Introduction

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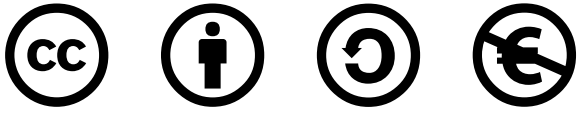

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INTRODUCTION

ENVIRONMENTAL ALTERITIES

Cristóbal Bonelli and Antonia Walford

THIS BOOK IS ABOUT EVERYDAY ENVIRONMENTAL ENGAGEMENTS IN A TIME that has been framed through and with environmental crisis. It is intended as a means of slowing down the speed with which a discourse of 'Anthropocene collapse' is employed and circulated (see Stengers 2018). As scholars have pointed out (see for example Haraway et al. 2016), one of the problems with public and policy discourse around the Anthropocene is that it *collapses* all sorts of differences – cultural, political, social, racial, cosmological – into one linear trajectory encompassed within a 'future perfect continuous' tense (see Stengers in Davis and Turpin 2013), hurtling towards a common catastrophe. This collapse is refracted in various registers – environmental, conceptual, political – and it obscures the possibility of making room for other ways of living and thinking (Viveiros de Castro 2019; see Povinelli 2012). The 'Anthropocene collapse' eclipses the acknowledgement that the concept of the Anthropocene is a deeply depoliticising Western invention (Swyngedouw and Ernston 2018) with aspirations of universality (Hecht 2018). It also obscures the fact that the destructive effects of climate change are distributed unequally along fault lines that were laid down in colonial times and continue through capitalist and racialising systems to this day (Davis and Todd 2017; Yusoff 2018). Even more profoundly, in so doing, it negates the constitutive possibility of difference, the partiality, heterogeneity, multiplicity and alterity of its own existence.

In this book we develop this critique by exploring what we call 'environmental alterities'. Environmental alterities is used here to signal a sensitivity

to aspects such as the uncertainty and unknowability, edges and limits, excess, overflow and extremes that characterise environmental engagements. Rather than trying to overcome environmental alterities in and through our knowledge practices, focusing on them demands that we actively elicit them as crucial to learning from mundane, experiential and grounded environmental engagements (see Latour 2018). This sensitivity also presents us with the possibility that, far from being features only of extraordinary environmental crisis, we encounter these aspects all the time in our relations with the environment. In this book we take it for granted that in very mundane ways, we still do not know what 'the environment' is and what it does (Deleuze and Guattari 1987). As Gayatri Spivak has argued, we need a language to try to take account of the alterity of the planet in ways that do not reduce it to the singular encompassing 'globe' of globalisation; on the contrary, '[T]he planet is in the species of alterity, belonging to another system; and yet we inhabit it, on loan' (Spivak 2003: 72).

Scholars in anthropology and STS, as well as in many other disciplines such as geography, philosophy of science, literature studies, environmental studies and cultural studies, have laid a solid and inspiring base from which to start and further expand this exploration of environmental alterities. In this introduction, we lay out three different epistemic paths that emerge from this critical scholarship.

The first is what we gloss as 'limits'. Here, we see scholars developing theoretical approaches to the edges or limits of human relationality with the environment. Important questions posed here are: what escapes our means of counting and knowing the environment? How does the earth act in our absence? In what ways is the planet more than the scale of the human? The second sensitivity is to 'heterogeneities'. Here, rather than focusing on a kind of environmental 'outside', we see scholars drawing out the differences internal to presumed unities and homogeneities, multiplying the possibilities for relationality and existence. Important questions here are: how to make room for ways of living that are not responsible for the Anthropocene collapse, and that have persisted at the margins of the modern constitution? How to design possible and multiple lines of thought and action that are not destructive but rather have the potential to

trigger ontological openings in the ways we relate to our immanent environmental surroundings?

It is easy to see how these two approaches might rub each other the wrong way. One seems to be directed at what lies beyond relationality – human, or (more radically) otherwise (see for example Clark 2010, or Meillasoux 2006 respectively); from the other's perspective, there is no such thing as 'beyond relationality'. However, the third mode we want to explore, which we call 'heterogeneous limits', is a sensitivity which attempts to countenance both these positions, including the paradoxes and contradictions that this presents. Such an attempt can be understood, in part, as a continuous movement *between* these previous two epistemic paths. This sensitivity is to unexpected figure–ground reversals and self-contradictions which entail a shift between relationality and non-relationality, between the internal and external, between knowledge and its excesses. Rather than oppose the two previous approaches, this mode thus offers an interstitial space between environmental relationality and its limits as a fertile source of environmental thinking, turning the contradiction of such a perspective into a virtue. In this way, this third mode is an attempt to explore the extent to which these two sensitivities can engage in a relation of 'disjunctive synthesis' (Deleuze and Guattari 1983) capable of producing a series of generative explorations of differences that subsequently make new differences (Bateson 1972).

It is this third mode that the chapters in this book develop and explore, suggesting in so doing that to focus exclusively on either what we are calling 'limits' or on 'heterogeneities' is to obscure the extent to which environmental engagements are dynamic and shifting, and often circumscribed within a realm of figure–ground reversals, self-contradictions and 'in-betweens'. Each chapter brings different notions of alterity into relation with each other; the chapters range over different settings, mostly if not all ethnographic; and each chapter differs in its approach – but all share a commitment to dwelling, more or less uncomfortably, in this space of heterogeneous limits when it comes to trying to understand environmental engagements, be that with the sea, the forest, animals, spirits or planets. In this introduction, we will first elaborate on the three different positions we have outlined above, before introducing the chapters and other content in the volume.

WHAT COMES AFTER AFTER-NATURE?

We want to start by returning briefly to the idea of Anthropocene collapse. We use the idea of collapse to refer to the way in which the Anthropocene works to erase differences (see Harvey et al. 2019). But perhaps the defining collapse of the Anthropocene – the collapse of the distinction between nature and culture – was also one of the most important theoretical moves of the twentieth century across the humanities and social sciences. Drawing from the disciplines that we know best, science and technology studies (STS) and social anthropology, this 'after nature' movement has been characterised by an analytical focus on anti-essentialism, emergence, relationality, contingency and enactment. Some arguments aimed at destabilising Eurocentric 'nature/culture' divides have been based in indigenous lifeworlds (for example Viveiros de Castro 1998; de la Cadena 2010; Cruikshank 2012), while others draw inspiration from scientific or technological practices that are often set in Europe or the US (Mol 2002; Law, Lien, and Swanson 2018; Latour 1991). In both, it has become almost taken for granted that there is no natural world separate from culture or the social, and vice versa; and it is now commonplace to talk of multiple 'worlds' or 'ontologies', which are emergent from practices that simultaneously enfold and co-construct both what we might think of as 'nature' and 'culture' – hence the popularity of the neologism 'naturecultures' (coined by Donna Haraway in her *Companion Species Manifesto* of 2003). The subsequent realisation that we have thus limited our social and political worlds through a focus only on culture or humans has meant that several influential versions of this after-nature thinking – such as the multispecies turn (Kirksey and Helmreich 2010; Tsing 2015) – have pushed for an expansion of our horizons of relationality beyond the human, and beyond only human relations, to include all sorts of sundry entities, from dogs to coral to fungi to salmon, in our configurations of sociality (Haraway 2003; Hayward 2010; Tsing 2015). Again, this is also a collapse of sorts, in so far as it is an argument about how the 'natural' is inherently 'social' (Tsing 2013). The Anthropocene thus seems to provide inescapable proof of the claim that there is no Nature 'beyond' the cultural, the social, the political:

we all live in hybrid and heterogeneous realities that are socio-material and natural-cultural in multiple ways.

However, there is also a slippage occurring here, as contemporary Anthropocenic discourse becomes interwoven with earlier after-nature arguments. If in earlier after-nature scenarios, scholars revelled in pushing back against the determinism of nature in the name of non-deterministic emergence, in the Anthropocene version what is notable is that the environment is increasingly described in relationship to its destruction by (white Western capitalist) humans. In this sense, recognising the after-nature status of 'the environment' is no longer just an emancipating commitment to hybridisation over purification, but an acknowledgement of the historically destructive effects of social or human relations, and a realisation that there is no part of what we thought of as 'nature' that is uncontaminated by capitalist, colonial effluvia of some sort or another, be it plastics, radioactive isotopes or heavy metals (Liboiron 2018). The socialised 'nature' of post-nature becomes the damaged 'environment' of environmental crisis. From this perspective, the expansive relationality of post-nature approaches collapses into the dystopian framing of anthropogenic environmental degradation, leading to 'the sense of undoing that many call the Anthropocene' (Hetherington 2019: 2). In our reading, it is this slippage that has in turn led to what might be called a reappraisal of nature, with several scholars resisting the idea that the earth is in fact exhausted by humans' relations to it and pushing for a means of re-asserting the earth as a domain at least in part independent from the humans it hosts (see for example Clark 2010). This is where we locate one juncture that characterises the broad spectrum of after-nature approaches today; the question then becomes, what comes *after* after-nature? [1]

ENVIRONMENTAL ALTERITY 1: LIMITS

Two sets of scholars can be summoned here to guide us in thinking about an answer to this question. One set helps us consider what comes after after-nature in the sense of an (autonomous) outside. The second set of scholars

inspires us to think about the potential for expansive relationality to generate difference not sameness, such that 'after-nature' contains its own potential for transformation.

In the first broad set of scholars, we see how people are pushing back against Anthropocene collapse by thinking about the limits, edges and endpoints of human relationality. A strand of argument to this effect has emerged across various disciplines. It stresses – directly or indirectly – the need to take into account something that is 'beyond' humans: something of the world which exceeds human relations. Perhaps the clearest example of this is geographer Nigel Clark's book, *Inhuman Nature: Sociable Life on a Dynamic Planet* (2011), in which Clark makes a case against the relational encompassment that characterises many after-nature approaches. He calls for a return to what he calls a sort of 'ground' to critical analyses, arguing against the symmetry which characterises co-constructivism, on the basis that we are dependent on an earth that is, to all intents and purposes, not dependent on us – and in fact supports us. He suggests therefore that radical asymmetry is a better way to think about the relationship we might have with the earth and argues that science provides a way to access the 'world in our absence'. In the terms we employed previously, Clark is in this way refusing the easy mapping of the 'nature' of post-nature critical thought onto the 'environment' of environmental crisis.

Another geographer, Kathryn Yusoff, also asks how to think about the world in the absence of humans – or what she terms the 'insensible' (2013); that is, that which is 'beyond me' (ibid.: 209), that which is not, and will never be, categorised and named by scientific (or any other) systems of meaning and ordering of nature. Her enquiries are ethically motivated, directed at trying to become 'responsible' for the loss of species that humans will never know: 'how to be responsible to that which disappears without a trace?' (ibid) she asks. Yusoff seeks a way to 'recognise' these as-yet unknown entities by thinking along what she calls the 'the edges of the insensible':

> There exists an urgent need to find modes of recognition beyond 'our' abilities to make non-human worlds intelligible if biodiversity loss is, for the most part, lost to sense. (This is not just a problem of recalcitrance or immanence,

> but of a radical non-relationality.) This is difficult work, because … it involves a modality of thought that moves against the priority of our senses to attempt to release other modalities of being that are not our own and will never be fully sensible to us.' (ibid)

Here Yusoff is interested in the limits of knowledge, what can by definition never be included in our accounting for and of nature. She questions the common equation, in new materialism and cognate approaches, of the non-human with the material. What if 'these other worlds that occasionally graze 'ours' perhaps do not leave anything so pronounced as a material trace?' (ibid.: 216)

Both Clark and Yusoff are explicitly concerned at the incapacity of contemporary forms of social scientific and critical thought to deal with those parts of the world which, they argue, are by definition beyond 'us', beyond material semiotic relations; Clark takes social constructivism as the exhausted paradigm, while Yusoff (perhaps more subtly) points to the inadequacies of new materialist approaches. Although we would take issue with the idea that scientific practice is a privileged means to access the 'world in our absence' as Clark seems to suggest,[2] both Clark and Yusoff highlight that the Anthropocene confronts us with the limits of the human, *including* scholarly attempts to overcome those limits (through, for example, the inclusion of the putatively 'non-human'). Clark and Yusoff have subsequently gone on to develop these ideas together through an enquiry into what they call 'geosocial formations' (Clark and Yusoff 2017). They point out that human social life is literally dependent upon the ground beneath it, but they also trace out the historical intertwining of the geological sciences and social thought, from Marx to Deleuze and Guattari – hence the 'geosocial'. However, they do so in order to argue that 'what is at stake is an inhuman agency that is not and cannot be fully co-extensive with the human domain, however inclusively this is imagined' (ibid.: 16). [3] The geological does not only appear simply as a lively material in their analysis, to be included in social reckonings. Rather, they emphasise the impossibilities of this inclusive aspiration: 'what is at issue is not only how to extend or enrich the composition of shared worlds but what to make of forces capable of interrupting, undermining or overwhelming the very conditions of doing politics or being social' (ibid.: 15).

The capacity of the world to escape or overwhelm our means of knowing it has also recently engaged literary theorists concerned with themes of ecological disaster. In his recent book *The Great Derangement: Climate Change and the Unthinkable* (2016), Amitav Ghosh is interested in the failure of another social practice, this time the literary novel, to tackle climate change. Ranging over different times and places, Ghosh traces how writing the improbable was entirely neglected in modern fiction, the early writers of which were more interested in the mundane, everyday and predictable, than the violent and unpredictable (Jane Austen's treatment of the Napoleonic War only through the mundanities of the rural English drawing room is perhaps one infamous example of this). This narrow solipsism, Ghosh argues, has meant that fiction has shied away from dealing with the inhuman 'uncanniness' of climate change. But, he argues, 'we are confronted suddenly with a new task: that of finding other ways in which to imagine the unthinkable beings and events of this era' (ibid.: 45). He presents us not only with the limits of the literary imagination, but also the narrowness – indeed the 'derangement' – of historical thinking and political action when faced with 'the unthinkable'. In a rather different tone,[4] literary theorist Timothy Morton (2013), inspired by the philosophers who espouse Object Oriented Ontology (or OOO as it is known), has coined the term 'hyperobjects' to try to take account of global warming as a phenomenon that exceeds the human. Drawing extensively on philosopher Graham Harman's investigations of objects[5] – specifically the Heideggerian idea of objects being 'withdrawn', such that there is a part of every object (a category which includes all manner of humans and non-humans) which is not available for relationality at all – Morton seeks to account for how hyperobjects, like climate change, are fully independent of, and transcend, human cognition: 'The transcendental gap between things and thing-data becomes quite clear when we study what I like to call *hyperobjects*: things that are huge and, as they say, 'distributed' in time and space – that take place over many decades or centuries (or indeed millennia), and that happen all over Earth – like global warming. Such things are impossible to point to directly all at once' (Morton 2018: 22; see also Morton 2013). Hyperobjects are beyond the human exactly because they provoke 'scalar dilemmas' (Morton 2013: 19) in which they cannot be

thought of as occupying a 'series of now-points in time and space' and in which they 'confound the social and psychic instruments we use to measure them' (ibid.: 47); and yet at the same time, you cannot extricate yourself from them: hyperobjects are 'viscous' (ibid.: 30).

Finally, and in a different vein to the previous approaches, we have already briefly mentioned Spivak's work on post/de-colonial comparative literature, and in particular her concept of 'planetarity'. Unlike Morton, her challenge to re-think what the 'planet' is through its alterity captures the *political* necessity of this form of environmental alterity, which understands the Anthropocene collapse as a legacy of colonialism. Spivak writes: 'if we imagine ourselves as planetary subjects rather than global agents … alterity remains underived from us; it is not our dialectical negation, it contains us as much as it flings us away' (2003: 73); it is 'mysterious and discontinuous' with us (ibid.: 102). She urges us to make the familiar unfamiliar, to render 'our home uncanny', riffing on Freud (ibid.: 73–74), as a necessity for addressing the pervasive eurocentrism and orientalism that characterises literary studies. Thinking in terms of planetarity, for Spivak, is confronting the ways in which we must accept the 'untranslateable' without translating it into 'acceptance' (2015: 291) and realising how we must be open to a difference that exceeds the tolerance of liberal multiculturalism (2003: 100) and is instead an 'experience of the impossible' (2003: 102).

Here then we present one form of environmental alterity which lies at the edges of, or even beyond, the human. The forms it might take vary considerably depending on the author, but there is a sense in which we have reached the edge or the limits of our knowledges and practices – as both 'humans' and as critical scholars – and that those edges or limits are *generative* exactly because they challenge us, confound us and escape us. What lies beyond those limits? For Clark, it is a ground that 'supports us', that carries on independently of us. For, Yusoff, it is something like the 'insensible' (Yusoff 2013).[6] For Spivak, it is alterity that is not caught in an exoticising dialectic but encompasses it. For Ghosh, it resides in the uncanniness of earthly violence and the reluctance of literature, history and politics to engage it. But all of these authors ask us, in different ways, to think about the limits of the

collapse between humans and the world, and about the world as excessive of human thought and practice.

ENVIRONMENTAL ALTERITY 2: HETEROGENEITIES

The second set of scholars we want to highlight is pushing back against Anthropocene collapse by making room for heterogeneous ways to live in our critical times – but without relying on an autonomous ground existing beyond human relationality. As such, these authors have been trying to make room for a kind of alterity that, rather than being concerned with an 'outside' emerging at the edges of human relationality, focuses on the generative force of immanent and relational difference.

Notable in this respect has been the invitation made by Donna Haraway (2016) to explore unforeseen connections and rebuild lively, sympoietic assemblages in a historical time she calls the *Cthulucene*, a concept that revitalises the ancient Greek term *khthonios*, roughly translated as 'of the earth'. Haraway's intervention problematises the centring of the human in the Anthropocene by offering the idea of the *humus*, a take on the human understood as inherently pertaining to the 'biotic and abiotic working of the Earth' (Haraway and Franklin 2017: 2). In doing so, Haraway develops an imagination which allows us to realise that unities do not precede their heterogeneous relatings. This is an imagination that challenges the sciences of the 'modern synthesis', which tend to be based upon competitive unities and relations 'whose actors and stories are mostly described mathematically in competition equations' (2016: 62). Etymologically, *sympoiesis* means 'making-with', a concept that Haraway mobilises in order to state that no living entity is really auto-poietic, nor fully self-organised: 'Critters interpenetrate one another, loop around and through one another, eat each another, get indigestion, and partially digest and partially assimilate one another, and thereby establish sympoietic arrangements that are otherwise known as cells, organisms, and ecological assemblages' (Haraway 2016: 58).[7]

In a similar critical relational vein, Marisol de la Cadena has recently noted that the Anthropocene obscures engagements that might be taking place within

'heterogeneous worlds that do not make themselves through practices that separate ontologically humans (or culture) from non-humans (or nature)' (de la Cadena 2019). In contrast to this, de la Cadena proposes we make room for the *anthropo-not-seen*, a kind of cosmo-political sensitivity that considers the *anthropos* as always partial and radically situated. By telling us the story of Massima, a peasant woman who refuses to leave her lands to extractivist mining corporations in Peru – as her existence is inherently *with* the land – de la Cadena offers us an example of a radical and immanent relationality working at the core of extra-modern populations. Somehow, de la Cadena's sympoietic imagination (and not only this!) allows us to deploy and push forward what Helmreich (2014) has coined as 'symbiopolitics', that is, a 'politics of living things coexisting, incorporating, and mixing with one another' (2014: 56), a politics whose understanding of relations as emerging outcomes of sympoietic perceptions might be an inspirational source.

Haraway's and de la Cadena's work strongly resonates with other more-than-human conceptualisations of relationality in South America that have offered us understandings of kinship (in general), and affinity (in particular), as going beyond inter-species borders to involve relations between humans and animals, plants and spirits. Indeed, in a way which resonates with one of the slogans proposed by Haraway for the Cthulucene '*Make Kin Not Babies!*', Amerindian ethnographic work has revealed how affinity is the generic mode of relatedness in South America, a mode of relatedness that prevails over consanguinity and its subsequent understanding of kinship limited by biological premises (see Viveiros de Castro 2001, also Bonelli 2019). For this post-natural conceptualisation of relatedness, the Other, and the outside, are conceived of as a constitutive relation.

Through all these post-natural sensibilities, the possibility of the kind of 'ground' understood by Clark is made relative, as it depends on the particular positionality of, for instance, Massima and her situated becomings. As far as the Anthropocene trope is concerned, these relational conceptualisations of 'difference from within' resonate with recent and growing attempts to think about our planet 'from the inside', a move with the capacity to reveal the complex, dynamic and heterogeneous aspects of the Earth (Arenes, Latour, and Gailladert

2018, see Szerszynski in this volume). Challenging the modern imagination of environmental transformations as if they were taking place in a given 'container universe' (Latour 2004; Law 2015), and as Jensen and Blok (2019) have recently argued, this sensitivity towards heterogeneous worlds pushes against theoretical tendencies that solely focus on how developments in the natural sciences can inform and explain emerging ecological material-transformations (Bennett 2010; Coole and Frost 2010). At the same time, it also challenges the equally reductive theoretical formulations of eco-Marxist approaches that seek to explain ecological transformations solely as an expression of the history of capitalism (Malm and Hornborg 2014; Moore 2015; Wark 2015).

Complicating theoretical tendencies that construe responses to ecological crisis as dictated either by natural scientists or by social scientists, scholars supporting this heterogeneity have underlined the richness of attending to the juxtaposed knowledges and practices at stake in different divergent environmental settings, making explicit that we cannot understand our environmental engagements only by relying on scientific practices or secular politics. Broadly conceived, this scholarship concerned with heterogeneity has shed light on how differentiating among dissimilar co-existing configurations of practices allows us to learn what is at stake in each empirical transformative environment, and to generate new conceptual tools to better account for the 'arts of living' on our damaged planet (Tsing et al. 2017). Here, we consider the allusion to 'art' as being not only metaphorical but literal: the arts of living on a damaged planet entail the continuous creative development of particular skills that emerge in very situated practices linked to very particular problems, thus making explicit that coping with environmental transformation does not imply the existence of a unified or transcendental domain.

ENVIRONMENTAL ALTERITY 3: 'HETEROGENEOUS LIMITS' OR DIFFERENCE AS A KIND OF TABAPOT

All the chapters in this book draw on and enter into generative dialogue with the sets of scholars we have introduced above, and the broader constellations

of ideas they propose. Thus, Marianne de Laet's chapter on the concept of 'the pack' takes up Haraway's provocation to 'think with' other species and draws on Tsing's work on multispecies anthropology. We see Bronislaw Szerszinski in his chapter drawing on the related notion of Latour's Parliament of Things. Both Stine Krøijer and Magnus Course engage directly in Amerindian relational anthropology, Course in the context of proposing an ethical mode of the human for fishermen in Scotland, Krøijer in order to explore the multiplicity of alterities in the forests of the Sieko-pai people in Ecuador. Annet Pauwellusen troubles the nature/culture binary by building on the work of scholars such as Descola and, again, Haraway, in order to think about the alterity of the sea for the people of the Massalima Archipelago in Indonesia. Lys Alcayna-Stevens, inspired by Yusoff's work, presents the edges of scientific understandings of the forest.

However, by attending to questions of both 'heterogeneity' and 'limits' as outlined above, the chapters in this book in fact collectively start to flesh out what we think of as a third position, by focusing our attention on the space *in-between* these sensitivities, 'not-quite' one nor the other. And in fact, since the first time we met most of the book's contributors in Amsterdam in 2016 in a workshop we called 'Environmental Alterities', we have been continuously tinkering with how best to frame this provocation in a way that does not end up triggering further irresolvable oppositions, or immediate gut reactions against either limits *or* heterogeneity. Indeed, what we and the authors ended up doing throughout this long process was to experiment exactly with the continuous movement *between* these positions, searching for unforeseen ways to create inter-theoretical alliances between scholarships and scholars that are strongly moved by partially connected after 'after-nature' concerns. Therefore, rather than being simply the *means* by which different positions are assumed, the relation between what we are calling heterogeneity and limits can, we argue, be the *ends* as well. That is, it is precisely holding both of these positions together, and the movement *between* these two positions, that emerges as the generative dynamic – not one or the other. This means that the conceptual yields of environmental alterities, understood as the exploration of heterogenous limits, lie not in differentiating heterogeneous relationality from external autonomous alterity, but in making

room for thinking of and with the alterity of relationality, and the relationality of alterity, at the same time.

We have drawn on two scholars in particular to guide us in trying to think through this third mode. The first is Isabelle Stengers, who has worked extensively on the philosophy of science from what we have called an 'after nature' perspective. Here, we are particularly inspired by her recursive and paradoxical formulations of scientific practice. Through such formulations, she works within an after-nature or co-constructivist paradigm, and nevertheless manages to simultaneously subvert it. For example, in her early work on particle physics, taking the neutrino as an example, she tells us that the neutrino 'exists simultaneously and inseparably "in itself" and "for us"', an 'apparently paradoxical mode of existence' which is populated by '*factishes* that are both dated and transhistoric' (2010a: 22). Although Stengers' argument here dovetails with those of Latour and other co-constructivist approaches to scientific knowledge, for Stengers it is not so much the hybridity of these entities, but their paradoxicality that needs to be taken seriously and sustained; unlike Latour, with Stengers the issue is never 'resolved' or, indeed, 'collapsed' – she does not allow the reader to rest on one side or the other but keeps both sides of the relation in constant question.

This becomes clearer in relation to our notion of environmental alterities through her distinction between the experimental and the field sciences. Stengers distinguishes explicitly between what she calls the experimental or laboratory sciences (of which physics is exemplary) and the field sciences, such as the Earth Systems sciences. According to Stengers, whereas the experimental sciences aim to create the world in the laboratory (as with the neutrino), the field sciences go outside and 'follow' the world. This endeavour to follow the world does not bring 'stable proofs', as laboratory practices do. Rather, 'irreducible uncertainty is the mark of the field sciences' (1993: 144). Whereas laboratory sciences produce 'factishes' which are real exactly because they have been constructed (as Bruno Latour has also written about extensively (Latour 1993), Stengers invokes the notion of the 'terrain' (ibid.: 144) as the peculiar object of the field sciences. Unlike the factish of the experimental laboratory, which by definition 'explains itself', the terrain 'induces and nurtures questions, but does not supply the ability to explain the answer that will be given to them' (2010b2: 230). The

terrain cannot be taken into a laboratory, and nor can it be made to represent any other terrain. It demands that those who study it follow it at its own pace in order to 'bring it into existence' (1993:145). It thus emerges from, but is in no way determined by the practice of those who follow it; on the contrary, it can 'object' – and, as she says in her later writing on the concept of Gaia, 'intrude' (Stengers 2015: 137; see also Jensen and Blok 2019). Further, the terrain must in a sense 'pre-exist the one who describes it' (Stenger 1993:144). The natural entities of the experimental laboratory are determinate entities with the power to create a clear cause and effect relation and can be made to speak for entities like them everywhere. The 'field' of the field sciences, on the other hand, is a specific terrain that is neither willing nor able to offer guarantees of causal certainty or represent other places.

Stengers develops these ideas even further in her recent engagements with the Anthropocene (2015a, 2015b, 2017), and her cosmopolitical proposal around the figure of Gaia, the latter understood as an unruly, disruptive, ominous being that intrusively demands unexpected ways of thinking and acting around and throughout entangled practices in times of environmental crisis.[8] On the one hand, Gaia is a new kind of being, 'existing in its own terms, not in the terms crafted to reliably characterise it' (Stengers 2015: 137). It is neither living nor non-living but, Stengers writes, requires instead that we 'complicate the divide between life and non-life, for Gaia is gifted with its own particular way of holding together and of answering to changes forced on it (here the charge of greenhouse gas in the atmosphere), thus breaking the general linear relation between causes and effects' (ibid.). Here Stengers stresses the ways in which Gaia is excessive to the binaries themselves – between knowledge and world, life and non-life, phenomena and model, and is therefore new, or at least difficult to recognise. At the same time, Gaia pays tribute to the diverse and many times divergent worldings (see Omura et al. 2019) and entanglements between people and untamed earthly forces. This attention to the relational existence of Gaia then produces an ethical imperative that multiplies the myriad configurations of thought and action needed to articulate a political positionality in times of environmental crisis: ecological responses should be multiple, pragmatic and experimental, so the way we design and think about them should resist any

tendency towards totalising generalisation.[9] We argue that Gaia reformulates the space between limits and heterogeneity as we have defined them earlier in the text. As Jensen and Blok put it, '[G]iven Gaia's indifference to human pleas, it is indeed possible to speak of an asymmetric relation to a new 'ground', of the kind that held Clark's (2011, 2014) attention. For Stengers, however, Gaia does not designate a set of inhuman materials forming autonomous worlds' (Jensen and Blok 2019:). Which is to say, Gaia seems to unapologetically suggest an outside, in Clark's terms, that is nevertheless thoroughly 'inside'.

We can follow the thread of Stenger's paradoxical formulations through many of the chapters in this book, several of which focus empirically on different scientific practices. In her examination of living with dogs, Marianne De Laet puts Haraway's notion of species companion into conversation with ethological ideas of dog behaviour, in order to ask of *both* how humans might be able to 'speak for' dogs if we have no access to their *umwelt*. If Stine Krøijer is interested in her chapter in the possibility of non-relationality in the context of Sieko-pai understandings of the relational emptiness of palm oil plantations, it is a non-relationality that unabashedly points to how, paradoxically, it can only be sustained in relation to other forms of relationality, be they shamanic, historical or political. In Lys Alcayna-Stevens' description of primatologists' experiences of the forest, where their scientific work gets endlessly interrupted by losing their research subjects (bonobo chimps) altogether, and they spend periods of time wandering the forest lost in thought, we see clearly, if indirectly, an evocative description of Stengers' notion of the 'terrain' and indeed Gaia, intruding and demanding, both produced by the field sciences and pre-existing them. And in Bronislaw Szerszysnki's exploration of planetary existence, he draws directly not only on the planetary sciences, but also on Stengers's work with Ilya Prigogine in order to point us towards the possibility of planetary 'becoming', a sort of intensive planetary alterity in which planets differ not just from each other, but also from themselves (this volume, p 203). In all cases, the paradoxical and often recursive shapes that emerge from the chapters' analyses are sustained and curiously explored, rather than refused or resolved. Neither 'heterogeneities' nor 'limits' alone quite capture what the authors assembled here are trying to describe.

There is another scholar whose work has also inspired us to think about the generative potential of indeterminacies, albeit in a different idiom to that of Stengers: anthropologist Roy Wagner, who interrogated the anthropological concepts of nature and culture by experimenting with the paradoxical essence of meaning in his work with the Daribi of Papua New Guinea and the Usen Barok of New Ireland (although always in relation to Western, anthropological, forms of meaning). Although Wagner's work is prolific and full of tropes and images which complicate and involute the opposition between what we have called 'limits' and 'heterogeneities' – like his infamous idea of 'symbols that stand for themselves' (Wagner 1986) – here we want to draw specifically on his later work on chiasmatic relations and what he called the 'reciprocity of perspectives'. In one of the last articles to be published before his death in 2018, entitled *The Reciprocity of Perspectives* (2018) Wagner makes a case for an analogical chiasmatic understanding of nature and culture, working through a series of different examples in typically heterogeneous fashion. Drawing on thinkers from Wittgenstein to Einstein, he evidences his own argument in the article by demonstrating the creativity and generative function not so much of thinking *through* self-contradiction but thinking itself *as* self-contradiction. In his rendering, meaning is always becoming something else: 'it is neither exclusively subjective nor objective, but rather a continuous dialogic transition between the two' (ibid.: 506). It is this transition itself which is the ever-shifting locus of meaning, rather than the poles it transits between; so 'metaphor' Wagner writes, the bridge between the signifier and signified, 'is language's way of figuring out what we mean by it' (ibid). Energy, likewise, is not of one kind or the other, but only the 'generic 'kind' of its transformation from one specific kind to another' (ibid.: 505). The 'chiasmus' at the heart of this form of relationality is the shift of perspectives that allows, for example, as Marilyn Strathern writes in a commentary on Wagner's 2018 article, '[A] symbol that (in one mode) stands for itself' to 'also (in the other) stands for something else' (see Wagner 1986), as in a Barok ritual feast: 'where you see a male youth you also see a female ancestress; where you see a nubile girl you also see an out-marrying clansman' (Strathern 2018: 511–512). Here we see the way that the invention of meaning, its extension into the world, is

simultaneously 'mined – 'elicited' – out of its own resources' (Holbraad and Pedersen 2017: 89).

Wagner provides us with another evocative image from the Tolai peoples of East New Britain, in Papua New Guinea. In the words of one of Wagner's Tolai friends, cognition and perception might be summarised with the following figure of the *tabapot*:

> Imagine a tree whose top foliage cuts the shape of a human face against the sky and fix the shape of that face in your mind, so that it appears as a real face, and not just a profile. When you have finished, turn back to the tree, and imagine it as a free-standing object without reference to the face. When you have both images firmly fixed in your mind, just hold them in suspension and keep shifting your attention from one to the other: tree/face, face/tree, tree/face, and so on. That is what we call a *tabapot* (Wagner 2018: 502).

Wagner's development of this idea of 'chiasmatic thinking' then complements, to our mind, the elicitation of recursive and paradoxical formulations of knowledge and truth that we drew from Stengers. Where in the latter, we are asked to hold contradictions together and 'follow' what happens when we do so, in the former we are pointed towards what you might call a particular 'chiasmatic skill' of shifting our attention between what we might think of as mutually opposed intellectual positions, in a series of figure-ground reversals between knowledge and its limits and excesses; between practice and its exhaustion; and, in this case, between ever-expanding heterogeneous relationality and a grounded non-relationality.[10] Again, as a tactic we can borrow, we can see how thinking through such a *tabapot* form can be traced out in several of the chapters of this book. Annet Pauwellusen's investigation of the notion of 'twinship' between humans and sea creatures that she encountered in the Masalima Archipelago argues that twinship expresses 'co-existence' between humans and the non-human realm of the sea, but also simultaneously indexes an 'excess' that forces us to think 'in-between' the categories that we might be accustomed to draw on as anthropologists (this volume, 63). As she traces out the complexities of this notion, she shows how the amphibious sea twin also has a figure-ground reversal

at its heart, such that it can be both the sea and a part of the sea; but this also shows us that twinship 'liquefies' figure and ground, turning the ground into fluid that will not hold steady for analysis (this volume, 77). Course's analysis starts by demonstrating how the 'structural isomorphism' (this volume, 36) of the land and the sea in Gaelic poetry also contains within it a moral asymmetry and contradiction, such that the sea is both a danger and a refuge, both Other and familiar. His chapter tacks between these two ideational formations, one symmetrical, one asymmetrical, in order to develop a parallel argument that flips the figure-ground relation of ontology to ethics in Amerindian perspectivism, urging us to re-centre the figure of 'the human' in the process. In a very different vein, Alcayna-Stevens' chapter switches back and forth stylistically between semi-fictional reflections, primatalogical observations, ethnographic data and anthropological theory, constantly destabilising the perspective of the reader, but nevertheless adding up somehow to an evocative description of a 'sylvan thinking' as a thinking with and through the failure and partiality of meaning (this volume, 151).

Here, and across the chapters more generally, we are reminded of the generative potential of the edges and limits of our own conceptual apparatuses as Anthropocene scholars. Kim Fortun's (2012) characterisation of the Anthropocene as a time of 'exhausted paradigms' neatly captures the imbrication of environmental collapse with a feeling of conceptual fatigue; just as the resources of the earth are running out, so too are 'our' conceptual resources. As a result, the Anthropocene literature has been replete with calls for new approaches, from radical interdisciplinarity to eco-modernism to science fiction (for example, Tsing et al. 2015). However, as several of the authors here emphasise, another question might be whether, alongside new paradigms, we also need simply to acknowledge the edges of our current knowledge-practices without immediately posing new, more encompassing, ones; that perhaps we need also to dwell on exactly the in-betweens, the not-quites, the self-contradictions and the impossibilities of the environmental contexts we are working in, as themselves generative of a form of political, intellectual and ethical engagement.

THIS BOOK

We have organised this book around three key loci of environmental engagement. The first section is Sea; the second section is Forests; the third is Collectives. In the spirit of chiasmatic thinking, and in order to create some sort of fidelity with our attempt to identify conceptual, ontological, and ethical openings, we have also invited different scholars to discuss these chapters in a conversational format, based on a previous, critical discussion about the central arguments made in this introduction. Each section therefore includes a commentary on the chapters in that section, in the form of a conversation. These conversations are integral aspects of the book; we hope in this way to keep the idea of 'environmental alterities' *chiasmatic*, continually shifting and turning. Here, we present the chapters in relation to each other and those conversations, in order to explain the structure of the book.

The first section includes the chapters by Magnus Course and by Annet Pauwelussen, which both focus on a particular aspect of 'the environment' – the sea – and on a particular kind of category – the human. Course picks up directly on the question we posed in this introduction, of what comes after after-nature; his answer is, contrary to a post-human intuition, a 'humble anthropocentrism'. In order to develop this, Course draws on Scottish Gaelic folk tales, in which seals appear as both socially continuous but morally discontinuous with humans. Humanity emerges from these tales in two distinct modalities: one can be understood through tropes of domestication and colonisation, but there is also another way that centres the human as part of a much wider web of affective attachments. This multiplies the possibility of what being human might mean, yet also circumscribes a limit to what a human can be. Turning subsequently to his ethnographic work with fisherman in Scotland, Course argues that being human is an ethical, rather than an ontological condition. The oscillatory uncertainty of humans' relations to seals, and to the sea that both exceeds and constitutes humanity, resolves itself into a question of ethical decision-making – what sort of human do we intend to be?

Pauwelussen also picks up on the idea of the 'human' as it appears in her ethnographic work in the Indonesian islands of Masalima, among a very different

set of seafarers. Also interested in exploring the limits of the human, Pauwelussen develops this in relation to the concept of 'twinship', which offers itself as a fertile idea to think with: twins are the same but also not the same. This appears in her material as twinship not between humans, but between humans and octopuses and crocodiles. Tracing out these connections and disconnections through rich ethnographic detail, Pauwelussen shows us a complex relationship that signals both an otherness and a likeness; the term for what we could call 'human' – *manusia* – is a term for personhood that exceeds the people from Masalima as it also embraces the sea, without however, fully capturing it. *Manusia* thus emerges as a means not to make a distinction between humans and animals, nature and culture, but focuses our attention on what escapes conceptualisation, indexing an in-between space that, as we have remarked, evokes the *tabapot* as a pivotal ethnographic figure at the centre of environmental engagements.

In both Course and Pauwelussen's analyses, difference resides in making heterogeneous that which might be presumed to be 'the same' – in these cases, the 'human'. But both also point to the difficulty of holding still the relation between people and the sea; particularly in Pauwelussen's piece, we are left with a social theory and practice that both encompasses and exceeds human relationality, thus ethnographically revealing that the sea is an autonomous alterity which is at the same time immanent to/with the people of the sea. This section of the book is concluded with a conversation between Stefan Helmreich and Penny Harvey, who in their discussions of the chapters and the introduction, point to the role of kinship in manifesting forms of environmental relations of alterity, and remind us among other things of the importance of remembering the heterogeneous histories and uneven distributions and intensities of these environmental forms of relating and belonging.

The second section, 'Forests', takes us to two very different forest settings; one forest of Ecuador with the Sieko-pai people; the other the forest of primatologists in DR Congo. If both Course and Pauwelussen are interested in 'different kinds' of humans and forms of extensive relationality, both Stine Krøijer's and Lys Alcayna-Stevens' chapters focus on 'different kinds' of natures. In her chapter, Krøijer turns our attention towards the environmental alterity of what she explicitly calls 'non-relationality'. Investigating the ways in which

trees are understood in the indigenous Sieko-pai's world, Krøijer examines two different forms of environmental alterity. One of these is recognisable from the anthropological literature arising out of the multi-natural landscape of the forest, but the other, surprisingly, emerges from the unlikely place of an intrusive plantation. Refusing, along with Sieko-Pai, to see plantations only as spaces of monoculture and extractivist colonialism, the plantation becomes a source of a particular kind of environmental alterity, 'a wild and uncontrolled realm that escapes human attempts at knowing and owning it' (this volume, 106) – and one which the Sieko-pai do not recognise and are unsure how to relate to. Krøijer thus argues that plantations are relationally multiple, and far from being forms which anthropologists might think they recognise, offer the chance to re-examine our presumptions about ever-expanding relationality. In her use of the nature/culture binary to understand these environmental alterities, Krøijer also raises the question of the adequacy of our linguistic frameworks to adequately grasp what is at stake, an issue picked up by several of the chapters (Alcayna-Stevens, de Laet).

Also starting with the problem of 'Nature', Alcayna-Stevens opens her chapter by asking what is to be done when the primatologists with whom she works seem to romanticise Nature or the forest. In thinking through this, she starts to assess what she calls the 'edge work' or 'cusp work' that goes on in scientific practice. In part pushing back against various ideas of science as disembodied and detached, she points to all the moments of waiting, searching and wondering. Employing what she calls 'ethnographic fiction' as an experimental device to explore the unanswerable, unfathomable and indeterminate grounds of the forest, her piece exemplifies exactly the sort of meandering day-dreaming that she is describing, interweaving the journey of a 'composite character' on a search for bonobos, with primatological theories about bonobo social life, with ethnographic observation from her field-site and her own personal experiences of being in the forest. Evoking the interstitial spaces of an embodied relation to the forest, Alcayna-Stevens goes well beyond a critique of romanticisation to show how paying attention to these 'in between' moments can generate further appreciation and respect for alterity, asymmetry, indeterminacy and the unknowable. This section of the book is concluded with a conversation between Casper

Bruun Jensen and Marisol de la Cadena, who ask us to consider, among other things, whether the concerns of the two chapters and the introduction in fact point to the impossibility of pure relationality or pure non-relationality, and whether there is not more than one way of doing both environmental politics and environmental alterity.

The third section of the book we have called 'Collectivities'. This is to signal how these chapters confront one of the overarching challenges of environmental alterities, that is, how to compose an after-nature world? In this section, Marianne de Laet presents us with three evocative auto-ethnographic stories around living with dogs as a form (or not) of alterity. Tacking between a series of positions of sameness and difference between herself and her dogs, de Laet's three stories address issues around subjectivity, species-thinking and ethology, and anthropocentrism, eventually proposing 'the pack' as a way to try to grasp 'a language for togetherness' that also pushes back 'against the fantasy that dogs are with us, naturally, all the way' (this volume, 178). As a form of an unsteady, shifting collective, the pack also, we suggest, indexes a *tabapot* figure for learning from human-animal collaborations that exceeds alterity while at the same time resisting a sort of generic, natural intra- or inter-species harmony. De Laet's piece also makes explicit one of the underlying questions of the book – what to do with the realisation that language fails us in our descriptions, if we are simultaneously 'after' a post-modern response to such a realisation? Working around essentialist language, she refuses to 'reify alterity', instead presenting a shifting terrain of differences in which relationality is nevertheless very possible; where 'living together', as a form of 'fidelity' emerges as a direct antidote to any sort of post-modern ennui.

If, as Clark and Yusoff have suggested (2017), the multi-species thinking that characterises de Laet's chapter has failed to take the non-organic into account, then in our last chapter Bronislaw Szerszynski does just that by asking how planets come to matter when thinking about cosmopolitical collectives. Equally concerned as de Laet with the question of non-human compositions, Szerszynski however introduces a very different tradition, that of geophilosophy, drawing on Deleuze, Guattari and Simondon. Planets emerge from his description not as the stable background to human dramas, but engaged in their own forms of

relating, creating and differentiating. Grafting Latour's concerns around the Parliament of Things onto a planetary scale, Szerzynski argues that in order to answer Latour's question – how many are we and how should we live together – we need to understand planets as being in a constant process of becoming, of being not just different to each other, but different internally to themselves. This section of the book concludes with a conversation between Dehlia Hannah and Manuel Tironi, who begin by drawing on their personal experiences of political upheaval and recent parenthood to reflexively re-think their relation to their work on environmental crisis. Part of their conversation critically considers the role of interdisciplinarity in the Anthropocene discourse, and the way in which the arts and social sciences could or should relate to the natural sciences, in order to invent new forms of disciplinary collective.

END?

Crisis stories surround the Anthropocene, and for good reason: the news is filled with extreme weather events caused by global warming, toxic spills, biodiversity decimation and, more recently, global pandemics. Despite the fact that it seems impossible to untangle the human from the non-human in the face of the distributed effects of such catastrophes, this thoroughly socialised nature – polluted nature, damaged nature, feral nature – is simultaneously characterised as 'terrifyingly antisocial' (Hetherington 2019: 4). It feels like something has been unleashed: scientists talk of tipping points and runaway processes; our climate predictions fail, as do our political apparatuses. As we were in the middle of writing this introduction (May 2019), the UN released an urgent warning about environmental destruction; school children were striking from school to protest the lack of political action on climate change; there were massive protests in London and other major cities by activists under the banner 'Extinction Rebellion'; and various environmental activist movements were contesting the violent extraction of natural resources in South America and elsewhere. As we finalise it (January 2021), we are caught up in the Covid-19 pandemic that has infected 92 million people, and killed 2 million people,

around the world and will make its effects known for a long time to come. The times feel extraordinary and urgent.[11]

It may seem counterintuitive at a time like this to suggest that we slow down our critical thought. Nevertheless, with this book, we do want to shift attention to the generative potentials of lingering with the limits of our conceptual tools, and to point to the challenges that this moment poses for our presumptions about environmental relationality. What we do not know matters too, and uncertainty is not scepticism. Although the background to this book is one of political urgency, it remains the case that negotiating heterogeneous limits is also part of the everyday of environmental engagement. In this book, the contributors focus on the edges and limits of mundane negotiation implied in the way different people relate to the excesses of their everyday existences in different contexts. We see this as presenting a hopeful ethics of possibility, concerned with practices of care for a myriad of environments that are shaped by, but not fully encompassed by, the catastrophic spirit of our historical era.

NOTES

1 As Marilyn Strathern predicted (1992).

2 As if scientists were not also humans, and science not also a social endeavour; see Jensen and Blok 2019.

3 The geological sciences, they argue, might in fact provide a different sort of image to collapse: 'the very configuration of the earth into a single, integrated system in the newly dynamic earth sciences has been the condition of a more dis-integrated, fractious and multiple vision of the planet (N. Clark, 2016). p10' (Clark and Yusoff 2017).

4 Though Ghosh does cite Morton.

5 Harman was one of the main proponents of OOO, which became very popular in the early 2000s, and spawned a large online discussion and following.

6 See also Waterton and Yusoff's notion of 'indeterminacy', which captures a space that 'exceeds classification' (2017: 9).

7 Strongly inspired by the symbiogenetic theory proposed by the American biologist Lynn Margulis (1991), Haraway builds upon the term *symbiogenesis* and its capability to capture the notion that evolutionary biological novelty arises not just from Darwinian descent with modification, but also through the symbiotic fusion of diverse types of cells and organisms (see Helmreich 2014).

8 Here we do not intend to discuss Gaia scholarship in detail. For further recent discussions about it see Jensen and Blok 2019, Latour et al. 2019, among many others.

9 See also Viveiros de Castro 2019 for an interpretation of Amerindian thought in this vein.

10 It should be noted that this shift presupposes a reciprocal, generative self-contradiction between the two, rather than a renewed opposition between nature-culture divides. As Wagner writes, 'Nature… is a cultural concept, but culture itself is a natural fact. All this means, however, is that culture is a self-differentiating variable; in chiasmatic terms the contradiction is revealed; culture is the difference between *itself* and nature; nature is the similarity between the two (2018: 508).

11 As we revise this introduction (January 2021), our planet has dramatically changed due to the emergence of Covid-19. This introduction, as well as the chapters and the conversations, were written before this pandemic moment. In this context, we have witnessed the rise of anti-scientific thinking, which has subsequently triggered diverse pro-science mobilisations. As scholars inspired by anthropology and science and technology studies, we feel the urgency of not going back to holist understandings of Science, with a capital S, but to reveal, once again, the relevance of the situatedness of scientific practices. Even if an exploration of this new planetary scene goes far beyond the aims and the scopes of this book, we hope that the 'chiasmatic' spirit of our intervention, instantiated in the concept of 'environmental alterities', can potentially contribute to keeping in circulation the fact that science is a set of situated practices, continuously and *chiasmatically* evolving.

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