (*WIP?* 183). In these terms, the animal's deconstruction of the art object is what actually makes art possible.

As an art of inter-species collaboration and sympoetic partnership, deCaires Taylor's work becomes a habitus: a burgeoning milieu of trans-locatable ecological networks featuring organisms such as sea sponges, algae, corals, fish, and zooxanthellae. These artificial reef structures become hyperlinked to other coral reefs through ocean currents (Helmreich 4), but are deliberately at a remove from existing reef structures that have been damaged by scuba divers and other eco-tourists. In communicating with one another, coral reefs work together to share resources and encourage the habitation of zooxanthellae. Like the prescient coral of Stott's novel, these hyperlinked coral reef structures have mastered both independent and interdependent functions over the course of millennia.

Fig. 29. *The Lost Correspondent.* Jason deCaires Taylor, 2007.

The human, by contrast, is entirely out of its depth on the sea floor. Illustrating the recency of the human in natural history and its relative illiteracy in interpreting oceanic transmissions, deCaires Taylor's *The Lost Correspondent* features a human form at an undersea typewriter. Missing its paper, the correspondent ostensibly labours endlessly at his typewriter, yet fails to produce any intelligible communications. The quotidian time of the office space — the nine-to-five, Monday-to-Friday workweek of the typist — stands in sharp contrast to the deep time of coral productions, and the bureaucratic station of the human at a desk gestures to the capitalistic and colonialist attitudes of the human in its participation in global warming. Yet the barren and initially sterile surface of this sculpture becomes, after a mere few days and weeks, carpeted over with mineral accretions that provide a home for marine life. The coral polyp soon makes its own inscriptions, engaging with the stone form that has become a welcome host for a healthy population of non-human organisms. Divers who swim below the surface to encounter this piece may wonder: what might these inscriptions say, a thousand years from now? Would a recovery of the lost — and/or last — correspondent be possible, and if so, who or what would interpret the creative expressions of coral life?

The Lost Correspondent generates a valuable critique, I think, of our inability to know the future of the Anthropocene. We are living out relatively short lifetimes in an as-yet-unwritten epoch, and we are at once the characters in, and authors of, our own version of natural history. The complications this presents can perhaps be addressed, however, by conversing with Darwin, who acknowledges that the human would only ever pick up sentence fragments and water-logged pages of the earth's history of life. Embracing the "sublime grandeur" of these slow and splintered messages, the lost correspondent (that is, us) might come to the realization that these oceanic iterations are always in *medias res*, and therefore always incomplete. Much like the layered maps and stratifications depicted in *The Coral Thief*, the stratigraphic record of time will only ever be unequivocally knowable when it is over, when nothing else remains to interpret this record. This record is, in other words, always already lost.

Yet a completed record would also, for all intents and purposes, be the discontinuance of all of life itself. As such, to be alive is to be in progress — to concomitantly decay and to regenerate. deCaires Taylor's *Un-Still Life* vividly depicts this vitalistic process. The sterility of the water jug and fruit, preserved in a photograph taken when the piece is first submerged, is comparatively flat, lifeless, and dull in comparison to the piece five years later. deCaires Taylor describes the transformation of the sculpture, explaining that the *Un-Still Life*

> has become encrusted in marine life. The table is decorated in a fuzzy layer of turf algae, layers of pink encrusting sponges, and brown coral colonies. Patches of bright red encrusting sponge have grown on the jug and fruit bowl. A sea urchin ambles along, looking like a spiny piece of fruit. A finger of sponge pokes up from the fruit bowl together with a colony of fire coral and a feather duster worm. (69)

Fig. 30. *Un-Still Life*. Jason deCaires Taylor, 2007.

In an interval of five years, the piece has completely regenerated. Through its decay and renewal, the sculpture seems to draw life to itself, becoming more and more lively with time. The fullness of life's diversity and community becomes the main exhibition of deCaires Taylor's work, which in its abandonment to the sea is an act of oceanic reclamation.

Fig. 31. "Grace." In *The Silent Evolution*. Jason deCaires Taylor, 2012.

The regeneration of coral life displayed in deCaires Taylor's underwater museum enables his audience to witness the evolutionary principle of contingency at work. In *The Silent Evolution*, deCaires Taylor showcases the timeliness of particular organisms in their colonization of the sculptures. deCaires Taylor identifies turf algae as the first colonizers, followed by patches of orange and pink coralline algae. "Eventually," deCaires Taylor elaborates, "[Grace's] features are

lost beneath layers of encrusting coral and sprouting tufts of fleshy algae" (deCaires Taylor 62). The chance encounters between the stone sculpture and marine organisms illustrate how chance is central to deCaires Taylor's aesthetics. Moreover, as a kind of death mask (though cast on a living form), the sculpture invites a meditation on Grace's individuality — the shape of her lips, eyes, nose, and the contours of her hair invite particular kinds of configurations of algae. Yet by literally becoming stratified and covered over with living forms (a body on a body on a body, and so on), Grace's body becomes a milieu for all kinds of organisms that rely on her structure to sustain life. In *The Silent Evolution*, art undeniably affirms life.

However, the annihilation of these marine colonizers due to rough storms and even small changes in water temperature can completely transform deCaires Taylor's undersea gallery. The four-hundred figures of *The Silent Evolution* were damaged in a hurricane a few years ago, deCaires Taylor recalls, and will need time once again to rebuild their structures. While the coral polyp is resilient, it is clear to deCaires Taylor that "nothing stays the same" (Interview in *New Scientist*, unpag.). Furthermore, although the pH-neutral concrete that deCaires Taylor uses to construct his sculptures is "highly durable" and specially designed to "stay solid and firm for many years, if not decades, giving slow-moving corals plenty of time to create their own self-renewing edifices" (deCaires Taylor 25), the decay of each sculpture is expected and encouraged as marine life practices its art.

The well-known Volkswagen Beetle sculpture, entitled *Anthropocene*, more explicitly demonstrates deCaires Taylor's interest in creating structures that will serve as residences for other kinds of marine life. The eight-ton life-size VW beetle is unique among deCaires Taylor's other works in that it contains internal living spaces specifically for crustaceans. As an unequivocally clear critique of the fossil fuel industry, *Anthropocene* features an anguished figure on

the car's hood and windshield. The mournful tone of this piece reverberates through the ocean currents. Yet in providing homes for lobsters, shrimp, crabs, barnacles, and other crustaceans, the sculpture establishes a milieu that shelters these organisms from predators, thereby ensuring their preservation. As a mobilization of the "ordinary within the unusual" (McCormick 17), *Anthropocene* celebrates the capacity for old forms to generate new life.

Fig. 32. *Anthropocene*. Jason deCaires Taylor, 2013.

In much the same way, deCaires Taylor's oeuvre as a whole inspires new ways of thinking about our habits, practices, and conventions. Making, viewing, and abdicating art ought to be, deCaires Taylor insists, an "immersive activity." Dire scientific research papers and pedagogical newscasts cannot generate the same awe and curiosity about the Anthropocene as deCaires Taylor's undersea VW beetle car surrounded by tropical fish and seaweed. This curiosity guides deCaires Taylor's decision to sculpt recognizable forms like the human, which would otherwise quickly become unrecognizable under the layers of algae and sponges. "All [of] my work is about change, and forming objects that mirror the transient nature of our lives," Taylor insists in his interview with *Diver Magazine*. Having emerged from the sea, deCaires Taylor states further, humans have "an intrinsic desire and fascination to return there." We are, it seems, searching for our own undersea habitus.

Through an underwater submersion, deCaires Taylor creates a renewed engagement with the environmental crisis of the contemporary moment. Yet his work also more imaginatively builds what Stacy Alaimo regards as our "evolutionary kinship" with the oceanic realm (490). This kind of art emphasizes our estrangement from, and desired intimacy with, a particular version of the human that echoes from the vast depths of sea. This is the irremediable iteration of humanity that arises from "our hermaphroditic, aquatic, evolutionary ancestor" (Alaimo 490), or is perhaps a call from a posthuman and post-mortem future that advises us to plunge into the underwater otherworld in search of our origins and endings. Whatever the message, we hope that it undulates beneath the rippling and heaving waves, surging through deep time towards an evolutionary hereafter — kept company by the slow, cumulative expressions of corals.

Conclusion: Coral Chronostratigraphies

Coral reefs are architecturally engineered to propagate new life: they are, as I have been arguing, characteristically futuristic. But given the impending crisis of coral reef extinction, what remains now is a consideration of Darwin's evolutionary theory and the geo-vitalism of corals in relation to ecological responsibility. Like Haraway, I remain somewhat suspicious of the Anthropocene as an emerging geological epoch characterized by an apocalyptic future and capitolocenic motivations. If we have learned anything from Deleuze and Guattari's axiom, *God is a lobster*, it is that strata are always in a jumble; they are always in motion, evading capture. The naming of a geological epoch, at least until now, has been a posthumous act: geologists have named natural historical eras only by reading between the layers of strata long deposited in the earth. The multiple layers of strata, snapped up between double pincers, is what makes time intelligible. So how do we map the time and space of time of an Anthropocenic future, which has not yet deposited itself upon the earth's surface?

Coral chronostratigraphies produce a new way of thinking that brings us downward, into the subterranean depths. This is where we become posthuman. It involves ensuring that the coral, which is uniquely qualified to carry forward a record of natural history into the unknown future, is maintained as a habitus for new generations of marine life. The significance of this mapping of life and death processes, from the coral diagram as the Tree of Life to the maps of corals that record the geological formations of corals over the millennia, is exemplified in what Justin Prystash describes as a "'horizontal history' of organic development," which serves as both a metaphorical abstraction and a real assemblage of organic components (4). Such a map of time and space invites us to contemplate the significance of climate change and its far-reaching effects, as well as the possibilities for renewed life in a tentacular future.

Haraway's analyses of coral reefs are helpful here, because they serve as a provocation to re-thinking the Anthropocene as a period of "tentacular" innovations and intersections between human and nonhuman animal species. She writes in *Staying With the Trouble* that "corals helped bring the Earthbound into consciousness of the Anthropocene in the first place. From the start, uses of the term Anthropocene emphasized human-induced warming and acidification of the oceans from fossil-fuel-generated co2 emissions" (56). "But coral and lichen symbionts," Haraway continues, "also bring us richly into the storied tissues of the thickly present Chthulucene" (56). It is into these richly-storied tissues of the present and unfolding epoch of the "Chthulucene" that corals stretch their limbs. What this means is not that the human is no longer culpable or responsible for the potential extinction of the corals. Rather, what it means is that the human and and all other nonhuman animal species (including the inorganic matter of minerals and stone) are tentacularly connected in the unfolding of an evolutionary hereafter.

The coral's mapping of evolutionary time and space captures the colossal scales of the planet and its protracted epochs. This is important, because the human cannot responsibly consider the future of the planet in the same way as the coral. This is because the human has a limited sense of time and space, as Jeffrey Jerome Cohen argues: "the ecological project of thinking beyond anthropocentricity requires enlarged temporal and geographical scales. Yet expanded frames risk emphasizing separations at the extreme of material intimacies. In both ecotheory and object studies much critical writing on the inhuman is animated by an order for an unpeopled world" (*Stone* 9). Elsewhere Cohen contends that primordial elements extend across "a life span of eons" and "resist enduring partition, spatial or historical" ("Elemental Environment" 10). Climate exceeds us in scale. But the coral, squishy and sedimentary, is capable of capturing the time and space of climate change. By acknowledging the life-sustaining structures of coral reefs, we can begin to respond to the call of ecological responsibility.

As we saw with deCaires Taylor's undersea installations, the success of a bio-artistic project or of any effort towards the conservation and preservation of ocean habitats is incontrovertibly predicated on human activity. Can the human commit to curbing the effects of climate change? Two very different results follow from this question: either the protection of marine habitats will generate new and colourful habitations of undersea organisms, or the effects of continued environmental damage will leave coral reef structures barren and unoccupied. When under siege from the effects of overfishing and pollution, deCaires Taylor's coral structures will undoubtedly remain in their original forms as sterile and untouched human statues submerged upon the ocean floor. But when humans preserve and improve the health of the sea, the sculptures become lively; as a home for ocean organisms, the concrete human forms are creatively resurfaced and re-made into something new that bolsters the health of aquatic

ecosystems. From these outcomes, we can surmise that *the human must take responsibility for its own embeddedness in a network of ecological agents*. It is by ensuring the habitation of the coral's life-giving structures that the human becomes posthuman. The disintegration of the human makes possible an aesthetics of decay and renewal that models the creativity of evolutionary processes and in turn supports the continued well-being of aquatic environments in a time of ecological uncertainty.

CHAPTER FOUR | *fish*

Decomposing the Book of Life

In hues of pink, ultramarine, cardamine, and vermillion, the still life paintings of William Buelow Gould (1801-1853) depict natural forms in an incandescent kaleidoscope of colours. In "Still Life with Flowers" (1840), as with so many still life paintings in the style of the Dutch Golden Age, the focal point is an arrangement of fresh flowers set upon a table. In Gould's painting, a vibrant blue jug spills over with the soft petals of parrot tulips, the heavy blossoms of roses, a drapery of bleeding hearts, and what appears to be full and suffusive sprigs of larkspur and delphinium. But before he would compose these traditional still life paintings, Gould would create his *Sketchbook of fishes* (1832), a folio of thirty-six watercolour sketches of native fish species of Tasmania. It is this natural scientific book, now recognized as a document of world significance by the United Nations Educational, Scientific and Cultural Organization (UNESCO), that Richard Flanagan decomposes and reinvents in his 2001 novel, *Gould's Book of Fish.*

Fig. 33. William Buelow Gould. "Still Life with Flowers." (1840). 690 x 560 mm. Oil on canvas. Reproduction by the Allport Library and Museum of Fine Arts, Tasmanian Archive and Heritage Office. Wikimedia Commons.

As the convict-cum-artist of Richard Flanagan's novel, Gould would in his early years also paint what Flanagan's narrator describes as portraits of "milky-eyed patriarchs on their deathbed," along with "infant corpses for grieving free-settler families" and "painting[s] of some dead meat in the Dutch style" (73). Showcasing Gould's watercolour sketches of fish, however, *Gould's Book of Fish* is a "novel in twelve fish" that presents, chapter by chapter, Gould's own brilliantly illustrated compositions of native Tasmanian fish species: the *pot-bellied seahorse*, the *kelpy*, the *porcupine fish*, the *stargazer*, the *serpent eel*, the *sawtooth shark*, the *striped cowfish*, the *crested weedfish*, the *freshwater crayfish*, the *silver dory*, and the *weedy seadragon*. While the real William Buelow Gould (born as William Holland in England in 1801) was imprisoned in 1827 at Van Diemen's Island for petty crimes, he re-appears in Flanagan's text under the guise of multivalent narrators, each of which corresponds with one of his real-life aliases, including Sid Hammet, the Surgeon, Jorgen Jorgensen, Capois Death, Pobjoy, and the Commandant.[35] As a post-modern narrative that is part natural history and part colonial history of the penal colony, Flanagan's novel narrates Gould's life story through a vivid lens of colour and putrefying flesh. From the composition of still lifes abundant with "the old rustick favourites — a dead hare strung up by its back legs, a few pheasants, a musket or two, a brown demi john for domestick effect, and a bald eagle on a perch" (75), to the natural scientific illustrations of slimy eels and glossy fish eyes, *Gould's Book of Fish* animates living and dead flesh into a prismatic confluence of word and image.

In this chapter, the decomposition of the "Book of Life" in Flanagan's *Gould's Book of Fish* and in novelist Jim Crace's *Being Dead* (1999) is metaphorically represented by, and personified in, the work of the stinking fish. This fish, from the "Kelpy" of Flanagan's text to the myth of

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[35] In "Set Adrift: Identity and the Postcolonial Present in *Gould's Book of Fish*" Zach Weir explains that these aliases appear in the Colonial Secretary's correspondence files from 5 April 1831 of the Archives Office of Tasmania.

Mondazy's Fish in Crace's novel, mediates processes of decay for individual characters and for a natural history of human and nonhuman species. The aesthetics of this decay, represented prominently in *Gould's Book of Fish* through colour (often sourced from the flesh of human and nonhuman animal bodies) and in *Being Dead* through the funeral ecology of two rotting zoologists, illuminates the putrescent stench and tincture of fish that permeates the natural historical record.

As I explain in the first section on "Fish and Colour Theory in Darwin's Natural Science," the natural history of fish is encoded with the living specimens and dead fossils of Cuvier's comparative anatomy project (reviewed in the last chapter on corals) and with the work of Darwin during his tenure aboard the HMS *Beagle* and in his edited volume of Leonard Jenyn's *Zoology of the Voyage of the Beagle* (Part Four). This edited collection, which meticulously documents the colour of fish species gathered from South America according to Patrick Syme's *Werner's Nomenclature of Colours* (1821), marked Darwin's early contribution to the emerging field of ichthyology. But despite Darwin's attempt to preserve the *Beagle's* collection of fish, the majority of fish species rotted away before they made it to England. Thus, in detailing this natural history of fish, we can examine how the project of taxonomizing fish species was at moments foiled by the slimy scales of the fish, which when dead transforms its colouring and thereby evades accurate categorization.

Elaborating on this natural history of fish, I argue in the next section on "*Gould's Book of Fish:* A Kaleidoscope of Colour" that Flanagan's representation of Gould's scientific illustrations of fish species is notable for its use of colour — both in the reproduction prints of fish that appear from Gould's original sketchbook as well as in the narrative itself, which appears in a veritable rainbow of red, black, mauve, maroon, brown, blue, and green text with each unfolding chapter. I read this novel *prismatically*, as a post-modern experiment with multivalent narration

and as a text-within-a-text (Gould's *Sketchbook of Fishes* within Flanagan's novel), as well as a kind of hyper-text: a text that commands the attention of the reader with each eye-popping hue. Interpreting Flanagan's novel diffractively (as per the method of Karen Barad, who views texts as composites of other texts), I argue that *Gould's Book of Fish* remediates language into the materiality of flesh, which is juxtaposed with the dead and rotting bodies of Flanagan's colonial history of the penal colony. I am interested in particular in the creation of colours by the fictional Gould, who sources the materials for his colours from the blood and bones of animals, the powder from mineral rocks, and even from his own body (from mucus and shit to blood and pus). The scatological references in Flanagan's text gesture to the material expressions of the dead and oozing body and to the methods of aesthetically representing and perceiving "true-to-life" sketches of what during the period were rarely seen and uncatalogued species of native fish. Pivoting between the deep time of natural history and the crude annals of Australia's colonial past, Flanagan's novel enacts what the narrator describes as a "charming kaleidoscope of changing views" that moderate the intersection of past and present, the individual and the collective, and the image and word.

As an extended rumination on rot, the funeral ecology of Jim Crace's *Being Dead* examined in the next section of this chapter reads the decomposition of the human corpses of Joseph and Celice (two married zoologists) as an expression of active, vital, and transformative inter-species interaction. Affirming the creative possibilities of putrefaction, my analysis of Crace's necro-ecological narrative emphasizes the vitality of death through the entangled interactions of organisms both human and nonhuman, living and dead. The "Fish" of Crace's novel is an undertaker: a personification of death that brings the bodies of Joseph and Celice into intimate proximity with a number of tiny micro-organisms, bacteria, vermin, and sea creatures

that consume their putrefying flesh. I argue that through their participation in the decomposition of Joseph and Celice, these nonhuman creatures initiate a lively animacy that incites the demarcation (and dissolution) of the bounds of animal and human, life and death, object and subject. As active, subjective-objective participants in their own putrid mortifications, the corpses of Joseph and Celice are necro-ecological organisms; vibrant, organic, and vital, their bodies enact an enlivened post-mortem "subjectivity" that enables life to go on after death. In my analysis of the colouring of the creatively (de)composing bodies of Joseph and Celice, I explore necro-ecology as a mode that represents death as an active and intimate process of human-animal participations. I argue that the mouldering narrative of *Being Dead* is spun out of the Fish's slimy trails, which are measured by the salt-line of the outgoing tide left behind upon the surface of the corpse. For Crace, the Book of Life is composed and decomposed in the remainders of mucilage and silvery scales.

In illuminating Darwin's work on fish and the putrescent natural history of fish species, I conclude that the fish of Flanagan's and Crace's novels conducts a decompositional aesthetics that (dis)colours the corpse. Exploring the "blackening," "silvering," and "jewelling" of the dead in these texts, I argue that the wordiness of flesh, and the fleshiness of the word, conspires to produce the "storied" matter of the post-mortem. In composing and decomposing the Book of Life in these novels, the Fish inspires an art of decay that connects all human and nonhuman animal organisms in a colour wheel of (de)composition. In these texts, the Fish exemplifies the creative expressions of the dead in the flaking, reddening, and sliming of scales.

Fish and Colour Theory in Darwin's Natural Science

While no book-length monograph on fish species exists in his natural scientific oeuvre, Darwin's contribution to early ichthyology is evidenced by his editorial work on the fourth part of

The Zoology of the Beagle, composed by the Reverend Leonard Jenyns. In *Darwin's Fishes: An Encyclopedia of Ichthyology, Ecology, and Evolution*, marine biologist Daniel Pauly argues that Darwin's contributions to the field of ichthyology can be ascertained by his numerous published works and across his notebooks and correspondence. Pauly explains in the introduction to *The Zoology of the Beagle* in *Darwin Online*, that "Darwin's input into *Fish* was substantial: he sampled all the fish reported upon by Jenyns, who also had access to all of his field notes (notably on live colours and sampling sites). Further, it was Darwin who 'superintended' the publication of *Fish*, as amply documented in his correspondence. Fish were important for Darwin not only because of his "extraordinary devotion to angling, which started at at an early age" (Pauly xvii), but also due to Darwin's early insights into the divergence of fish species. In *Darwin's Fishes*, Pauly recounts the importance of Darwin's dissection of the Lumpfish, arguing that it was this experience that led to "the profound understanding of the relationship between scientific 'fact' and 'theory'" in observing animal specimens (xvii-xviii). As we learned in earlier chapters, Darwin's keen observance of the natural world made it possible for him advance his theoretical hypotheses on principles of natural and sexual selection.

In addition to the significance of the fish in shaping Darwin's early insights into the patterns of species divergence, we also learn from Pauly that an integral component of Darwin's work on fish included the accurate and detailed description of fish colours. "Charles Darwin believed," according to Pauly,

> long before he conceived sexual selection…that the colour of animals matter, and the descriptions of live colours of most of his specimens, e.g. in *Fish in Spirits of Wine*, attest to this. Moreover, he did not let his imagination colour his descriptions, basing them, rather, on the colour-

> coded charts in a book that he took with them for that very purpose (Syme 1821). Thus, we can attribute to Charles Darwin the first rigorous treatment of colours in biology in general, and in ichthyology in particular. (xix)

In short, what Pauly learns from Darwin's work on colour-coding fish specimens in his *Beagle* voyage is that the aesthetic specificities of living specimens (compared with dead specimens) is matter of particular importance in cataloguing fish species. What fascinated Darwin was not only the unique habitats and ancestral history of vertebrates in the oceanic realm, but also the tendency, like the worm, mollusc, and coral, towards hermaphroditism and to a shift in colouring both between species and between living and dead specimens of those same species. Colour is a key component of documenting the natural history of fishes, as it was in Cuvier's extensive study of 5,000 fish species in his *Histoire naturelle des poissons* (1828-1849).

What also intrigued Darwin was the role of fish in decompositional processes. Pauly further points out that "Charles Darwin's thoughts about the ecological role of parrotfishes turned out to anticipate his later work on the slow work of earthworms: he believed that parrotfishes, by consuming corals and defecating calcium carbonate, had created the chalk layers that characterize the Cretaceous" (xxiv). While this claim was not quite correct (parrotfish do contribute to decompositional processes in their role as detrivores, but it is the coral polyp that produces calcium carbonate), it is clear that Darwin's interest in the decompositional aesthetics of fish is evident in his early work from 1831-36.

The distinctions between variations of colours in the copy of Patrick Syme's *Werner's Nomenclature of Colours* are organized genealogically (in families of colours that are catalogued according to gradation). These include colours organized by name and appearance across the

realms of "animal," "vegetable," and "mineral." As a source guide for those working across the arts and sciences, Syme's book features colours like the *deep reddish orange* of the gold fish or the Scarlet Leadington Apple, the *straw yellow* of the polar bear, oat straw, or calamine, the *oil green* of the common water snail shell. These chromatic tinctures are valuable to both artists and naturalists alike, according to Syme, and are highly advantageous for the accurate systematization of specimens in botany, agriculture, mineralogy and chemistry, anatomy, and natural science (23-24). Moreover, Syme writes that his nomenclature of colours aids "the meteorologist, and the hydrographer, by the use of an accurate and standard table of colours…[in describing] the skies and meteors of different countries, and the numerous varieties of colour that occur in the waters of the ocean, of lakes and rivers" (24).

Fig. 34. Excerpt from Patrick Syme's *Werner's Nomenclature of Colours* (1821). Screenshot retrieved from *Darwin Online*.

Fig. 35. "Colour Wheel." Johann Wolfgang von Goethe. *Farbenlehre* (1810). Wikimedia Commons, Online.

The nomenclature of colours produced by Patrick Syme is but one of innumerable sources for artists and scientists that attempts to visually organize colour. These include, but are not limited to: Mark Maycock's *A Class-Book of Color: including color definitions, color scaling, and the harmony of colors* (1895), Robert Ridgeway's *Color Standards and Color Nomenclature* (1912), and of course, Johann Wolfgang von Goethe's famous colour wheel, created in 1809, which appears in his illustrious book *Farbenlehre* (1810).[36] What is curious about this history of colour (and its organization) is that aesthetic philosophy, such as that of Goethe, has further influenced debates concerning the nature of cognition and perception in natural scientific practice. How do I know that what I see is red is the same as what you see as red, or that these gradations are perceived by all species? What is the relationship between the materiality of the organic-based pigments used by artists and the biological pigments that are produced by particular organisms (such as melanin or chlorophyll) that give each species its colour, as in the expression of corals? In modern paint colour productions, for instance, pigments are often still sourced from minerals, plants, and

[36] A full and fascinating overview of the history of colour wheels can be found at http://publicdomainreview.org/collections/colour-wheels-charts-and-tables-through-history.

animal tissues. Vermillion is a mercury compound, while ultramarine comes from the semi-precious stone *lapis lazuli*. Scarlet dye is made from cochineal (a ground powder made from the cochineal insect), gelatine and other animal by-product derivatives are often used in gesso and other chalk-based paints, and charcoal (the charred remains of organic materials) remains a staple in the studios of a number of artists. Yet these pigments are subject to how we, as humans, perceive gradations of colour. As we have already learned from Darwin's passage on the eye in the *Origin* and from Bergson's examination of the mollusc eye in *Creative Evolution*, the eye is a sensory organ that composes and decomposes images. The operation of this sensory organ is also far from uniform across species lines (canines, parrots, and fish, for example, interpret gradations of colour quite differently), and is specific to each species's evolutionary adaptations.

Because the history and theory of colour is bound up in debates in subjective perception and cognition, evolutionary aesthetics in turn depends upon colour and other markers of beauty as evidence for the the sublime viewer in her interpretation of natural phenomena. Yet upon closer examination, colour shimmers and refracts. It evades classification. Like the evolution of species, which occurs on a scale and scope too broad for humans to comprehensively observe, colour angles away from our attempts at standardization. As Victoria Finlay contends in *Color: A Natural History of the Palette*, colours do not really exist:

> or rather they do exist, but only because our minds create them as an interpretation of vibrations that are happening around us. Everything in the universe — whether it is classified as "solid" or "liquid" or "gas" or even "vacuum" — is shimmering and vibrating and constantly changing. But our brains don't find that a very useful way of comprehending the world. So we translate what we experience into concepts like 'objects' and

> ‘smells’ and ‘sounds’ and, of course ‘colors,’ which are altogether easier for us to understand. (4)

The colour wheel of Goethe, much like other attempts at systematizing colours, attempts to capture the nuances and subtle degrees of difference between families of colour. But as a metaphor for species divergence and for the categories of the individual and the collective, the colour wheel is in constant motion. The shift from life to death, similarly, is a kind of prism, not quite existing independent of one another, but bending and wilting, in nebulous and inappreciable shades of colour.

Gould’s Book of Fish: *A Kaleidoscope of Colour*

> *There is something irretrievably fishy about us all.*
> —Robert Flanagan, *Gould’s Book of Fishes*

It is this shifting kaleidoscope of colours that composes and decomposes the Book of Life in Flanagan’s *Gould’s Book of Fish*. The word and the stinking flesh of the corpse and of fish become as indiscernible from one another as Flanagan’s narrators. As we learn in the opening pages of Flangan’s novel, the narrator, Sid Hammet, determines that “We — our histories, our souls — are, I have since come to believe in the consequence of his stinking fish, in a process of constant decomposition and reinvention, and this book, I was to discover, was the story of my compost heap of a heart” (2). This story is scrawled in a rainbow of coloured text, garnered from human and animal bodies.

The book itself throbs with a phosphorescent aura. Upon Sid’s discovery of the folio in a meat case of a local junk shop, he finds that the cover of the dilapidated book was “a mass of pulsing purple spots. The more I brushed, the more the spots spread, till most of the cover was brightly glowing. As with the night fisherman who handles the bastard trumpeter, the speckled

phosphorescence spread from the book onto my hands until they too were covered in purple freckles" (13). The book of Sid Hammet's life (and by extension of the lives of the Surgeon, Jorgen Jorgensen, Capois Death, Pobjoy, and the Commandant) reflects, in permutating colours, its (de)compositional character.

Reading this book diffractively, following Barad's reading method, we find that the matter of the texts (namely, those of Gould and of Flanagan) and the matter of colour (in the watercolours of Gould and in the colourful text of Flanagan's narrative) contributes to the configurations of matter and meaning that intersect in Flanagan's experimental writing. As Barad explains in her prodigious book *Meeting the Universe Halfway*, this method of reading interprets difference as a provocation to new ways of thinking across the humanities and natural sciences. In an interview with Iris Van der Tuin and Rick Dolphijn, Barad further notes that diffraction "is not just a matter of interference, but of entanglement, an ethico-onto-epistemological matter" (unpag.). This diffractive reading method is itself a kind of prism that produces divergent lines of thinking by comparing the insights of artistic and literary production with natural scientific representation in order to build new insights. My approach to Flanagan's novel is therefore (de)compositional in that it discloses the entanglements of previously segregated domains, including the correlations of matter and discourse (or of flesh and the word), in order to interpret the configurations of colours and relations between living and dead species. To read diffractively, then, is to note the "intra-active" entanglements in *Gould's Book of Fish*, and to investigate how Flanagan's novel contributes to the disintegration of entrenched dualisms (past/present, human/animal, living/dead) in favour of a transformative ethical, ontological, and epistemological framework.

The materiality of the book is important for Sid Hammet. He tells the reader that the book is "a dreadful hodgepodge" (13) with "numerous addenda and annotations crammed into the margins and sometimes on loose leaves of paper, and on what looked like dried fish skin" (14). Inscribed upon the flesh of the book are varying colours of text. Each story was written, Sid explains, "in a different colour ink which, as their convict scribe describes, had been made by ingenious experiments from whatever was at hand: the red ink from kangaroo blood, the blue from crushing a precious stone, and so on. The author wrote in colours, more precisely, I suspect, he felt in colours" (14-15). In subsequent chapters, the narrator (from the point of view of William Gould) smears his paintings with "mossy mucus and yellow pus and runny shit" (48) and with the sepia ink of a cuttlefish that floated into his cell, which he speared with his paintbrush (127). In harvesting these colours, the narrator describes in auburn-red text that "colour is a tragedy that should not be taken seriously" (49). For Gould, it is nothing other than Newton's broken prism: a rainbow's divided light. In his rotting, noxious cell at Sarah Island abutting the briny Tasman sea, Gould finds that colour is both everywhere and nowhere, bending through light and darkness.

Fig. 36. "The Kelpy." From Flanagan's *Gould's Book of Fish*. Original 220 cm x 220 cm watercolour sketch by William Beulow Gould, 1832.

The fishy sights and sounds of the penal colony both figuratively and literally colour Gould's paintings, turning the sensory organ of the eye into a kind of omniscient perspective in Flanagan's narration that combines images of fish, bodies, and narrative voices. In the second chapter, entitled "the Kelpy," Gould's paintings, which he proclaim to be a "natural history of the dead" (63), are produced as a composite of the body of the machine breaker and the kelpy fish (which is also, within the narrative, a figure for death in Scottish mythology). In this chapter, an accident occurs on the penal colony during the operation of a torture device named the cockchafer. Having fallen into the device, the machine breaker eventually meets his painful death after a prolonged period of suffering that is ended by Capois Death. During this time, the narrator explains, "he began raving how the Kelpy was coming to take him" (81). We read that as a representative of the spirit of the waters, the Kelpy drowns and kills all those who have travelled too far from home. After the machine breaker's death, Gould returns to his cell and begins painting a living specimen of the Kelpy in which the eyes of the dead machine breaker become superimposed upon the eye of the Kelpy. In this entanglement of the living and dead flesh of human and nonhuman animal bodies, the watercolour painting becomes stratified with more bodies, as the narrator relates: "I must confess I began taking liberties with that fish's face, so it was both the fish's knowing eye & the horror of the machine breaker's eye watching us on the treadwheel; so it was both that and so many other things" (90). Gould goes on to explain that "it was all that blood — of fish eyes & revolting slaves being torn apart & Maurepas' nailed shoulders haemorrhaging & the blood in the machine breaker's eyes after we drew the palliasse away…it was a funny thing but then it didn't seem so funny that all these things were bound together for a moment & all existed as a single dying kelpy" (90). In these entanglements of words, bodies, and images, Flanagan produces a shifting kaleidoscope of colours — brown and

green, pink and grey, as they appear in Fig. 36 — that relates the horrors and atrocities of colonial power with the systematizing authority of the natural scientists who catalog these native fish specimens. This scene affirms the heterogeneity of the world, which shimmers with the shifting forces of light and darkness. As Zach Weir argues, Flanagan "cleverly manipulates the slipping and sliding of relationships between the novel's characters, until Gould has no clear understanding of the division between one character and the next, between men and fish" (unpag). The Book of Life, captured in the bleeding of text and in the colouring of bodies (as perceived in the wandering eye of the Kelpy and the machine worker), is for Flanagan's post-modern text a juncture between the diffractive elements of matter and discourse, flesh and the word.

The expressions of fishy matter in the chapters on the *porcupine fish*, *stargazer*, and *leatherjacket* present a challenge to the Surgeon (another narrator/alias) who ponders whether it is possible to organize bodies, words, and images together into a "solvable" and "remediable" catalogue (125-6). The Linnaean system that is upheld by the Surgeon is coupled with a desire to uphold Bentham's principle of the panopticon, not only in the penal colony but in the realm of natural history. For the Surgeon, the matter of the world is a heap of fragments that he must bring to order. Yet in these chapters and in the chapters that follow (the *serpent eel*, *sawtooth shark*, *striped cowfish*, and *crested weedfish*), Flanagan's narrative increasingly shifts to stream of consciousness narration, evoking uncertainty for the reader about the narrative voice(s) and the embodied subjects of the book. In the "Crested Weedfish" chapter, composed in a royal purple, the narrator proclaims, with biblical authority, that "In the beginning was the Word, & the Word was with God, & the Word was God…But then the Word was made flesh & dwelt among us as part of our darkness, & it comprehended not our darkness; for its flesh was putrid & slimy green

bloated rotted rags floating flotsam-like around my cell" (324). The objective, for the narrator, is then to "expose that the Word & the World were no longer what they seemed, that they were no longer one" (324). As a increasingly fragmented and decomposing book of corrupted words and flesh, the narrator's scribblings disintegrate into chaos. We can interpret this important scene as a shattering of the jurisdiction of language, which attempts to foreclose meaning in the production of text. Yet for Flanagan's colourful narrator, *Word* and *World* are enfleshed in the eye of the fish and the painter — but only for a mere moment — before becoming refracted in a prism of light. The slimy green rags of flesh make their own meaning and tell their own stories as they metamorphose, much like the freshwater crayfish, into a translucent sac and a shedded carapace (341). In *Gould's Book of Fish*, the Word and World refract into and away from one another, in a state of constant decomposition and reinvention.

As a prism of narrative voices, flesh, and fish, Flanagan's Book of Life is a puzzle not only for readers and writers, but for painters and consumers of art. The slimy scales of fish are slick, as the Surgeon reminds us: "a fish…is not an easy item to forge. A fish is a slippery and three-dimensional monster that exists in all manner of curves, whose colouring and surfaces and translucent fins suggest the very reason and riddle of life" (133). The flesh of fish, with their unique transparencies and slippery surfaces, quiver and bend away from both pen and paintbrush. Flanagan's novel suggests that in our shared putrescences, from the alluvium of bodies to the stench of dead flesh, we are all fish.

The Funeral Ecology of Jim Crace's Being Dead

The writer Felix Mondazy, who often appears within the pages of Crace's novels, surmises that "Our Books of Life" are founded upon an ecological and vitalist principle of (de)composition. The Book of Life, Mondazy writes in his memoir, has no terminus: "fresh

chapters are produced though we are dead. Our pages never terminate. But, given time, the paper yellows, then turns green. The vellum flesh becomes the leaf" (144). Going on to produce a vibrant sheaf of pages that constitute one's ongoing existence in the world, the Book of Life is made vital through its continuous (de)compositions. But how are these illimitable chapters of being dead (de)composed?

Dead, and now steadily putrefying amidst an industrious assembly of dune beetles, swag flies, squadron ants, crabs, rodents, skin-eyed hawks, gulls, and parasites, the two dead zoologists of Jim Crace's *Being Dead* (1999) have entered into a "dawning death" with "all their lives ahead of them" (8). There are no "good deaths," no culturally-sanctioned funerals, and no proper burial for these two married zoologists. But there are, Crace writes at the novel's conclusion, "the everending days of being dead" (196) that carry Joseph and Celice into an imagined future of transformation and regeneration.

Being dead for Crace is a communal enterprise: it is at the threshold of death that creative assemblies of living and dead species converge, bustle, and swarm. As this chapter unfolds, I will examine how the vital decomposition of Crace's dead zoologists enacts a necro-ecological assemblage of nonhuman animal organisms that produces a vital post-mortem narration. Made possible by the "storied matter" of the (dis)colouring carcass itself, and by the "intra-actions" of Crace's network of literary animal agents, the vital post-mortem narration of *Being Dead* in turn fortifies a post-mortem earth that encloses and embraces Joseph and Celice, conveying them into a natural burial while continuously (de)composing new forms of Life out of the commingling residues of human and nonhuman animal organisms. As I will argue, Crace's *literary funeral ecology*—a divergence from modernist and postmodernist "burial plot" fictions that reflect a humanist schema of life and death—is emphatically counter-elegiac in its portrayal of

death as an affirmative, material, and agential inter-species affair. To be dead in Crace's novel is to enter into a new condition of existence that generates story beyond the species divide, across what we commonly regard as the threshold of life and death, and outside the very parameters of narrative itself.

Inviting readers to consider the breakdown of normative considerations of humanity and animality, of life and death, and of the conventions of story, Crace's novel in turn initiates an interrogation of the central tenets of Western philosophy and the fundamental principles of natural scientific knowledge, zoological practice, and their attending narratives. As such, *Being Dead* advances a unique narratological scheme driven by seemingly inanimate beings (human remains) and literary animal agents, creatively decomposing anthropocentric constructions of the natural order, creaturely mortality, and human-centred mourning practices.

Central to these extraordinary depictions of death and decay is an unremitting vitalism that beckons life and existence to continue beyond the cessation of vital signs. As Alaimo proposes in *Bodily Natures*, it is this corporeal metamorphosis that has the potential to disembowel the "very notion of the human" (25). It also asks us to inquire how the animate breakdown and recomposition of the necro-ecological assemblage incites a breach of the life/death distinction and the human/animal divide, and how this breach might be generative for thinking through the ethics, ontology, and epistemology of being dead. Indeed, what can we know (or un-know) about the human and nonhuman animal through vital decomposition, and how do the deaths and natural burial of this pair of zoologists occasion a more intensive web of belonging with the environment and its nonhuman inhabitants? In what way does the (de)composition of the Book of Life pose a challenge to the seemingly ossified limits, divisions, and practices of natural science

and Western philosophies of mortality? Moreover, what does it mean to *be* dead, as the seemingly paradoxical title of Crace's novel proclaims?

To begin to respond to these central research questions, I propose that Crace is, much like Flanagan, a *(de)compositional creator* who challenges the respective aesthetic parameters and generic conventions of fiction. While the standard elegiac text is characterized by a mournful narrative sustained by a living human subject, a person, or a voice, Crace's novel features a "minor" literature harnessed by the carcass and its nonhuman attendants through a third-person omniscient narration. Crace further revises the classic elegy through his utilization—and innovation of—a number of styles and literary devices, including zoological realism, naturalism, the grotesque, black humour, irony, metafiction, figurative language (such as prosopopeia), fictional landscapes, and temporal distortion. Together, these devices and styles create subversive depictions of the dead that thereby challenge traditional notions of personhood, subjectivity, milieus (or "world"), mortal timescales, and senescence. In disassembling these systems of thought, Crace employs a (de)compositional creative practice that defies conventional plot structures, extra-textual worlds, temporal modes, and subjective characterizations that typify fiction featuring death and mortification.

With a view to interpreting and elaborating on Crace's imaginative disassembly of ideas, this section begins with an analysis of how *Being Dead* exposes, and confronts, the binary structures that are historically embedded in our philosophical considerations of the living and dead human and nonhuman animal. How can the carcass, for instance, serve to rupture these considerations, along with related notions of materiality and immateriality, activity and passivity, and subjectivity and objectivity, that anchor theories of being and vitality? Scrutinizing the

process by which concepts are created, indurated, and disseminated, I aim to uncover how these concepts can also be critically and creatively (de)composed.

Crace's Literary Funeral Ecology

With no proper burial or traditional funeral rites that might acknowledge their demise, Joseph and Celice are conveyed into their deaths through more naturalistic ordinances. Crace's literary funeral ecology, an enclosing process of regrowth and regeneration conducted by the earth and its nonhuman inhabitants, marks Joseph and Celice's chapters of mortification in the Book of Life. As a part of Crace's "quasi-Darwinian metaphysical theme" (Tew, *Crace* xv), this literary funeral ecology reflects Crace's insistence that nature is "a compost heap" where "every living thing dies, and…decays" (Crace qtd. in Balée 526). It is this "compost heap"—namely, the necro-ecological assembly of nonhuman organisms, coupled with the putrefying carcasses of the two zoologists that inaugurates a material-discursive program of decay that produces "storied matter" and a vital, post-mortem narration. Sharply juxtaposed with the traditional human-centred funeral rites and philosophies of death that hinge on the life/death distinction and the species divide, this natural burial narrative does not sanctify the community through the disposal of the carcass, but rather affirms death as a new chapter of collective existence in the world.

In comprehending how *Being Dead* fits into the archive of literature about death, it is clear from the outset that Crace's counter-elegiac novel dissents from modernist "burial plot" fictions that might mourn the loss of Joseph and Celice as unique subjects and insist upon traditional burial as the *telos* of their stories. As noted literary critic David Sherman explains (utilizing Peter Brooks's plot analysis framework), the "burial plot" fiction of modernism is defined as

> not simply a corpse's resting ground, but also its story, the arc of time between its perishing and final disposal. Corpses, the ambiguous

> protagonists of these interstitial stories, organize plots which begin with a biological perishing and involve a search for ritual and hygienic care, marks of identification, and a secure state of rest that accomplish its death as a culturally intelligible event. (108)

Central to the burial plot, Sherman insists, is *a community's mortal obligation or transhistorical ethical imperative to maintain the dignity of the dead through internment* (2). Similarly, Lisa K. Perdigao contends that dead bodies in modernist fiction, such as Addie Bundren in William Faulkner's *As I Lay Dying*, present a "crisis for narrative transaction" (1) and "demonstrate a systematic drive toward internment" (13). By entombing the corpse underground, modernist writers assuage their readers's anxiety and fear of death and decay. On the other hand, Perdigao writes, postmodernist "burial plot" fictions are driven by a desire for exhumation, where the resolution of the plot ensured by burial in modernist fiction shifts instead to "a recycling of plot, a revisitation of origins, repetitions and variations on the tropes and theme of death" in novels like Toni Morrison's *Beloved* and Jeffrey Eugenides's *The Virgin Suicides* (Perdigao 105).

However, the underlying anthropocentrism of Sherman's and Perdigao's critiques of these modernist and postmodernist texts reiterates the notion that to be human is to bury the dead, or that "*Dasein does not die until its remains are disposed of*" (emph. Harrison's 143). This view reflects the humanist schema of life and death, which insists upon the integral value of human (over nonhuman) life, justifies the human's seemingly superior orientation to death "as such" (as per the Heideggerian tradition), and privileges Western, human-centred systems of cultural meaning and communication about death and its practices of ritualistic mourning (funeral rites including eulogies, grave epitaphs, and the like).

To situate Crace within these traditions and in relation to his extant works, it is clear that *Being Dead* marks an innovation from modernist treatments of death that might portray the horror of death through a breakdown of language, stream of consciousness narration, and the fragmentation of the human subject, or postmodernist exhumation novels that utilize a human-centred hauntology that exposes the community to the disinterred corpse or to the return of a spectral entity. Moreover, we see that Crace's natural burial novel views the carcass not as uncanny, abject waste, or a ghastly threshold of self and other, but as a material-semiotic node for inter-species narrative production. *Being Dead* diverges from the traditional anthropocentric mourning rituals that maintain the view of the human as a superior supernatural being that transcends the mouldering materiality of death. The literary funeral ecology of *Being Dead* is fundamentally characterized by material decay and regeneration, and it affirms death as a vital mode of being with its own spatial and temporal particularities.

Accordingly, in setting the stage for a post-mortem narration, Crace estranges his readers from human-centred funeral practices that maintain a conviction in a disembodied hereafter. Contrasting traditional death customs and mythologies (such as the "quivering") with naturalistic funerary rites (including Mondazy's Book of Life and his fable of the Fish), Crace emphasizes a natural burial undertaken by the earth and its nonhuman inhabitants, where "death was cultivated, watered like a plant" (6). We read in the opening chapter, for instance, that had the bodies of Joseph and Celice been found promptly,

> their family and their neighbours would have held a midnight *quivering* for them. Their bodies would be laid out side by side on the bed in their best clothes and shoes, their wounds disguised, their hair slicked back, eyes shut, mouths shut, his hand on hers, their faces rhyming. The room

> would smell of camphor, candlewax and soap, and be as full of coughs and hard-backed chairs as a doctor's waiting room. (5)

Unlike this display of ceremonial bereavement, the demise of Joseph and Celice is not "death as it was advertised" (64). There is no public lamentation, no set period of mourning, and no church ceremony for these two dead zoologists. Instead, Joseph and Celice had

> perished without ceremony. There'd been no one to rub their skin with oils or bathe and dress the bodies as they stiffened. They would have benefited from the soft and herby caresses of an undertaker's sponge, the cotton wool soaked in alcohol to close the open pores. No one had plugged their leaking rectums with a wad of lint, or taped their eyelids shut, or tugged their lower jaws to close their mouths. No one had cleaned their teeth or combed their hair. (65-66)

Undeniably, the ecological funeral of Joseph and Celice is a ghastly and grotesque scene. Yet in their six days of putrefaction on the beach, these two dead zoologists find a kind of terrestrial sacrarium on the dunes. Quietly resting, "flesh on flesh, dead, but not departed" (15), Joseph and Celice are shrouded and swathed by the nonhuman organisms that inhabit the coastline. And during the six days it takes for the cadaver dogs to sniff out their location and send them to the morgue, they enjoy a short reprieve: "it was as if they had been struck by lightning but the thunder, separated by its faster twin, had yet to come with its complaints to shake and terminate the bodies lying in the grass. Time was divided into light and sound. There was a sanctuary for Joseph and Celice between the lightning and the thunderclap" (15). While a quivering would seemingly restore dignity to their bodies and remediate them as objects of grief, it is in the

prescient interval of time before light and sound reunite on the beach that Joseph and Celice "go on" to produce chapters in the Book of Life.

Along with Joseph and Celice's six days on the beach, we find that a literary funeral ecology is the ethos that grounds the narrative as a whole. Shortly before the deaths of the two zoologists, evidence of this ethos is apparent in their expedition to their former study house, which has gone on to produce "fresh chapters" since the tragic death of Joseph and Celice's colleague, Festa, nearly thirty years prior. At noon (just six hours before their deaths), the couple clamber through the beaten scrub that leads to an overgrown, charred cottage. It was in this place, and on the day that it became engulfed in flames and laid claim to their colleague, that Joseph and Celice had their first tryst so many years before. Now, with Festa gone, the reality of her "thirty years of being dead" (139) strikes Celice as a grievous mishap. However, she is surprised to find on her return to the cottage that it "was not a haunted place" (143). Instead, the couple note that "the smell was only vegetation and the sound was only leaves and stalks" (144). Over thirty years, the scorched floorboards and "last remains of bricks, masonry and walls were colonized by nettles, brambles, buddleia and mortar roses…[and] what roof beams had survived the fire and years were skeletal, stripped of all charring, tapered by erosion, and clad in the reds and greens of timber algae" (143). Making their way through the house, they also observe that the bunk room and common room are now fertile ground for "rock shrubs and carbon-loving plants," which have transformed the rooms into oblong beds of stove weeds and pyrosia (143). Celice does not expect this scene of regeneration. Vital grounds for continuous metamorphosis, the cottage is an "*eco*" (from the Greek, indicating "home") for Life's continuous elucidations. When understood in light of Mondazy's metaphor of the Book of Life, Festa's untimely dissolution marks the beginning of fresh chapters (144); the pages of Festa's incomplete

doctorate, awaiting career, future husband and children, and undemanding life remain unwritten, but the expressions of Life beyond her death are assured by the intervening greenery.

A Post-Mortem Narration

As the ultimate "minor" literature, which Deleuze and Guattari argue is characterized by a "high coefficient of deterritorialization" (*Kafka* 16) and collective, revolutionary, and enunciative value (17), Crace's post-mortem narration is written in a "major" language by minoritarian subjects: those nonhuman composers (and seemingly inanimate remains) that inhabit the wind-blown beach of Baritone Bay. The three main chapters of mortification that lie embedded within the structure of the novel are written from the perspective of a third-person omniscient narrator, thereby capturing the full range of actions undertaken by Joseph and Celice both before and after their deaths, along with the nonhuman animals they once studied and those that now attend their bodies. Without privileging a human voice, each of Joseph and Celice's chapters of progressive decay are registered by the nonhuman animal organisms that have gathered together in their open wounds and orifices, as well as by the audacious vitality of the carcass itself, which carries forward the narrative action through a self-directed imperative to transform into something new.

The first instalment of Joseph and Celice's post-mortem narration begins at 3:50 p.m., hours after their inspection of the overgrown cottage. Having sought a secluded spot near the coastline, the two zoologists are interrupted during a failed moment of intimacy by an opportunist robber wielding a granite stone. Tragic and absurdly comic in equal measure, Joseph's premature ejaculation leaves them both open and vulnerable to a predator who hopes to pilfer a small bounty of cash and sandwiches. The black humour of this "clownish tragic curtain call" (58) gives way to the poignant liability of their naked flesh: "they were like rabbits, too weak

and mesmerized to run or hide, too soft to fight, too rooted to the spot" (28). Yet the violence of their deaths and their susceptibility to death (their finitude) *does not mark the end of existence for the two zoologists*. While Celice dies in less than a minute, her clinical death, including the failure of her lungs and heart and brain, initiates another wave of activity:

> there were still battles to be fought but these would be *post mortem*, the soundless, inert wars of chemicals contesting for her trenches and her bastions amid the debris of exploded cells. Calcium and water usurped the place of blood and oxygen so that her defunct brain, almost at once, began to swell and tear its canopies, spilling all its saps and liquors, all its stored immersions of passion, memory and will, on to her scarf, her jacket and the grass. (10)

Indicating the beginning of autolysis, in which the inert wars of chemicals is understood as the intrinsic breakdown of the body at its own directive, Celice's "battles" sustain her post-mortem narration and ongoing existence. Although her now-defunct brain is "pale and mushy as a honeycomb" (10), Celice's body is immersed in an intensive process of decomposition that paradoxically produces the narrative of its own dissolution.

But how does this narrative materialize, when there is no longer a person, a voice, or a living human subject to make it viable? Although the novel refers to the two dead zoologists by their first names (indicating personhood), Crace's use of prosopopeia is atypical in that side-steps the anthropomorphism that is often couched in the rhetoric of personification. Joseph and Celice are not "depersonalized" in their death and decay (157), but their names are fabricated in the same way that their practice of naming zoological species falsely "double[s] their existence" (73). Like the sprayhoppers, oceanic bladder flies, dune beetles, skin-eyed hawks, and numerous other

creatures in *Being Dead*, Joseph and Celice are fabulized by Crace himself. This zoological realism and naturalistic style self-reflexively critiques what we ordinarily consider to be conventional personhood and subjectivity, including the presumption that the human is the sole proprietor of agency and communication (including voice, speech, or writing). This literary style also challenges the misconception that zoologists are adamic figures who are endowed with the right and responsibility to name every creature. Undermining these anthropocentric assumptions, the instalments of post-mortem narration in *Being Dead* are galvanized not by a person, a voice, or a subject, but through Joseph and Celice's encounters with nonhuman animal agents, which work to create "storied matter."

Turning to the material-ecological framework of Serenella Iovino and Serpil Opperman, we can interpret the "storied matter" of Joseph and Celice's dead bodies as a material-discursive node that engenders story. For instance, Iovino and Opperman claim that bodies are "living texts" (6), and that literature, when "framed as material-discursive encounters," can be understood to "emerge from the intra-action of human creativity and the narrative agency of matter" (8). Read this way, human and nonhuman agents can create "new narratives and discourses that give voice to the complexity of our collective" (8). Paramount to our reading of "storied matter" then, which Iovino and Opperman describe as a "material 'mesh' of meanings, properties, and process, in which human and nonhuman players are interlocked in networks that produce undeniable signifying forces" (1-2), is approaching the carcass as an animate text-producing body that creates narrative via inter-species encounter.

Thus, in reading Celice's wave of post-mortem activity and cellular "battles," it is important to recognize that "storied matter" always conceives of agency as intra-active. As Iovino and Opperman suggest (following Karen Barad's interpretation of agential realism), the human

is not a self-contained sole actant, but rather one of many co-acting agents that make up a collective. Interpreted this way, Celice's animate and active dissolution is remarkable in and of itself (given that the corpse is often interpreted as a static, inert, and passive object), but is perhaps most extraordinary in that Crace's representation of death does not presume a holistic view of the living human subject as a precursor to agency. Unlike Descartes's mind-body dualism, which would insist that the body cannot "think" on its own without a mind, Celice's dead body, despite her defunct brain, demonstrates a spectacular propensity for agency, animacy, and action.

Crace's depiction of Celice's actively embattled tissues is undoubtedly atomistic, which in turn reflects the notion that the material human body is itself composed and decomposed of divisible human and nonhuman elements while in a state of continual transposition between life and death. This literary representation of the animacy of death is corroborated in the scientific history of thanatology. In *The Biology of Death*, André Klarsfeld and Frédéric Revah write that life and death processes happen concomitantly in every living organism as billions of cells die and are disposed of, or reconstituted, through apoptosis. To support this claim, Klarsfed and Revah appeal to the father of modern physiology, Claude Bernard, who argues that "organs destroy themselves, disorganize themselves constantly, by their very processes" (Bernard qtd. in Klarsfeld and Revah 10). Klarsfeld and Revah further propose that these same procedures of cellular death occur in the corpse as in the living body, and from this outlook, "existence is…nothing other than a perpetual alternation of life and death, composition and decomposition" (11). (De)composed of living and dead cells and tissues, the human body is also an aggregate of both human and nonhuman materials.

As we learn from Donna Haraway in *When Species Meet*, 90% of the human is comprised of "cells [that] are filled with the genomes of bacteria, fungi, protists and such," so that when "'I' die, all benign and dangerous symbionts will take over and use whatever is left of 'my' body" (4). Therefore, Haraway maintains, "to be one is always to *become with* many" (Haraway's emph., 4) due to the fact that "organisms are ecosystems of genomes, consortia, communities, partly digested dinners, [and] mortal boundary formations" (31). Contrary to continental philosophy, therefore, which H. Peter Steeves claims views the body as "self-contained within the limits of the individual flesh," the body is "not alone" because of the thousands of parasites that constitute our flesh (7).

The heterogeneity, divisibility, and decompositionality of the organism is reinforced in this first instalment of post-mortem narration by Celice herself, during the last annual fieldwork lecture she delivered before her death. As a habitat for gulls, beetles, flies, and crabs that feed at her wounds in "clinging multitudes" that make her hair "seem more lively than it ever had in life" (39), Celice becomes more animate in her encounter with the marine animals that gather at her gaping wounds. Furthermore, with her "spread body, her rustling hair, her husband hanging from her leg, a centre-piece — [Celice] was a fine display to illustrate the annual fieldwork lecture that she gave, normally with slides of putrefying seals or tide-abandoned fish, to the faculty's new and squeamish students" (40). In her natural science lesson, Celice insists to her pupils that "life and death are inextricably intertwined, the double helix of existence" (40). Asking her class whether a single-celled eternity is paradise or hell, Celice contends that "'death is the price we pay for being multi-celled'" (40). To "replicate and decompose" (40), to start to die after birth, and to find life on the underside of a rotting, water-logged branch (41) is to discover the fundamental, hard truths of natural science, Celice expounds. Yet as a representation of these

zoological platitudes, Joseph and Celice's dead and decaying bodies reveal the way in which the "story" of natural science told by zoologists can be re-written by nonhuman organisms.

In her death, Celice comes to be differently composed and oriented in "the natural orders of zoology" (86). Her early work on the oceanic bladder fly and later job as a part-time tutor at university teaching biology orients her in a vertical position, bearing down on the earth and nonhuman species from a seemingly superior point of view. Submitting her slides of putrefying seals or fish to her magnifier, Celice sees these dead nonhuman animal organisms as objects of knowledge in a world that fits into a "reassuring microcosm" in her laboratory (75). As she collects her data, sets a latin name to the flora and fauna she discovers by the sea, and orients herself as an expert in her field, Celice tells herself a particular story about her station in the ecological milieu. However, as Celice's corporeal decomposition unfolds, she enters into a different degree of intensity and orientation. Following Deleuze, who argues that longitude indicates "the set of relations of speed and slowness, of motion and rest, that is between unformed elements" and latitude signals "the set of affects that occupy a body at each moment" (*Spinoza* 127), it is apparent that in shifting from a vertical position of power to a horizontal relation of mortification, it is *Joseph and Celice* who are "passed down, through classes, orders, species, to the last in line, the lumpen multitude, the loopers and the millipedes, the button lice, the tubal worms and felts, the bon river or nectar bugs" (101), thereby enabling a new narrative driven by nonhuman organisms to take hold.

As the two zoologists complete the next stages of their mortification in the second instalment, their water-logged bodies become a consolidation of flesh and text upon which a nonhuman collective marks their passage into death. Their second day of decomposition brings a storm that cleans out their bodies, making them as "stiff as wood": they had discoloured,

becoming pallid on the upper parts, and livid on the undersides (64). But as the rain clears, the crabs and rodents again return to work, "frisking them for moisture and for food, delving in their pits and caverns" (65). As the necro-ecological assembly labours on, Celice's storm-cleansed body is compared to her soaked copy of *The Entomology* (a meta-textual reference to a fictional publication featuring insects) that lays nearby in the sand. No longer studying the characteristics, life cycles, behaviours and taxonomy of insects, Celice is now a habitat for the flies that remain "lodged in the damp recesses of [their] wounds" (63). Celice's portrayal as a corpse-text is similar to an earlier reference to Joseph's daily ledger, left out on the deck's breakfast table, where the rain could "wash away his ink, the records of his life. His pages would be turned to pulp" (13). Now Joseph's waterlogged body is "losing form" (65): as the rain loosens, rinses, and dissolves the clots of blood on their skin, so too are the pages of their books and ledgers re-written and (de)composed.

We can understand this conflation of flesh and text through a consideration of the body as a "fold." Both Merleau-Ponty and Deleuze offer a way of understanding the subject's anchored and incorporated position in nonhuman reality. For example, New Materialist scholar Diana Coole explains that for much of Western philosophy, particularly since Descartes's anti-vitalist treatise of the mind-body dualism, subjectivity is regarded as "immaterial (disembodied), potentially omniscient, and legitimately omnipotent" (95). But for Merleau-Ponty's treatment of world-flesh and the fold, "it is corporeality that introduces meaning or structure into matter," and it is through phenomenology that we can comprehend how consciousness "emerge[s] from, yet remains enmeshed in, this material world" (Coole 101). According to Coole, Merleau-Ponty sees the body as a two-dimensional subject-object (107) and rethinks agency not as "an essential characteristic of the rational subject," but as the contingent capacity for "reflexivity, creative

disclosure, and transformation that emerge[s] hazardously within the folds and reversals of material/meaningful flesh" (113). Like Merleau-Ponty, Deleuze sees the body as a kind of pliable hinge on the world, constantly "folding, unfolding, refolding" (*The Fold* 158). And intriguingly, as Badiou describes, the fold marks the correspondence between the surface and the limit; it is a paper folded, which constitutes the limit but is nevertheless itself still the surface (89). Reading these philosophical concepts together with Joseph and Celice's chapters of mortification, it is possible to see how the body as a text represents the consolidation of the biological and textual—or to use Barad's turn of phrase, the entanglements of matter and meaning. As an articulation of *what a dead body can do*, it is in the carcass's active and vital fusion with the world that we find the basis of story.

For instance, as we discover in the final instalment of their mortification, Joseph and Celice increasingly become the surface of, and the outer limit for, material-discursive activities. Now entering the bloat stage, Joseph and Celice's bodies enact a "blackening" (38), "silvering" and "jewelling" (101) that composes a new chapter in the Book of Life. This florid (dis)colouration, "where life's soft pink and death's smudged grey conspired to find the silver in between," also reveals "a tracery of lucent white where snails and slugs had made enamel patterns on the flesh with their saliva trails" (101). These patterns tell the story of death in relation to what Crace describes as "Fish" (the personification of death invented by Crace's fictional writer Mondazy), which evidences itself by its silvering, its smell, its "watermark" (101), and by the residue left behind by the "wake of scales and mucilage across the sheets" (99). Analyzing these markings as the intersections of the material and discursive, we can apprehend the trails and patterns on the surface of Joseph and Celice's mouldering flesh as the production of story in, and through, flesh. Regardless of who is, or who is not, reading the story (or who

observes or does not observe Joseph and Celice's decay), the corpse-as-text goes on to rot and colour as it enters into another form of existence. The mouldering narrative of *Being Dead*, spun out of slimy trails and the salt-line of the outgoing tide on the surface of the corpse, creates an unexpected narrative of death that recasts zoological and natural scientific principles and encloses the couple in a new relation with the earth and the nonhuman animal community.

A Post-Mortem Earth

Although the thunderclap and lightning bolt once again re-unite, causing Joseph and Celice's bodies to be cleared away from the beach by the novel's conclusion, it is clear that *Being Dead* outlines a never-ending narrative of putrefaction that extends beyond the individual deaths of the two zoologists and into an eternity of being dead in the world. Evidence of this ongoing narrative is found in the epigraph, which is credited to another of Crace's fictional writers, Sherwin Stephens. The first half of Stephens's "The Biologist's Valediction to His Wife" reads:

Don't count on Heaven, or on Hell.

You're dead. That's it. *Adieu*. Farewell.

Eternity awaits? Oh, sure!

It's Putrefaction and Manure

And unrelenting Rot, Rot, Rot,

As you regress, from *Zoo*. to *Bot*.

The regression of the organism as it is depicted in Crace's fictional epigraph has no absolute end, but continues to intermix with, and become, the earth, through a boundless process of natural burial. Thus, in imagining this eternal synthesis of decay and pursuing the effects of the wide-reaching vitality of ongoing rot and putrefaction, the plot-line of *Being Dead* spins ahead toward an infinite time and space that is beyond that which is possible to reason. As such, Crace's novel

gestures toward what Derrida describes as the "aporia" of death: "the refused, denied, or prohibited passage, indeed the nonpassage" that is the *atopos* or nowhere place of death (*Aporias* 8).

How does Crace imagine this nowhere place of death? To understand how *Being Dead* imagines an eternity of vital decomposition in a post-mortem world, it is important to trace how this literary plane correlates with the transitional, realistic yet fantastic worlds, distinct "imaginary milieus" and "new fictional landscapes" (Chalupsky 40) that characterize Craceland, which scholar Philip Tew argues "is a world constituted by ongoing, cumulative change" (*Crace* 29) but which differs from any modernist, post-modernist, or any typically British conception of topography and literary space (*Contemporary British Novel* 151). *Being Dead,* Tew writes, is about exploring the ways in which "death is immanent in life" (*Crace* xv) and suggests that "the essential co-ordinates of Craceland, a world proportionate to reality, [is]…largely a system within itself" (*Crace* 4) and is "neither vague nor unrealizable" (6). In his construction of a grotesque narrative of decay (an underlying quality found in much recent British fiction, Tew argues), Crace configures death as an otherworldly yet "curiously affirmative" ecological milieu (*Crace* 142) with particular temporal and spatial coordinates.

My consideration of these temporal and spatial particularities differs somewhat from Adam Begley's insistence that Crace's narrative runs on a double-stranded "necrometer" that goes backward and forward in time, juxtaposing both the distant and recent past with the decomposing present. While I argue that Crace's novel is precise in its temporality, the "necrometer" assigns a definitive beginning and end to life, reflecting a framework of finitude rather than a reading of life as a vital continuum. Temporality in the framework of finitude can be understood in relation to Donna Haraway's outline of human and non-human animal time-

scales, which are either evolutionary "at the level of the planet earth and its natural cultural species," or face-to-face, "at the scale of mortal bodies and individual lifetimes" (*The Companion Species Manifesto* 63). Reading Begley's interpretation of the necrometer through Haraway's time-scale outline places Crace's narrative on a "face-to-face" or mortal time-scale that shares the same time-space foundation as natural scientific and traditional philosophical notions of time, and as such does not adequately account for the vitalistic time and space of being dead in the novel.

While a detailed analysis of time and duration (as explored by Bergson and Heidegger) lies outside the parameters of this chapter, it is important to examine how the mortal time-space foundation of death for natural science, along with Heidegger's philosophy in particular, is anchored to concretely *mortal world*. Although some organisms challenge typical mortal time-scales, either by replicating continuously and leaving no corpse behind to measure an end (such as some bacteria), or by living on for grand lengths of time (such as the sequoia tree), it is nevertheless the case that natural science depends on the order and length of species timelines, or their senescence, in order to determine their essential differences. As I have already suggested, philosophic and natural scientific knowledge on the human and non-human animal consonantly abounds with considerations of "animal worlds" that respond to the question of mortality (Acampora 117). Heidegger's world-forming *Dasein*, for instance, is linked to a mortal timeline that beholds death as the maturation of a living being. Heidegger compares this being's "not-yetness" and "being towards-death" to the moon in its last quarter, which is "outstanding until it is full," or to fruit that is moving towards its own ripening (234). Heidegger's approach to death is about the future of death's insuperable coming as an impossible certainty that lies embedded in the past. A vitalism of decomposition, and the time-space structure that arises from it, dissents

from this natural scientific and philosophical treatise of being, time, and world as it pursues the possibility of life to advance indefinitely. Correspondingly, Crace's focus on an ecology of death results in a narrative that shifts into over-ripeness and rot (to modify Heidegger's metaphor), where there is no end to the potential relations and transformations that are yet-to-come in the interminable world of being dead.

This perspective on "world" in Crace's literary landscape means that the earth is understood to conduct its own burial, and to manage the unceasing bodily transformations of its inhabitants. For instance, as the novel draws to its close, we read that it is "a pity that the police dogs ever caught the scent of human carrion and led their poking masters to the dunes to clear away the corpses for 'proper burial,' so that the dead could be less splendid in a grave. The dunes could have disposed of Joseph and Celice themselves. They didn't need help. The earth is practiced in the craft of burial" (193). Imagining a post-mortem earth and an ethics of enclosure, Crace's narrative suggests that the world

> embraces and adopts the dead. Joseph and Celice would have turned to landscape, given time. Their bodies would have been just something extra dead in a landscape already sculpted out of death […] So, had it not been for the dogs, the residues of Joseph and Celice's lives would have been tossed and tumbled in the dunes to nourish and renew themselves in different forms. They might have found a brief eternity below the sand, together at first, still touching, but soon they'd have to separate, to weave and drift into the unremarking sea, or sink into the clods and pebbles of the earth. (194)

Crace's post-mortem vision of the world is not divided between the living and dead (as in the humanist schema of life and death), but intimately connected in a process of burial and transformation.

This imagination of a natural reality that cannot be rationalized evokes what Deleuze and Guattari regard as a call for new concepts for thinking that produce "*a new earth*" and "*a new people*" (emph. Deleuze and Guattari's, *What is Philosophy?* 99). What this call for thinking a new people and a new earth entails, specifically for the purposes of this analysis, is a way of reaching outside of the conventional tenets of reason on the subject of death. For death is, Derrida insists, the "impossibility, the impracticability, or nonpassage […] the impossibility of being dead" (73). Death is that nowhere place, that "ultimate otherworldliness" as Tew suggests (*Jim Crace* 142). While we cannot enter into death and live to tell about it, we can initiate a new way of thinking death through the literary imagination. This literary practice achieves something, as Wolfe argues, that philosophy cannot (*What is Posthumanism?* 84). Unlike philosophical treatises of death, the literary imagination can enable the kind of thinking made possible by writers like Crace, who question, as Elizabeth Costello does in Coetzee's fiction, what it is like to be a corpse (*The Lives of Animals* 32). When we imagine what might come of letting dead matter and non-human agents tell their story, we invoke a vision of a post-mortem world that exists outside of our individual selves and beyond the limits of what we can reason or set into frameworks of knowledge. It is to imagine a world like Crace's, where "all along the shores of Baritone Bay and all the coast beyond, tide after tide, time after time, the corpses and the broken, thinned remains of fish and birds, of barnacles and rats, of molluscs, mammals, mussels, crabs are lifted, washed and sorted by the waves" (196). As *Being Dead* reveals, the post-mortem world is equipped to care for those that continue to dwell on the earth. To acknowledge this is to understand a necro-ecology in its

fullest sense: as a set of relations that is deeply embedded in the structure of the world composed of organisms both human and animal, living and dead. This is a vision of the world that does not expose us, but *encloses us* in a community of new, alternative relations plotted along the shifting coordinates (or longitudes and latitudes) of being dead in the world. Beyond what we can observe or understand, the narrative of decay goes on, giving voice to a world of vital and agential relations that return us to the ever-shifting tides and settling soils of the earth.

Conclusion: Blackening, Silvering, Jewelling

Post-mortem flesh (dis)colours, becomes pale, and then turns flush with the activities of intestinal microbes. Green as sweet basil, with splashes of a florid red and blots of aubergine, the dead body turns vegetable, then mineral. There is a particular aesthetic pathway that a body follows on its way to becoming mulch. As the bodies of Joseph and Celice blacken, silver, and jewel, and as the rotting flesh of fish and prisoners of the penal colony emulsify into slime and scales, a decompositional aesthetics emerges in the interminably turning colour wheel of life and death. From Darwin's rotted collection of South American fish specimens to his colour-coded notes, the natural history of fish is a story of looming putrefaction.

The (dis)colourations of flesh in these narratives and in Darwin's natural history of fishes demonstrate the capacity of post-mortem matter to carry on the work of decompositional organisms and the agencies of dead bodies. While the labours of the worm and coral create landscapes and homes over vast geological epochs, the mollusc and fish move slow and sticky. These are (dis)colourations of the Book of Life that challenge and subvert conventional elegiac or historical narratives, creating a new index of bodies and an alternative palette of colour that showcases the creativity of being dead.

CONCLUSION | *fungi*

The Decompinautics of Natural Burial

Space travellers are called astronauts, Buddhist scholar Robert Thurman calls those exploring states of consciousness psychonauts, [and] those who seek death acceptance via decompiculture may be called decompinauts.
—Jae-Rhim Lee, Coeio Burial Project

Assemblages do not die; they are most alive when broken down; they live by continually breaking down.
—Leslie Dema, "Inorganic, Yet Alive"

Staggering and insuperable though it seems, to imagine such a thing as the animation of post-mortem being is to produce a radically alternative interpretation of life. This dissertation has explored these surprising post-mortem animations of being in a collection of contemporary poetic, artistic, fictional, and filmic texts that take up Darwin's decompositional mechanism in his ontology of life. Thinking through the post-mortem as a fecund substructure for the creative iterations of biological matter, this project has explored how decomposition creates possibilities for inter-species collaborations, nutritive outgrowths of new and burgeoning forms, and an outspreading of time and space that envelopes all manifestations of matter, from the expiry of cells to the extinction of species. We have seen the strange and sordid materiality of the corpse occasion a bevy of necro-ecological assemblages, along with their sticky excretions, mouldering remains, muddy sediments, and stinking (dis)colourations. I have argued that such entropic shifts in being are the basis for Darwin's creative evolution, a process that welds together decay and regeneration into a seamless and continuous cycle.

But what is the purpose of all this rot? Returning to the zookeeper's exclamation in Greenaway's *Z&OO*, we might ask, *What value or conclusion can be reached with all this rotting meat?* As we turn towards the ecological prospects of an Anthropocenic future, what role does Darwin's decompositional aesthetics have for a politics and ethics of death? To answer this question, as I have suggested in the introduction, we must think in radically alternative ways about the nature

of time, matter, and posthumous being. In this subversive paradigm, nonhuman animals, along with organic and inorganic compounds, participate in the creative unmaking of the human. In addition, the agency and activity of necro-ecological organisms operate according to their own ethical demands: to recycle nutrients, to renew ecosystems, and to lay the groundwork for the next generation of life forms. The intimacy of Joseph and Celice's funeral ecology in Jim Crace's *Being Dead* provides us with a framework for thinking about the possibilities of producing what Deleuze and Guattari suggest is *a new earth and a new people*. But what are the epistemological and ontological coordinates of this new earth, and who or what populates this space in a time of ecological uncertainty?

Exploring Decompinautics: New Ecological Prospects

According to Jae-Rhim Lee, the founder of the Coeio natural burial initiative and the architect of the mushroom burial shroud, *decompinautics* is an otherworldly expedition to the subterranean depths of fungal filaments and the symbiotic colonies of mushrooms that fill the earth with billions of spores and populate the soil with their bizarre fruiting bodies. On the pathway to mulch, the dead body of the human becomes, in Lee's natural burial project, a source of renewed life in the fungal colony, which metabolizes the body and initiates a detoxification process. Part science, part art, and part elegy to the human, Lee's project puts Darwin's decompositional aesthetics to work. Here, in the soil amongst the worms, the bugs, and the spores of mushrooms, the corpse is at its most animate. The creative forces of the post-mortem body are wielded by an assembly of micro-organisms and other necrophagous species that dispatch the human into an otherworldy existence. In this project, the dead body practices Darwinism's decompositional aesthetics by going underground, by becoming embedded into the strata, and by

beginning a decompositional transformation that transfers energy and biomass into other bodies into other spaces in a series of nutritive parcels.

To think of our own decomposition through the subterranean, embedded, and decompositional Tree of Life devised by Darwin in the *Origin* is a challenge to Western traditions of personhood. Yet so much of this project has taught us that the individual is collective, and that heterogenous composites of matter (including nonhuman and inorganic matter, which is often so seemingly foreign to the human) are contained within human flesh in the form of bacteria, fungi, protists, and other molecules. From this outlook, we are just waiting to join the worms, to become a foundation for the next generation, and to return to the ooze of our origins, carried in the wake of mucilage and scales and slime. Like Thomas Feuerstein's *Myzel #10*, a bio-artistic installation that features the fleshy, tuberant stalks of the *psilocybe cubensis* (a species of psychedelic mushroom) arising from a human skull, nonhuman agents have their own process of cognition and creation that thrive because of, and in spite of, death. The ethical response to this shift in thinking is to abdicate ourselves: to remove the barriers that inhibit our becoming-habitus for forms of life that prosper and grow in and through decompositional processes.

Fig. 37. *Myzel #10*. Thomas Feuerstein, 1999. *Psilocybe cubensis*, nutritive medium, skull. 20 x 20 x 20 cm. Retrieved from thomasfeuerstein.net.

To return to Haraway's suggestion that we are not *human* but *humus*, and not *posthuman* but *compost*, I would argue that the last few decades have revealed the ways in which we are beginning not only to capitulate to the truth of this decompositional ethic but to celebrate it. In her article, "Dead Bodies That Matter: Toward a New Ecology of Human Death in American Culture," Suzanne Kelly argues that "attitudes toward the dead body appear to be in flux" (37). Where we once hygienically separated and repressed the corpse from the natural elements through the use of vaults, grave liners, embalming fluids, and lead coffins, it is now no longer uncommon to learn of green or natural burials that embrace the organic contribution of the human corpse to the ecosystem.

Figure 38. "Infinity Burial Suit." *Coeio* public website. Aug. 1st, 2015.

In her *TED* Talk, "My Mushroom Burial Suit" (delivered in July 2011), Coeio's Jae-Rhim Lee offers what she calls "a modest proposal at the intersection of art, science, and culture." Likening herself to a community of "*decompinauts*" who actively explore their postmortem options, seek death acceptance, and cultivate decompositional organisms like the Infinity Mushroom, Lee introduces an alternative burial system that is an art exhibit, science project, and cultural experiment. This system is described on the Infinity Burial Project website as "a handcrafted garment…embroidered with a special type of threat infused with infinity mushroom

spores" that transforms the dead body "into vital nutrients that enrich the earth and foster new life." Although Lee is met with some uncomfortable laughter from her audience members while wearing the garment (or what she calls her "ninja pyjamas"), the burial suit is, as she argues, "a symbol of a new way of thinking about death and the relationship between my body and the environment," which is itself "a step toward recognizing the fact that someday I will die and decay." It is no surprise, then, that the Infinity Burial Project was recently re-named "*Coeio*"—Latin for "assemble, come together." Inaugurating a necro-ecological assemblage out of bodies, fungi, and other organisms, the Infinity Burial Project attempts to underscore the illimitable relations we have with our bodies, both before and after death. While the project is in its initial stages of manufacturing, the idea behind *Coeio* encourages and promotes a green burial and a becoming-compost.

Taking this notion even more literally, Katrina Spade's Urban Death Project is an award-winning compost-based renewal system that literally metamorphosizes dead bodies into mulch. As a creative, affirmative, and ecological alternative to the traditional funeral, Spade's project (while also still in its initial stages of crowd-funding and planning) is an innovative approach to death acceptance. Spade's approach is not simply about regeneration, but about ritual. According to the Urban Death Project's website, "The Urban Death Project is not simply a system for turning our bodies into soil-building material. It is also a space for the contemplation of our place in the natural world, and a ritual to help us say goodbye to our loved ones by connecting us with the cycles of nature."

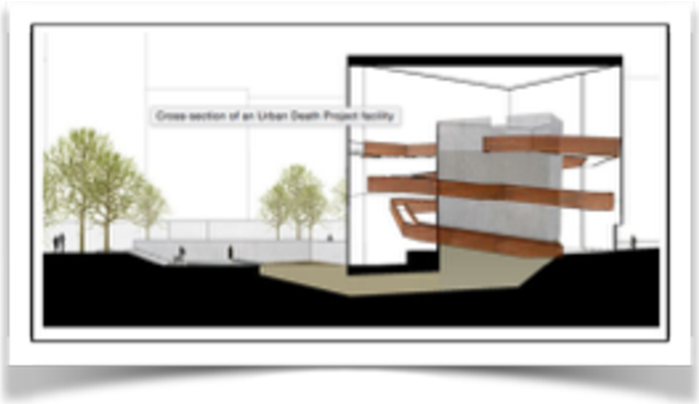

Figure 39. "Cross-Section of an Urban Death Project Facility." *Urban Death Project* Public Website. Aug. 1st, 2015.

In becoming-soil, the corpse of Lee's and Spade's projects demonstrates the ecological remediation of the dead body as an ethics of enclosure in the earth, which creates everlasting, immeasurable, and only-yet-to-be-imagined transformations into roots, rhizomes, and other nonhuman structures and landscapes. By imagining the potential of the body to continuously enter into new forms of relations and modes of being, these projects not only transform the conceptual landscape of death and our own cartographies of situatedness in cultural systems of mourning, but also quite literally revolutionize both urban and rural space. The Italian woodland project, Capsula Mundi, for instance, is an earth-capsule: a veritable seed or womb with an enclosed carcass that is implanted in the soil along with a seedling. Replacing the modern cemetery and creating new ecological systems, the Capsula Mundi project declares that "a cemetery will no longer be full of tombstones and will become a sacred forest."

Figure 40. "Genesis." Capsula Mundi public website. Aug. 1st, 2015.

These projects install a new vision of death as a process that initiates an intensive web of belonging with the environment. Fostering an ethics of enclosure, natural burial systems imagine death as a vital, agential, material, and affirmative inter-species relationship with nonhuman animals. Countering the biopolitical ethic of finitude that would insist upon the fragility of life, this ethics pursues the creative potential of becoming beyond the desistance of vital signs and the confirmation of clinical death. In so doing, it becomes possible to ensconce a post-mortem ontology of being that challenges Western philosophies of mortality through a framework of "deep bioegalitarianism" (Braidotti, "Animals" 528). This bioegalitarianism offers a *material and ecological grounding* that, as Braidotti argues elsewhere, "expresses an embodied and embedded, and hence partial form of accountability, based on a strong sense of collectivity, relationality and hence community building" (*The Posthuman* 49). This in turn envisions a vitalist epistemology of death that disposes of the humanist schema of life and death and secures a "new earth" and a "new people" that can foresee a (de)compositional, composting, nonhuman and corpsical future of the earth. The ecological prospects of natural burial initiatives, fomented by fungal species, inspire a becoming-soil and a becoming-mushroom. In becoming mulch, the human can perform a post-mortem poiesis to the fullest.

Choosing (De)Composition Over Critique

In outlining the multi-species decompositions of worms, molluscs, corals, and fish, we have yet to fully ask: why these organisms, and why not others? While I hope I have made a case for the intersection of worms, molluscs, corals, and fish in Darwin's natural histories, I will emphasize that necro-ecological communities can be forged anywhere, and with all manner of human and nonhuman animals and organic and inorganic matter. To a certain extent, I would echo the argument of Julian Yates, whose *Of Oranges, Sheep, and Yeast: A Multispecies Impression* explores vegetable, animal, and microbial species in order to explore the acts of inscription that intersect with other fungal, plant, and chemical actors. Examining "sites of exchange between the worlds of flesh and discourse," along with "different orders of life and death," "states of animation," and "traces of the acts of writing or coding of the host of others we come into being with" (16), Yates explores how material-discursive formations cross over and in between phylums and classes of species. Anticipating the inquiries of his readers, Yates asks: "Why sheep, oranges, and yeast and not some other constellation of actors?" "The answer remains," he writes,

> in one sense, arbitrary. Choose other entities and you shall tell other stories, find yourself charting different courses. That said, focusing on three differently scaled actors from different biological kingdoms (animal, plant, and fungus) allows me to explore the way in which the scaling of our relation to these different types of entities produces differently configured biosemiotic archives (bodies and texts). (18-19)

I would agree with Yates's contention that particular configurations of matter produce particular stories (fishy or wormy, etc). However, unlike Yates, who has (whether arbitrarily or not) selected representative organisms of biological kingdoms as a way of representing the scale of animal life

in relation to the human, my project emphasizes the embeddedness of the human in biological networks and has outlined case studies that illustrate how the human fits into evolutionary timescales and spaces that exceed the human's capacity to see and know the past, present, and future of species divergence. Death, in this project, has been the great equalizer that flattens distinctions between human and nonhuman matter and that recognizes the massive scale and scope of evolutionary history. The scale of evolution, according to Jeffrey Jerome Cohen (as explained in the chapter on corals), always exceeds our cognitive abilities.

Examining necro-ecology through a careful and compassionate reading of (de)compositional elements (rather than through the "sledgehammer of critique" in Latour's manifesto), this project has worked towards a ethico-onto-epistemological framework advocated by Barad and other New Materialist scholars. Reading with the intention of charting difference and continuous, contingent change across the epochs of natural history, the decompositional still lifes of this project have been ecologically oriented, animate, grotesque, and disordered in equal measure. From the post-mortem natural history of worms to the oozing performances of snails, the sedimentary formations of coral reefs, and the putrescent scales of fish, the multi-species decompositions of these creative texts and artistic productions have established the foundation for the sympoetic expressions of post-mortem matter.

A Post-Mortem Posthumanism

The greatest challenge to Posthumanist philosophy today, according to Cary Wolfe, is the problem of how to get beyond the humanist "schema of the knowing subject" (568). In his examination of Animal Studies and the Humanities, Wolfe insists that

> the full force of animal studies…resides in its power to remind us that it is not enough to re-read and reinterpret—from a safe ontological distance,

> as it were—the relation of metaphor and species difference, the cross-pollination of speciesist, sexist, and racist discursive structures in literature, and so on. That undertaking is no doubt praiseworthy and long overdue, but as long as it leaves unquestioned the humanist schema of the knowing subject who undertakes such a reading, then it sustains the very humanism and anthropocentrism that animal studies sets out to question. (589)

While biopolitical treatments of animality aim to critique humanism by expanding its purview (extending human rights to nonhuman animals, and endowing nonhuman animals with biopolitical subjectivity and agential autonomy), I would argue that the majority of these projects are untethered from the deep and rich evolutionary past that contextualizes the proper place of the human in the story of life on earth. Alternatively, if finitude has come to define "both the limit and the origin of human beings" (Ireton 17), I argue, along with Haraway, that it is a compost ethic that now designates the breakdown of the notion of the human in the face of death. To become posthuman, as Haraway infers, is to concede that such a thing as the human once existed. Yet death informs us of our organicism and our embeddedness in a riotous assembly of burgeoning nonhuman organisms that facilitate our corporeal breakdown. As in life, death reminds us of our assembled structures, composed and decomposed of an itinerant body of nonhuman animals that constitute our very being.

In a field oversaturated with treatises of animality that unfold from a "safe ontological distance," to use Wolfe's phrase, this project has attempted to scramble the coordinates of Posthumanist discourse. Rather than merely extending humanist principles to the animal (a common pitfall in Animal Studies that is also noted by Wolfe), I have aimed to establish a Post-

Mortem Posthumanism that confronts the "knowing" and "seeing" schema of the human. Challenging visual apparatuses and modes of perception, the *nature mortes* of this project have explored uncharted territories in Posthumanist theory. Death and decomposition, as we have seen in the creative texts of these four chapters, continually evade what is possible to see and know of being dead and of being human. I have found this perplexing puzzle to be a productive starting point for Darwinizing Posthumanism and Posthumanizing Darwinism. Without Darwin's subterranean, embedded, and decompositional Tree of Life, which presents another way of interpreting death and animality outside of the parameters of a biopolitical critique, how would we press Posthumanism forward? Without a sharp and incisive re-reading of Darwin's decompositional mechanism, aided chiefly by Grosz's original work on Darwin's life philosophy, would we have discovered Darwin's own Posthumanist leanings? Without this approach, we might never have come to appreciate the surprising dimensions of Darwinism's decompositional aesthetics.

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