



Extinction Temporalities: Rethinking TimeSpaces, Knots of Life and the Sixth Extinction in the Necrocene

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Abstract

By using the Necrocene nomenclature as opposed to the term Anthropocene as a concept to describe the extinctive and necrotic logic of capitalism, this essay analyses the multiplicity of non-linear, uneven multispecies knots of life in the Sixth Extinction. Namely, it focuses on the desynchronization of the relationships between elements and lifeforms in the current global paradigm. This is done scrutinizing three different events that intertwine non-human ecosystems, human ecosystems and beyond-life-and-death agents through a New Materialism, Multispecies Studies and Environmental Humanities lens grounded in theoretical reviews and analyses. Relying on the connection between death, extinction and capitalism, this article generates, through the different cases of analysis, an alternative narrative for the current epoch while challenging anthropocentric views of time, space and ecology and, thus, reconnecting New Materialism and Historical Materialism as disciplines that can be generative if intertwined.

Keywords

Necrocene; Extinction Studies; Sixth Extinction; Environmental Humanities; New Materialism; Multispecies Studies.

Introduction: Extinction, Anthropocene

I remember visiting the Amsterdam Micropia Museum in April 2019, coinciding with the start of longer days after a cold and grey winter. There, as a part of the Crucial Cleaners exhibition, visitors could observe a real-time decomposition of a giraffe calf that died at the Artis Zoo in 2014. The human eye is unable to perceive the necrotic activity that is going on inside the body of the mammal. It is only when a bone looms through a tear in the skin of the animal that the human eye can grasp little traces of the aftermath of the break-down of the cells by the thanatomicrobiome. These thanatomicrobiome are the dead animal's own microbes which, after the heart stops beating, release enzymes that break down the surrounding cell membranes, feeding in its own tissues and disintegrating the visible body. While staring at the giraffe, a question came across my mind: If one understands death as the possibility of the impossibility of any existence at all (White, 2005), how can we analyze the biocultural processes of death if death is an operation full of microscopical life that happens within and is part of a dead entity? Can the idea of death help us understand the temporalities intertwined in the paradigm of extinction?

Here, death can be considered as "the putrefaction of life, the stench that is at once the source and the repulsive condition of life" (Mbembe, 2003, p.15). However, it is also a part of life and, thus, the evolutionary process. Hence, the processes of death, decomposition and putrefaction are generative and can be fruitful to illustrate and understand the reality of our times. Just like a whale fall, empty of life as a living agent yet able to create and provide whole ecosystems for decades in the abyssal ocean, these processes present us certain epistemologically rich opportunities to generate worlds that rely on multispecies realms, together with alternate ways of understanding what it means to be alive (Radin, 2014). However, death as a concept might fail to grasp what is at stake in an extinction process. That is, extinction, as opposed to death yet with death as an inherent category, stops the evolutionary process. Extinction is then a negative phenomenon since, even though it is framed as an event, extinction means the withdrawal from being as an inversion of existence (Audra Mitchell in Gelonesi, 2014). Extinction is a deathly process, a collective death and the negation of both life and death. It is the ending of an ongoing lineage cultivated over millions of years of evolutionary time, that is, "the abrupt termination of a whole way of life, a

mode of being that will never again be born or hatched into our world” (Rose, van Dooren, & Chrulew, 2017, p.9).

In light of this, the Anthropocene age and the extinction embedded in it have brought at the centre of the discussion the temporalities, connections and synchronizations of both living agents and agents that “wield power over life and death” (Bastian & van Dooren, 2017). Here, human, geological, historical and ecological time start to unfold and host new uneven and multiple temporalities that might confront each other. As Michelle Bastian and Thom van Dooren (2017) illustrate,

In these and other fundamental ways, this is a period in which relationships between life and death, creation and decay, have become uncanny; no longer entailing what was once taken for granted. Toxic legacies, mass extinction, climate change: all simultaneously remake both temporal relations and possibilities for life and death. (2017, p.2)

Entangled in the eeriness of the knots between different living and non-living agents the concept of Anthropocene is at stake. It has become a core element in contemporary scholarship as an interdisciplinary endeavour to comprehend the geo-historical agency of humankind. However, this nomenclature can be approached as a narrative that, as Eileen Crist (2016) mentioned, “clings to the almighty power of that jaded abstraction “Man” and to the promised land his God-posturing might yet deliver him, namely, a planet managed for the production of resources and governed for the containment of risks” (p.23).

In this light, scholars such as Naomi Klein (2019) or Jason W. Moore (2016) have moved away from the conception that the current planetary crisis is a consequence of humankind as a whole. In turn, they stick to the idea that the ecocidal modification that the Earth has and is suffering has been a direct consequence of capitalist mass-accumulation, alongside the false belief that the Earth is an infinite fountain of resources. Therefore, Moore (2016) proposed the idea of Capitalocene, the age of Capitalism, an epoch dominated by the geological, political, ecological and cultural power of capitalist accumulation, which has separated Nature outside Humanity in what he coins as The Law of Cheap Nature. In this duality, Nature not only entangles natural ecosystems, but also members of human societies “such as peoples of colour, most women, and most people with white skin living in semicolonial regions” (Moore,

2016, p.91). Namely, when we separate the way in which elements and lifeforms coexist in this duality, we can start to ground the foundations based on power differentials that have perpetuated the inconsistencies brought in a global sphere by capitalism while, at the same time, putting anthropocentric views at stake.

Nonetheless, in the midst of the sixth mass extinction, the Capitalocene theory fails to acknowledge the deathly nature of capitalism. As Jonathan Crary (2013) postulated, neoliberal late-capitalism is “inseparable from environmental catastrophe in its declaration of permanent expenditure, of endless wastefulness for its sustenance, in its terminal disruption of the cycles and seasons on which ecological integrity depends” (p.10). That is why this essay advocates for the idea of Necrocene proposed by Justin McBrien (2016) as a concept to understand the current global and multifocal crisis. The Necrocene narrative, then, “reframes the history of capitalism’s expansion through the process of becoming extinction” (p.116) connecting capitalism with the sixth extinction as the first mass extinction caused by a *modus vivendi*. For McBrien (2016), capitalism is “the reciprocal transmutation of life into death and death into capital” (p.117) as a programmed way of destruction. Capitalism is a process of extinction through the reproduction of productivity. What the Necrocene brings to the discussion is the extension of this idea to human and non-human beings alike and how this subjugation to capitalism leads to processes of death and, therefore, extinction through accumulation.

Then, the Necrocene binds our current age as an epoch in which, according to McBrien (2016), “capitalism leaves in its wake the disappearance of species, languages, cultures, and peoples. It seeks the planned obsolescence of all life. Extinction lies at the heart of capitalist accumulation” (p.116). Furthermore, McBrien (2016), relying on Achille Mbembe’s (2003) necropolitics, approaches capitalism as the reciprocal alteration of life into death and death into capital, being this necrosis capital’s operation through apoptosis, as a way of destruction programmed through its logic prompting towards direct extinction as a result of the reproduction of productivity. As John P. Clark (2019) pointed out, the only thing that stays at the centre of such turmoil is “a sovereign lack, an imperious death drive, a destructive nothingness, surrounded by a field of objects of consumption and domination” (p.16).

However, capitalism does not seek death and extinction per se, but it creates deathly worlds through its logic. Capitalism survives and expands itself by adapting and absorbing everything at its reach, sucking out living labour and resources until these agents are no longer useful for its ends. Even the current ecological crisis has been absorbed by capitalism as it is seen in the green-washing attitude multinational companies are moving towards. Consequently, McBrien (2016) postulates that capitalism “did not ignore environmental risk; it made it the central problem of its survival” (p.119) and, at the same time, it made it a potential groove to be exploited through capitalist logic.

When approached through this lens, it becomes clear that the Necrocene refers to the fact that the illusion of a God-posturing ‘man’ derives its freedom from the commodification of non-human and human resources that generate the current lifestyle in which economically-rich regions are established (Stoekl, 2007). Nevertheless, what makes the Necrocene narrative original as opposed to other narratives is that it highlights that capitalism will cause its own extinction through the reproduction of accumulation and the inequalities that lie at its heart. Its accumulative drive in a finite and warming world is not only unsustainable for the objectified agents under its anvil, but also unsustainable for its own existence. Although it is easier to imagine the end of the world than the end of capitalism (Jameson, 2003), it is also true that capitalism will last as long as there is something to exploit for the benefit of the ones that make profit from this system. Yet, the ecological crisis and the sixth extinction put capitalism in a troubled position.

By using alternative nomenclatures such as the one presented in this article, we are forced to think about the existing relations between our ontology and the environment. The Necrocene puts extinction as an inherent cause of capitalism in a world in which humankind is alienated from its links to the non-human world. Then, the Necrocene brings, through its narrative, the fact that we are living in an age in which extinction as a stop in the evolutionary process and the unmaking of being of both human and non-human beings is brought at the centre of the debate.

Therefore, this article aims to use the Necrocene narrative as opposed to the Anthropocene in order to analyse the multiplicity of non-linear and uneven multispecies knots of life that are being remade in the Sixth Extinction. In other words,

this essay focuses on the desynchronization of the relationships that exist between elements and lifeforms in the current global paradigm as a consequence of accumulation and extraction. That is, by scrutinizing capitalism connected with ecology, and three case studies (plastic debris, the Great Barrier Reef and Pacific islands) that portray the intertwining of human ecosystems, non-human ecosystems and beyond-life-and-death agents, this article shows how an alternative theorization of the current epoch is needed so as to portray the inconsistencies that lie at the heart of the epoch itself and its discursivity. In addition, this necessarily challenges the anthropocentric views of time, space and ecology, trying to unify in a single narrative the two dimensions of Historical Materialism and New Materialism, in an ambitious task to find synergies between both.

To put it in a nutshell, the Necrocene narrative defines capitalist hegemony as an extinction-booster. Through the acknowledgement of the core logic of the Necrocene and its production of death and extinction, we can start to discern the shape of the Necrocene itself, becoming an interesting heuristic to come to terms with the contemporary world. In addition, and as a driver for this essay, the Necrocene allows us to grasp the fact that the multispecies ethnography of extinction reminds human beings of the fact that extinction “is never a generic event and is always a multi-contextual phenomenon requiring multi-disciplinary modes of encounter and understanding” (Wolfe 2017, p.x). Then, borrowing Donna Haraway’s (1988) term, thinking through the Necrocene and extinction allows us to conduct analysis of different situated extinction stories, generating a multiplicity of stories within the same one, immersing ourselves in the lives of non-humans and the entanglement humankind has with them, thus moving beyond anthropocentrism. Thinking through extinction then, asks for an intergenerational understanding of biodiversity, time, space and the way these stories are told and interconnected.

Time, Ecology and Extinction in the Necrocene

This uncanny epoch exemplifies the connections Bill McKibben (2003) postulated between time and nature. Namely, that modern civilization has failed to approach the threat of climate change in a successful way because human perception of nature has

an internal confusion about time, thinking that the Earth works on another dimensional timescale compared to post-industrial high-speed lifestyle, lulling us, as McKibben (2003) pointed out, “into imagining that the physical world offers us an essentially stable background against which we can run our race” (p.7). Hence, this treatment of nature as a stable background where humanity and the practices of capitalism can perform at its will claims that the different modifications that occur within nature are not significant or have any relevance.

When thinking in extinction times, one must consider the way in which lifeforms call and respond since, as Deborah Bird Rose elicited (2012) “ethics are situated in bodies, in time, in place and necessarily, in encounter” (p.6), understanding how these intertwining of different forces creating such process connect with the current temporalities, spaces and relationalities of the living beings. Therefore, humans have failed to comprehend time as something subjective and different between species. When one considers factors such as the Planetary Boundaries¹ temperature, humidity, gravitational effects and how materials and agents respond to them, clocks become biased, inaccurate and less reliable (Bastian, 2017).

To recognise nature’s own agency is to recognize that our perception of time when approaching nature needs to be shifted away from conventional temporal models. Humans have failed to approach this matter due to their linear, anthropocentric perception of nature as a whole. Therefore, there is the need to move away from the human rationality extrapolated to natural ecosystems from a Cartesian, Spinozian or Leibnizian tradition that leads us to understand the physical world through clocks. In turn, ecology needs to be approached through an ecological rationality that scrutinizes the connection between the actions, effects and choices of an agent, together with the desires, interests and objectives of said agent, since they need certain ecological conditions to be fulfilled (Plumwood, 2002). Furthermore, within this rationality, it is crucial to comprehend environmental ecology as an epistemological system based on an understanding of nonlinear systems governed by feedback loops and nonlinear causality (Guattari, 2000). With such an approach we can rethink time, agency and

¹ Planetary Boundaries are “human-determined values of the control variable set at a ‘safe’ distance from a dangerous level (for processes without known thresholds at the continental to global scales) or from its global threshold” (Rockström et al., 2009). Crossing one or more of these boundaries is likely to have catastrophic consequences due to the risk of crossing ecological thresholds. Four of them have already been transgressed.

ecosystems. That is, an agency that is understood beyond anthropocentrism and as something inherent in all elements. Thus, one can include natural ecosystems and the human beings associated with such at the centre of their agency, as a linear time connection with such terms deprives them from the ability to exercise their agency (Bastian, 2009).

In order to understand the different relationships and knots of life that play part in the Necrocene as a concept and as a period of extreme extinction, and portray how the desynchronization created by accumulative and extractivist praxes, it is necessary to challenge the ideas of time and space as something already given that always functions in an anthropocentric manner, since these concepts become very blurry when we approach other lifeforms and elements beyond humankind. Therefore, it is interesting to approach the temporalities of the Necrocene through what Jon May and Nigel Thrift (2001) coined as *TimeSpace*. According to them, *TimeSpace* is not a linear and even temporality that evenly elongates over space, but rather an assembly of diverse and divergent networks of time that stretch in multiple and uneven directions throughout an irregular social field. Then, this may be able to construct incompatible and contradictory senses of time which do not stand alone as every sense of time is the consequence of the dynamism and unevenness these *TimeSpaces* entail. Moreover, *TimeSpace* is mirrored through material practices yet not limited to the physical, as an entity that is described to “both expand and to contract, time horizons to both foreshorten but also to extend, time itself to both speed up but also slow down and even to move in different directions” (May & Thrift, 2001, p.20).

Thus, if we think with Crary’s (2013) idea of *24/7 Capitalism*², the Necrocene as a process shows the multiplicity of *TimeSpaces* embedded within it. In other words, when focussing in an analysis through the Necrocene narrative, we are again forced to understand that anthropocentrism as a way of understanding the dynamics of the world is no longer useful if we want to discern the extinctive injustices and desynchronizations that lay at the heart of the contemporary world.

² For Crary (2013), the 24/7 late-Capitalism 24/7 “steadily undermines distinctions between day and night, between light and dark, and between action and repose” (p.17). It is through this sleeplessness, of the ontological realism of perceiving the planet as an unstoppable working site, and insensibility through it that it defeats the possibility of experience and of understanding of life, time, space and non-human agents from an ecological perspective.

With that said, capitalism and its modes of production, exploitation and permanence triumphed due to its encounter with different TimeSpaces. Namely, capitalism has benefitted from the modification and evolution of the perception and flow of the TimeSpaces, that is, the different assembly of different temporalities and spaces that play part in a system, under its anvil. Thus, as Massimiliano Tomba (2009) suggested, the capitalist modes of production require “the synchronization through extra-economic violence in order to produce differentials of surplus-values, and to be synchronized with the world-rhythm of socially-necessary labour” (p.56). By synchronizing such TimeSpaces through extra-economic violence and socially-necessary labour, capitalism holds at its core this violence based on the Law of Cheap Nature, extended through liberal democracy and fascism. The modification of time by the logic of 24/7 late-Capitalism has disrupted the temporalities of the agents under it, modifying the shifts of socially-necessary labour. With shifts that can fluctuate between day and night, the Necrocene has absorbed and destroyed the natural circadian rhythms through its deathly logic.

Thus, the Necrocene helps us theorize and portray the voracious agency of Capitalism as an extinctive, extractive, viscous and viral³ entity that affects everything at its reach, from ecosystems to individuals to the point of necrosis. It provides new ways of understanding reality and the current global crisis by acknowledging the infectious and lethal logic of Capitalism and the subsequent inequalities engraved on it through its necropolitics⁴, necroeconomics⁵ and necro-ontologies. The hegemonical category of the Necrocene does not allow humans to discern a coherent alternative to the current logic. In addition, it has at its core the valuation of dead objects (for instance, money, the generation of it and everything money can buy) over the right of life of

³ Viscous in the sense that capitalism as a hegemonic structure attaches to everything at its reach, generating interconnections between its modus operandi and the different elements and lifeforms that coexist in the world; and viral in the sense that, through this viscosity, it manages to stretch itself to a global entity that infects everything at its reach, creating both an infection (entities helplessly fall into its paradigm) and an element of necrosis (it generates extinction at different levels).

⁴ For Mbembe (2003), Necropolitics is “the generalized instrumentalization of human existence and the material destruction of human bodies and populations” (p. 14). This means that through Necropolitics he exposes that through the negation of nature, humankind creates a world around itself and, in this process, humankind becomes subject of the negativity of this dialectic: death. With the inclusion of human and non-human beings alike, it regroups the subjects into the process of becoming extinct.

⁵ Necroeconomics can be understood according to Chaka Unzonde (2013) as an economic system organized around the consumption of bodies through accumulation. These bodies are rendered as instrumentalised “matter” solely used for the accumulation and generation of capital, otherwise disposed of them. These bodies have no intrinsic value in the capitalist logic besides the commodified value.

human and non-human living agents as some sort of social necrophilia (Thorpe, 2016). Both social and ecological policies within capitalism exemplify this, as for real policy to be implemented nowadays, there needs to be a monetary quantification of the issue at hand and then put into balance⁶. In addition, the differential effects of this logic extend anthropocentric and imperialist views as a logic that has doomed, directly or indirectly, through its extractivist and accumulative drivers, different non-human ecosystems and human cultures, usually those that have contributed and benefited the least from this system. Capitalism is, thus, a material, ontological, ideological, cultural, economic and ecological force that steers our decisions and understandings through its hegemonic logic of death and inevitable extinction as an inherent condition of its modus operandi in such way that it is almost impossible to fully get rid of it.

Since, as Timothy Morton (2016) suggested, we are “faced with the task of thinking at temporal and spatial scales that are unfamiliar, even monstrously gigantic” (p.25), to explore time in the Necrocene is to consider the sequence and synchrony of TimeSpaces as material achievements in human and non-human synchrony rather than mathematical accuracy. These sequences rely on “real embodied generations - ancestors and descendants- in rich but imperfect relationships of inheritance, nourishment and care” (van Dooren, 2014, p.27). That is, according to Michelle Bastian (2017) “neither do synchronies and sequences occur in isolation; rather, multitudes of them bring together food and fed, pollinator and pollinated, traveller and medium travelled” (p.151).

Then, the Necrocene is, borrowing from Michelle Bastian and Thom van Dooren (2017) about “foldings and pleatings, about simultaneous and contradictory temporalities, about the breakdown and (re) formation of new multitemporal relations” (p.7), where life, death and extinction are at stake as processes, possibilities and speculative imaginaries. Accumulation and extractivism have generated these different transformations, and it is only through the acknowledgement of these dynamics within a nomenclature that allows us to focus on a critique of capitalism, extinction and post-

⁶ See, for instance, how mainstream conservation has extended the usage of ecosystem valuation as an economic process that assigns an economic value to an ecosystem service. This has proven to be extremely effective to manage protected areas that generate direct assets or externalities to a capitalist market. Nonetheless, as it is only preoccupied with the economic area conservation entails, many ethical and political questions arise. For instance, the anthropocentric, colonial, imperialist dimension conservation entails, not to mention the reasons why conservation needs to be implemented in the first place.

anthropocentric TimeSpaces that we are able to comprehend the different sections that need to be analysed through a biopsy and the discursivities that perpetuate these dynamics.

Multispecies Knots of Life in the Necrocene: Plastic Debris

As Bastian (2017) exemplifies in her study of Leatherback Turtles, the sequences and TimeSpaces that the multispecies knot of life has created year after year between the different species entangled in its tentacles have been disrupted and unbalanced as a direct consequence of the processes of the Sixth Extinction. Due to such extinction, Leatherback carcasses that appear in their nesting season are not provided to the people of Tortuguero in Costa Rica, who have relied on them for centuries, but to research and tourism. With closed beaches for the locals and open for researchers and tourists, the knot of life and TimeSpace synchronization between the Leatherbacks, the local people and their new predator due to the destruction of the forest and the decline of species living there, the jaguar, are completely disrupted and disconnected (Bastian, 2017). As Rose (2012) indicated, with the disruption of such relationships, TimeSpaces are being unmade, transformed and unbalanced.

Apart from the jellyfish blooms in the Atlantic Ocean and the lack of leatherbacks, another pivotal example, maybe a much straightforward one regarding how capitalism has boosted the sixth extinction through its hegemonical necroculture, is the way the Necrocene TimeSpaces have disrupted the knots of life between species due to plastic and microplastic pollution. Plastic is thought to degrade in a temporal span of between 450 and +1000 years (LeBlanc, 2019) and although research is still not clear, it is believed that it will most likely never biodegrade (Harris, 2010). With a high chance of ending up floating in the ocean, plastics have been found worldwide in marine environments with analysis showing that more than 250,000 tons of debris are currently afloat at sea, most of them proceeding from anthropocentric accumulative practices such as tourism, fishing or industrial activities (Barboza et al., 2018). Ingestion of such materials is the main plastic and microplastic species exposure. As Luis Gabriel Barboza et al. (2018) highlighted, "after ingestion, microplastics absorption, distribution through the circulatory system, and entrance into different tissues and cells can occur, potentially resulting in several types of adverse effect"

(p.341), spreading through the trophic chain and causing mortality, reduced energy, decreased predatory performance or intestinal damage (Barboza et al., 2018). Since 1968, leatherback autopsies have disclosed the necrotic reality of the relationship between plastic and them, revealing that over 35% of those autopsies exposed plastic debris in their intestines, reducing its digestive capability and being a significant cause of death for this species (Mrosovsky, Ryan & James, 2009).

Now entangled in the relationship with leatherbacks and their surroundings, the immortal agency of plastic is threatening the mortal synchronizations of mortal agents and, therefore, it has radically modified the leatherback's knot of life. With decrease in their prey in some areas, their plastic ingestion increases, destroying their intestines. On the other hand, leatherbacks are also unable to cope with the jellyfish blooms in other areas because their intestines are damaged and cannot prey on them, modifying the synchronization they have with Atlantic jellyfish (Mrosovsky, Ryan & James, 2009). With such eerie synchronization of TimeSpaces, and perceptions of them and extinction in the Necrocene, not only have modified human lives through their necropolitics, necroeconomics and necro-ontologies, but also have unbalanced the way individual agents in massively distributed ecosystems understand their centuries-old rhythms, their relations and how they ecologically synchronize with each other. That is, the relationships and knots of coexistence between human and non-human elements are, thus, modified through accumulation, extraction and their subsequent pollution, triggering individual deaths and collective extinction processes in the process.

Objects, and their agency, tend to be ignored as long as they function properly. It is when they start malfunctioning that we start noticing them (Harman, 2012). Plastic has become a crucial part of the daily modern lives of most societies, transcending the economically rich to become a material found everywhere. It was only when this material started affecting the livelihoods of human and non-human ecosystems, or even creating its own ecosystems such as the *Plastisphere* or the Great Pacific Garbage Patch, that humankind started noticing its agency as an object intertwined in different knots of life.

Here, then, thinking through plastic allows us to come to terms with the fact that human culture is now inherently connected with the alien world of oceans, calling for

new approaches so as to discern the constitution of these infinite flows (Alaimo, 2014). Thus, the ocean is no longer the *aqua nullius* realm⁷ that was thought to be. In the Necrocene, capitalist accumulation, extractivism and human interactions with the ocean have affected, in multiple ways, the oceans and seas and, thus, its knots of lives. When approaching plastic debris, the seas and the oceans must be understood in terms of its agency, its anthropogenic pollution and acidity, and its interobjective interactions and ontologies, opening space for new understandings of the current geological epoch and its cultural, social, political and ecological impacts (DeLoughrey, 2017, p.34). That is, plastic debris makes us come from anthropocentrism and the significance plastic has, to situate the thinking body in an oceanic milieu, observing the different materialities that take part and constitute the uncanny relations between oceans, plastic, the different multiobject and multispecies relationships that appear, and the Necrocene.

As hermeneutics philosopher Santiago Zabala (2017) illustrated, “we cannot simply observe, describe and understand emergencies without being part of them” (p.112). That is, attentively analyzing plastic debris and the different entanglements this phenomenon entails might be helpful in order to take the theory of the nature of being insofar as how beings are modified their TimeSpace, and how these changes can be understood in their own milieus in terms of a situated philosophy.

Multispecies Knots of Life in the Necrocene: The Great Barrier Reef

It is believed by scientists that the Earth climate system will need around 50,000 years to digest and assimilate the damage and impact of human activities only during the third millennium, driving the Earth towards an irreversible greenhouse effect climate (Gilkson & Groves, 2016). With transparently predicted catastrophic events if the Planetary Boundaries (Rockström et al., 2009), which attempt to frame the different big groupings of single planetary crisis that can lead to an irreversible planetary plight, are overstepped and surpassed, the current crisis is distorted in terms of TimeSpaces. In this light, another event that illustrates the desynchronization and unbalancing of

⁷ Paraphrasing *Terra Nullius* as the land of none, concept appropriated during colonization processes, *Aqua Nullius* was the last stage of the oceans and seas before being absorbed by the omnipresence of humankind after the end of nature (DeLoughrey, 2017).

the knots of life and TimeSpaces between agents and species is the decline and likely extinction of the Great Barrier Reef (GBR) in Northern Queensland, Australia, due to mass-bleaching events as the consequence of capitalist overproduction and accumulation.

Defined as “a stress response that results in the loss of intracellular symbiotic dinoflagellates (Symbiodinium) and/or their photosynthetic pigments; on a broad spatial scale, bleaching results from extended warm periods” (Ainsworth et al., 2016, p.338)⁸, these events, as a straightforward result of global warming and climate change⁹, are a direct implication of the dynamics of the Necrocene as a narrative, its logic and the necrotic nature of it on ecosystems. In the last five years, there have been three mass-bleaching events in the GBR. In 2016, the event radically affected the Far-North Queensland area from Townsville to Lizard Island and has been the most severe of the three. In 2017, the mass-bleaching catastrophe was very virulent with the central section of the GBR from Townsville to Cairns/Port Douglas area. The latest event, which happened in March of 2020 due to the incredibly high temperatures and SST rises in February 2020 (United Nations, 2020), radically affected the Cairns/Port Douglas area and also, for the first time, the Southern Barrier Reef zone from Bundaberg to the Whitsunday Islands (Readfearn, 2020). In addition, it is not only global warming that is destroying the GBR. As Glenn De’ath et al. exemplify “mortality and reduced growth of the reef-building corals due to their high sensitivity to rising seawater temperatures, ocean acidification, water pollution from terrestrial runoff and dredging, destructive fishing, overfishing, and coastal development” (De’ath et al., 2012, p.17995) are the human-induced components that can cause a cataclysm of a coral reef affected by them in around a month (De’ath et al., 2012).

As a consequence of this destructive cocktail, the knots of life and TimeSpaces known for the agents that inhabit these areas have been distorted and stripped down. An experiment carried out by Timothy Gordon et al. (2018) instantiated that reef fish larval preferences and juvenile settlement conduct were affected by the degradation of the reefs. The results showed that predegradation landscapes were more appealing and

⁸ Bleaching must not be mistaken by Ocean Acidification, which is a continuous “deterioration of the chemical conditions needed for physiological and biogeochemical performance of the reef ecosystem” (McLeod et al., 2012, p.21). Coral Bleaching can be triggered by Ocean Acidification, even though it is usually caused by short-term increases of the SST (McLeod et al., 2012).

⁹ See Ainsworth et al. (2016) for a detailed explanation that links coral bleaching, global warming and climate change.

biologically attractive to the subjects than postdegradation. Depending on the welfare of their ecosystem as they rely on acoustic cues and sound to determine and guide their habitat selection, fish are losing attraction towards the bleached reefs (Gordon et al., 2018). However, as Gordon et al. (2018) point out, coral reefs solely rely on young fish for the refilling of functional taxa, process that is in extreme danger due to the degradation of the reefs, the fact that fish rely on acoustic cues and the consequent decline of them in damaged coral reefs. According to the NOAA, “with growth rates of 0.3 to 2 centimetres per year for massive corals, and up to 10 centimetres per year for branching corals, it can take up to 10,000 years for a coral reef to form from a group of larvae” (NOAA, 2020), and barrier reefs ranging from 100,000 to 30,000,000 years to become a full formation (NOAA, 2020). These ancient ecosystems and its millennium-old rhythms, synchronized knots of life and TimeSpaces have been totally disrupted in less than 50 years as the GBR has decreased its coral density in a 50.7% between 1985 and 2012 (De’ath et al., 2012) due to the direct consequences of mass-accumulation and the deathly nature of the Necrocene, which exploits directly or indirectly everything at its reach. In other words, the dynamics and rhythms of coral reefs are “already dominated by complex interactions between multiple anthropogenic drivers, which is resulting in new assemblages of life” (Hughes et al., 2017, p.86) that have led scientists to confirm that “it is no longer possible to restore coral reefs to their past configurations” (p.86).

Another event that is happening within the desynchronization of the species and the ecosystems of the GBR are the invasion of ecosystems by the *Acanthaser planci*, popularly known as Crown-of-Thorns Starfish (COTS). These large starfish that prey upon coral polyps are one of the most urgent problems of the GBR. When COTS populations outbreak, due to the critical situation of some reefs on the GBR and the absence of predators due to the decline in the biota of affected reefs, these starfish devour living polyps faster than their reproductive cycle, affecting reef-building corals (Barrat, 2019). With the destruction of the reefs for a wide range of capitalocentric reasons, the ancient rhythms and TimeSpaces that once coexisted and sustained every agent in the knot of life and the sequences of generational time are now eerie and unfamiliar to the agents entangled in such knot in a process in which time itself seems to fray. The new relation that is pressing COTS and coral reefs together is, therefore, disrupting others. As Terry Hughes et al. (2017) noted, “current thinking on

the responses of ecosystems to one or more drivers is too linear” (p.85), not conceiving and reframing that the “ecological response to even a single stressor is often curved owing to positive or reinforcing feedbacks” (p.85) and it usually “discounts the role of time lags between cause and effect in shaping the non-equilibrium trajectory of reefs” (p.85). That is, it is crucial to understand the value of such drivers to analyse them from a non-linear and uneven perspective in the knot of life.

The Necrocene epoch has also modified knots of life between human beings and the GBR ecosystems. Promoted as one of the main attractions in Queensland, the tourism industry related with the GBR is vital for areas such as Airlie Beach, the Whitsunday Islands or Cairns which solely depend on it. According to Bruce Prideaux, Julie Carmody & Anja Pabel (2018), in 2015-16 a total of 17.8 million people visited the GBR. As several studies have illustrated, “factors that reduce the positive image of a destination weaken its competitive position in the market place by reducing the strength of its pull factors” (p.9). Crisis and natural disasters such as coral bleaching have a huge impact on such areas as they seldom have another source of economical production. The same way some winter-holiday areas that have over-reliance and lock in a single dominating destination image such as ski resorts (Prideaux, Carmody & Pabel, 2018), the over-reliance on GBR associated tourism is hanging by a thread. As Natalie Stoeckl et al. (2014) pointed out, “environmental non-use values such as healthy corals, reef fish and iconic marine species are of highest importance to the quality of life of local residents” (p.12), stating that the degradation of the GBR can have devastating effects for the communities that rely on them as the number of visitors will rapidly decline. In this light, the tourism industry in Central and Northern Queensland is starting to suffer the consequences of bleaching with a decline on visitors, both because the GBR biodiversity is suffering the Necrocene at its core and the industry is now competing with cheaper snorkelling and scuba-diving hotspots in Southeast Asia such as Indonesia or Malaysia, which offer similar experiences to the ones at the GBR (Prideaux, Carmody & Pabel, 2018).

That is, the Necrocene as a narrative is compromising the relationships within ecosystems and the relationships between non-human and human agents. The millennium long synchronizations in the knots of life between the species that inhabit

the GBR are now in a state of disequilibrium as a straightforward consequence of the current instability and present and future transgression of the thresholds set by the Planetary Boundaries. What can be extracted from this is that the dangers of capital-induced climate change, sea surface temperature, biodiversity loss, ocean acidification and coral reefs are playing in different TimeSpaces, imbricating one another. With these thresholds evolving at an unprecedented historical speed, the decline of the capability of reefs to be resilient due to these same dangers and their slow development over TimeSpace, the ecology of these reefs is, for the first time in history, at stake. Furthermore, as stated before, it is not only the direct bleaching events that have been caused by a rise in sea temperature but the consequences of such events. With reef fish populations declining due to the bleaching events as they are more attracted by healthy reefs, the COTS outbreaks are becoming more common in the GBR, jeopardizing the resilience of the reefs, attacking healthy polyps and feeding on them faster than they can reproduce. In addition, the areas in Tropical Queensland that essentially rely on the tourism industry related to the GBR are imperilled as a consequence of the impoverishment of the biota there, predicting a major social and economic crisis in the areas if there is not resilience and adaptation to the new crisis. Thus, the TimeSpaces of the inhabitants of areas such as Cairns, Port Douglas or the Whitsundays, which have been three of the main doors to visit the GBR since the 1960s and which have an over-reliance on the GBR tourism have been shaken to its core as a consequence of the Necrocene.

Thus, while reading events through the narratology that the Necrocene theory proposes, TimeSpaces, ecology, extinction and coexistence are put at stake. The crisis that is upon coral reefs worldwide exemplifies these different problematics in a very clear way, shedding light upon the direct and indirect global causes of extraction and accumulation perpetuated by the economically-rich sections, dooming those who probably have generated the least in regards to said problematics, triggering a domino-effect extinction dynamism that will perpetuate capitalism at the expense of the annihilation of everything else besides capitalism as an extractive system.

Multispecies Knots of Life in the Necrocene: Pacific Islands

The Necrocene age is already laying on the line, amongst other agents, the peoples from islands and coastline areas. The sea-level rise rate estimates predict an unacquainted human catastrophe by the end of the 21st Century which will change our understanding of the global reality and the TimeSpaces that intertwine all agents in the knot of life, devaluating any prediction of speculative futures previously conceived due to the exhaustion of certain resources, disappearance of big chunks of land and a consequent massive movement and flux of people (Pilkey, Pilkey-Jarvis & Pilkey., 2016), which will affect an estimate average between 25 million and 1.4 billion people by the year 2050 (Parenti, 2011; Geisler & Currens, 2017). With high chances of becoming climate refugees, defined as people who are “forced to leave their home or community due to changes to the local environment, such as rising sea levels, drought, famine, or other effects of climate change” (National Geographic Society, 2012; in Tetrick, 2018), the people from the Pacific Islands will be some of the most affected by the Necrocene, extinguishing their local cultures and smashing with iron fist the synchronized ancient temporalities of their livelihood.

As an assessment of the 22 Pacific Island Countries pointed out, the nations with large reef areas and coastal communities “had the highest relative vulnerability to climate change impacts on reefs because of high reef to land area, dependence of household incomes on coastal fisheries (for food and livelihoods), aquaculture (for jobs) and tourism (for jobs and contribution to GDP), and low education standards” (Dutra et al., 2018, p.145). This only exemplifies that “those that contribute the least to the human causes of sea-level rise will be hurt the most” (Pilkey, Pilkey-Jarvis & Pilkey, 2016, p.3). That is, together with the rise of population in these islands which is estimated to reach around a 50% rise by 2030 (Mahnke, 2013), coral degradation is a direct threat for the livelihoods of the Pacific Islanders as one of their main sources of income and food supply is fishing. With the decline of these practices and the subsequent increase of food and income insecurity due to their local reefs’ degradation, “current projections anticipate declines in reef fisheries productivity of as much as 10- 20% in the western Pacific under climate change” (Pratchett et al., 2011 and Bell et al., 2016; in Dutra et al., 2018, p.145). Consequently, fishermen that have no access to an alternative *modus vivendi* tend to push beyond the limits of their local habitats in search for stock, which

can cause hysteresis and hasten a cataclysmic collapse (Hughes et al., 2017). If several weak feedbacks start acting simultaneously, as Hughes et al. (2017) illustrated, “they can collectively promote an unexpected regime shift as the effects of multiple drivers gradually increase” (p.86). Without being radically affected by mass-accumulation practices, the Pacific Islands seem to be better off than other areas because the development of fisheries took place later on and their practices are more local-based. Nonetheless, with the development of the tuna fisheries and exportation of goods due to the worldwide extinction of marine life and industries experiencing a noteworthy decline on their production, “there is a strong risk that the status of stocks will deteriorate in the near future if the governance of fisheries is not improved” (David, 2018).

The synchronies between Pacific Islanders and their surrounding ecosystems are being affected by the Necrocene. They are bound to be some of the first humans to become climate refugees due to the predicted calamity and the consequent transgression of the Planetary Boundaries. If the relationships between the different synchronized TimeSpaces that have been nourished, perfected through imperfection and inherited throughout generations are disrupted at such fast and catastrophic speed by capitalism and its logic, whether it is indirectly or directly, the knots of life start to make no sense. The Necrocene and its extintive force are disentangling these TimeSpaces that were intertwined before, making them visible as they get unattached. That is, when the sixth extinction is thought from an analytical gaze, time is being frayed, making sense of the eco-biopolitics trapped in the Necrocene paradigm and the different multispecies knots of life creating such a mesh.

To put it in a nutshell, the crisis in the Pacific Islands, together with plastic debris and coral bleaching, become snippets of the (de)synchronization of different elements that belong to multiple TimeSpaces that can only be understood through a post-anthropocentric gaze that puts the problematics of these elements front and centre. The Necrocene, hence, complicates the narrative of the new epoch while giving an alternative response in order to understand the dynamics of capitalism and extinction from a perspective that allows us to perceive the world as a net of different connections that have been created through evolution and that are being eliminated or modified towards extinction.

Living in the Necrocene: Stories of Death and Ecology in an Infected World

In light of this, humankind has modified the knots of life between species in such a short timespan that it is almost impossible for us to perceive it. As their magnitudes are so diverse and eerie, yet entangling and viscous, humans have difficulties to understand them. The current socio-political and ecological crisis seems to be outside of humankind because there has been a dispossession and objectification of our surroundings as the environment, something that can be exploited at the will of capitalism. This crisis has clearly illustrated that, using Bruno Latour's (2013) famous quote, "it is only once humans see pollution coming back at them, that they begin to really feel that the Earth is indeed round" (p.94). That is why thinking through and with extinction and its multiple TimeSpaces and knots of life is pivotal in the midst of the crisis of late-capitalism and the Sixth Extinction. The cultural and political somnambulism that the Necrocene as a theory and 24/7 late-Capitalism have inflicted in our perception of our surroundings through the trance-like behaviour that it forces humans to undergo has deprived humans of the capability of experiencing and understanding such surroundings (Crary, 2013). By analysing TimeSpaces and multispecies knots of life with the help of the Necrocene, one can start to see through the veil, waking up from the trance-like state through a cultural, political and ecological awakening. Then, anthropocentric perceptions of time, spaces, the non-human other and ecology enter a new realm of understanding that unsettles the human condition in a capitalist society while, at the same time, provides material to generate a philosophy and policy of equity and care through the catastrophism it entails. Therefore, the Necrocene presents itself as a tool to stay with the trouble that the nomenclature of this new age proposes and help us generate a critique of the current ecological, political and cultural condition in the contemporary world.

In a world in which certain events might leave us hanging without knowing what to do in a disorientation state, ecological awareness provides observers with a world in which everything has relevance insofar as the rest of beings are concerned, yet providing us with very distinct and vivid differences at the same time (Morton, 2018). That is, ecological awareness is realizing that living and non-living beings are interconnected in some way. It is a "detailed and increasing sense, in science and

outside of it, of the innumerable relationships among lifeforms and between life and non-life (Morton, 2018).

Bearing that in mind, achieving a caring, egalitarian and just sustainability by only considering scientific facts remains ineffective if disconnected from its political, cultural and social realms and, as a matter of fact, seems to be no longer useful in the current turmoil (Heise, 2017). The current crisis must then be approached from a critical, analytical and scientific position that scrutinizes the unsettling narratives of our time. Thus, the task of the Environmental Humanities from a Historical (New) Materialist perspective is not to acknowledge this statement, but to figure out what interconnectedness means and which stories and lessons can we extract from this multispecies and beyond-life-and-death knots of life. In other words, recasting the given, immersing theory and praxis in unknown surroundings in which different agents play part in the uneven knots of life said agents constitute in the Necrocene, reconfiguring both material and ontological ecologies.

To be is to become with others, inhabit and remake existence. Extinction is the annihilation of existence itself. In light of this, extinction processes call for a response that is attentive to what matters to another entity rather than considering an anthropocentric positioning on them. Thus, considering the different ways in which others exist and experience their worlds from a post-anthropocentric perspective, trying to become part of the emergencies they entail in order to experience them and reformulate them. Thus, thinking through extinction, gets rid of the realization that nature, as Haraway (1991) put it, is a discursive construction. Namely, it allows us to identify nature as an entity that has lost its pristine untouched condition, and the crises that accumulation poses on it. That is, although conceptions of nature, or even extinction, might be culturally depictable, it does not mean that, in this case, extinction is a cultural phenomenon. It aligns with the fact that nature is understood, according to Kate Soper (1995) as “those material structures and processes that are independent of human activity (in the sense that they are not a humanly created product), and whose forces and causal powers are the necessary conditions of every human practice, and determine the possible forms it can take” (p. 132-133).

Nevertheless, what these stories of extinction portray is that human culture, non-human entities and the current ecological plight intertwine in different non-linear ways,

most of them unconceivable at first glance for biological human perception. In other words, the subject of extinction and the TimeSpaces at hand, together with scientific mediation so humankind can perceive these massive phenomena, carry new challenges for the narrative, visual and theoretical representations of the ecological and, thus, sociopolitical and cultural planetary crises. Hence, the same way colonial settlers did not produce nature when entering the tropical areas in Queensland back in 1770, thinking through the Necrocene appears useful not to discover nature (as it is already there), but to *encounter* nature, capitalism and extinction in the same narrative, and the weird realism in which the current paradigm is immersed.

As the different stories that develop from disrupted TimeSpaces and knots of life suggest, “learning to tell time differently is both a collective risk and a collective task” (Bastian, 2017, p.170), which can help us unfold the different realities, from viruses to whole ecosystems, of the current crisis. Furthermore, they put our anthropocentric and comfortable existence into perspective. In this light, the new uncanny epoch is leading the planet as a holistic entity towards “a destruction of biodiversity, cultural diversity and the singularity of both psychic individuations and collective individuations” (Stiegler, 2018, p.41). In global 24/7 capitalism, the Necrocene is both a compelling nomenclature and a useful heuristic to analyse current cataclysm. It helps us glide above the different TimeSpaces and knots of life with a critical and ecological lens, fluctuating between life and death, creation and decay, infinity and mortality, eco and ego. Furthermore, it also puts the deathly nature of capitalism at the centre of the debate. By paying attention to these questions, acknowledging that non-human entities and processes are central in many political processes, and that capitalism has triggered most of such processes, anthropocentrism and capitalocentrism can be challenged. Hence, with a turmoil that has disrupted and will disrupt most of the TimeSpaces and knots of life that have been synchronized for decades, centuries or millennium, it is compelling for the Environmental Humanities to explore such desynchronizations from a critical perspective to offer rich interdisciplinary narratives, imaginaries, materialities and ontologies in the Sixth Extinction.

Finally, even though this is an issue that will go beyond the scope of this text which could be explored in further theoretical research, the Necrocene narrative allows us to reconnect two fields of research that seem to be far away from each other within the

Environmental Humanities: the Anthropocene Studies with a tight connection with Historical Materialism and Posthumanist/Multispecies Theory as trends in New Materialism. Consequently, it challenges anthropocentrism as a historical and cultural process by troubling it through the realization of a worldly construction in connection with the non-human entities that inhabit and interact in this world. That is, through its narrative and the way it travels through the different case studies, the Necrocene as the age of extinction acknowledges the historical materialism embedded in the current epoch while, at the same time, providing attentiveness and voice to the different multispecies and more-than-human stories that unfold from the processes of extinction that unfold from it. Therefore, it questions human exceptionalism by, on the one hand, singling out humankind and the extractive practices and the inequalities inherent in accumulation processes, while, on the other hand, putting at stake the logics of colonialism, sexism, speciesism and racism as issues that are foregrounded in not seeing the other as a being with the same legitimacy to have its needs, rights, necessities and condition of being alive that the beings wielding said power.

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