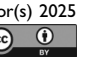
Article

E Nature and Space

EPE: Nature and Space
1–19



DOI: 10.1177/25148486251345307
journals.sagepub.com/home/ene


The politics of animal time: Species, race, and the Anthropocene

Mariam Motamedi Fraser
University College London, London, UK

Abstract

This paper explores how biological conceptions of species in time can obscure the creativity and invention of animals over time. Traditionally, species has been approached as a problem either for and of biology, or for and of politics. As a political problem, concepts of species are closely tied to concepts of race. This paper negotiates between these two approaches by stepping back from species and race, which are abstractions, and exploring instead the changing historical and contemporary configurations of variation and time that undergird and define them. My argument is that the present organisation of (evolutionary) time and (genetic non-) variation has contributed to the 'liberation' of race as a political concept, at the expense of the reification of species. I make this argument in the context of analyses of the Anthropocene, and in dialogue with Kathryn Yusoff's (2024) work on race, and Sylvia Wynter's (1995, 2015), and Yasmin Gunaratnam and Nigel Clark's (2012), efforts to politicise the human species. In the final part of the paper, I explore how natural selection frames species identities, and how it gives no reason to contest that framing. As such, it stands in the way of the claim that animals not only have histories, but that they are their histories. Finally, I address how the relative speed of anthropogenic climate crisis disrupts some of the foundations of these debates, and reinforces others (particularly human exceptionalism).

Keywords

Animals, time, politicisation, species, race

Introduction

The disinclination to take animals' times seriously is widespread. It can be found in practice – in the reluctance of handlers to leave enough time for a dog to respond to a cue, for example; in science – in the assumption of herpetologists, for instance, that turtles were mute, until it was learned that their 'turn-taking intervals' last 'for a minute or two or more' (Bakker, 2022: 14); and it can be found in

Corresponding author:
Mariam Motamedi Fraser, Department of Geography, Gower Street, University College London, London WC1E 6BT, UK.
Email: m.motamedi-fraser@ucl.ac.uk

the violent disregard for domesticated animals' free time, as Dinesh Wadiwel (2020) has so powerfully shown. In this paper, I will argue that this 'lacking interest in' (Wadiwel, 2020: 193), or neglect of, animals' times is also evident, in a more abstract sense, in the concept of species. More specifically: that the anchoring of animals in geological time, by way of species, makes it difficult to conceive of animals as capable of actions that carry genuine temporal import, i.e., that are enduringly transformative of themselves, their socialities, their environments, etc. My argument, in a nutshell, is that biological conceptions of species *in* time can obscure the creativity and inventiveness of animals *over* time. By locking animals into 'eternal' species identities – identities from which there is, in effect, no real escape – the significance of any differences between groups of animals ascribed to the same species, or of the agency of animals, is ultimately rendered superficial: explained away as context-specific, for example, or of relatively short duration and impact. This is why I will propose that, when animals are gathered under the sign of species (which, in mainstream Anthropocene discourses, is nearly always), they are best understood as 'living *geos*.'

My proposal that animals are living *geos* is indebted to Kathryn Yusoff's (2024) analysis of Blackness in *Geologic Life: Inhuman Intimacies and the Geophysics of Race.* In this book, Yusoff argues that *time* is a central mechanism of racialised ontological division. Rather than insist, as many scholars do, that the concept of the Anthropocene, and especially its 'grandiose time frame,' '*anaesthetize[s]* politics' (Bonneuill and Fressoz in Chakrabarty, 2018: 27, original emphasis), Yusoff claims that deep time *is* politics, is integral to a forgotten politics, conceived of in geology in the nineteenth century, that exploits a racialised division between a temporally progressive *bios*/life/the human, indexed to whiteness, and a temporally static *geos*/earth/the inhuman (where 'inhuman' can be organic or inorganic), indexed to Blackness. With this history in mind, Yusoff argues that not only is there no 'we anthropos' politically – a common position in debates about climate justice -, neither is there a 'we anthropos' ontologically. Only whiteness, she suggests, can conceive of itself as possessed of a history so powerful that 'it has now streamed itself into geological time, projecting itself … thousands or even millions of years out' (Crist, 2013: 131).

I draw on Yusoff's *Geologic Life* because the conceptual architecture of her analysis enables me both to make my case (there are temporal parallels to be drawn between Blackness and animal species), and to show how the case differs (there are few political parallels). In order to do this, I find myself obliged to negotiate between two kinds of analysis of species. In one, the concept of species is understood to be largely a problem for and of biology and the philosophy and history of science. Philip Kitcher's (1984) classic article, entitled simply 'Species,' would be an example here, as would, more recently, John Wilkins' (2017) book *Species: The Evolution of an Idea.* The aim, broadly, is 'to reconstruct the language of biology and trace its historical development' (Kitcher, 1984: 331). This project is especially interesting with regards to species, because it shows, as Kitcher notes, how contemporary species categories have 'emerged through a history in which different groups of organisms have been classified by scientists working on different biological problems' (Kitcher, 1984: 331). There is much to be learned from this observation. Yet because the relevant language is confined to biology, at the end of the day the concept of species is 'conserved' (as Wilkins might put it, in his analysis of the *evolution* of an idea), and the achievements of species beyond biology – how species concepts shape, for example, human understandings of animals, or human-human relations – are relegated to the margins.

In the second kind of analysis, species is largely a problem for and of politics, especially as it intersects with the politics of race. Histories of the concept of species and of race are irreversibly connected, as many theorists have demonstrated, and species continues to inform racist discourses and practices today. Claire Jean Kim elegantly summarises the point in her book *Dangerous Crossings: Race, Species, and Nature in a Multicultural Age*: 'race, which borrows from species, gives back to it; race is part of the lexicon by which species is made just as species is part of the lexicon by which race is made' (Kim, 2015: 272). This work too is indispensable, for

it reveals the multiple ways in which the concept of race is renewed and reinvigorated with reference not only to species, but to species' primary associations, 'animal' and animality. It addresses in full what the first kind of analysis often neglects, which is how the traffic between species and race violently shapes the lives of both animals and humans. At the same time, however, the issues raised by the biological dimension of species concepts and, in particular, what this dimension means for animals specifically, are mostly bracketed.

The difference between these two approaches might be summarised thus: the former is concerned with what species *are* – even if, as the 'cynics' would have it, species 'are those groups of organisms which are recognized as species by competent taxonomists' (Kitcher, 1984: 308) – while the latter is concerned with how species and race are *used*. My focus in this paper will be on how species and race are *made*, and with the implications of that making for scientific understandings of animals. Having established, in the first section of this paper, how species transforms animals into living *geos*, I step back from the concepts of species and race, which are abstractions, and attend instead, in the second section, to the changing configurations of variation and time that undergird and define them, both historically and today. This brings, I hope, a new clarity: approached from the angle of time and variation, the distinction between an analysis of biology and an analysis of politics is difficult to sustain. Not because biology is always political, or because politics makes use of biology (biopower), but because the specific arrangement of variation and time that is authorised by science today cleaves together the politicisation of race with the biological reification of species. Species and race are no longer political analogues (if they ever were). And as I will illustrate in the third section of the paper, in dialogue with Wynter (1995; Wynter and McKittrick, 2015), and Gunaratnam and Clark (2012), this makes even the human species difficult, if not 'risky,' to politicise.[1]

In the final part of the paper, I try to imagine what the politicisation of animal species might look like. I do so by showing how the temporality of evolution by natural selection frames animals and, in addition, how it builds reasons into itself for not contesting that framing. That framing *is* contested though, as I will discuss, by the Anthropocene; or more specifically, by the relative speed of anthropogenic climate change. This is also the moment, notably, where human exceptionalism makes an explicit appearance, perhaps because these 'new' speeds, and the 'new' speeds of animals' responses to them (where responses are possible), suggest that evolutionary time is not the only time that animals inhabit. I put 'new' into inverted commas here, by way of qualification. In the racializing discourses and practices analysed by Yusoff, and in the species thinking I identify, the geological is aligned with stasis; it is with the 'work' of stasis, what it achieves, that Yusoff and I are (differently) concerned. Since at least the mid-1960s, however, developments in various earth sciences disciplines indicate that rapid climate change is not exactly new at all,although its anthropogenic causes may be. Indeed, the very possibility of 'conceiving of human agency as capable of impacting on the earth system,' as Nigel Clark and Yasmin Gunaratnam explain, is part of a 'much bigger picture of a complex, dynamic earth with a propensity for nonlinear shifts between a range of possible states' (Clark and Gunaratnam, 2017: 152). Clark and Gunaratnam ask an important question in this context: how might this conception of the earth, as 'mobile, forceful and dynamic' (Clark and Gunaratnam, 2017: 148), challenge social science and humanities understandings of 'the human' and human histories? The question is equally relevant to animals, or would be, if animals were also understood, minimally, to 'have' histories. This is the focus of the final section.

A second qualification follows. For sure, as I argue in the final section, climate crisis is putting pressure on established scientific concepts, such as species. Other less devastating sites of radical upending also exist, though, as in the biology of microbial organisms, those 'evolutionary sophisticates who exhibit far more capacity to adapt to dramatic environmental change than does multicellular eukaryotic life' (O'Malley and Dupré, 2007: 164). Where microbes are concerned,

orthodox evolutionary concepts and theories, including that of extinction, may not apply. Since there is no scope here to address the productive theoretical and political opportunities posed by microbial phenomena, I end this introduction by joining a long line of 'apologists' (O'Malley and Dupré, 2007: 158), and admit that the discussion in this paper is confined to animals, and to those mainstream species concepts and theories that are understood to be relevant to them.

Living *geos*

The Lisbon earthquake of 1755, Yusoff argues, enacted a conceptual revolution in Europe that transformed understandings of western history, catalysing a shift 'from supernatural causation (God) to natural causation (Earth)' (Yusoff, 2024: 65), and launching the earth sciences and geology. In doing so, it illustrated 'what the earth does to thought, how it arranges disciplines, modes of inquiry, and institutions' (Yusoff, 2024: 65). But the earthquake also enacted, Yusoff continues, a social revolution, producing not only 'new modes of thought,' but also new modes of racialised subjectivity (Yusoff, 2024: 65). Between the 1760s and 1820s, and with the support of palaeontology, stratigraphy, and comparative anatomy, geology changed from 'a practice of determining localized formations of strata (for the commercial purposes of extraction)' to 'a temporal practice of determining the status of *beings in time* and *theories of the earth*' (Yusoff, 2024: 66, original emphasis).

These determinations turned (and continue to turn, Yusoff argues) on the identification of two states of matter: *bios* (life), which is subjectivised as the biopolitical/biocentric human, racialised as whiteness, spatialised as the surface or plateau, and temporalized as the present and future; and *geos* (earth), subjectivised as the inhuman, racialised as Blackness, Brownness, and Indigeneity, spatialised as the undergrounds, and temporalized as deep time. This 'twinned temporalization and racialization of colonial earth', Yusoff writes, casts whiteness 'as material achievement in time' (Yusoff, 2024: 4), so 'legitimising' its claim to the earth and all its resources, and 'interns [the] Other in/as matter of the earth, categorized for extraction and ascribed atemporally historical stasis' (Yusoff, 2024: 3). Blackness is the onto-political interregnum, 'positioned both outside and within geography, as libidinal buffer to the inhuman and as a lithic buffer of geophysical force in the extraction of value' (Yusoff, 2024: 70). Contra, for example, Moore (2017), Yusoff proposes that the root cause of the colonial enslavement of people and Indigenous genocide is not capitalism's reorganisation of land, labour, work, and property, but the *bios/geos* distinction, which is the precondition of the 'world-building [that] led to the Anthropocene' (Yusoff, 2024: 1).

'There is a before to colonialism (its spatialities and temporalities), but there is no *going back before* colonialism' (Yusoff, 2024: 282, original emphasis). By this I understand Yusoff to mean that the 'story of the rocks' (Yusoff, 2024: 3), told by geology in the language of race, cannot be *untold*. Yusoff's concern here lies not primarily with racism – which, following Toni Morrison, she describes as a 'distraction' (Yusoff, 2024: 395) – but with how 'Blackness is used and made' (Yusoff, 2024: 395). (This is why I used these distinctions in my introduction). Blackness, as it was made in the nineteenth century, cannot be *unmade*. More enduring, for example, than the explicit racism of Louis Agassiz (1807–1873), one of the founding 'fathers' of geology, are his racialised 'arrangements and classifications of time and matter' (Yusoff, 2024: 145). The legacy of this 'stratigraphic imagination' (Yusoff, 2024: 447–448) means that '[e]very question of matter, materiality, and materialisms gets passed through the space and time of race' (Yusoff, 2024: 4); yet, it is everywhere disavowed, as illustrated by the contemporary preoccupation, in the life sciences and humanities, with biopolitical concepts of race and, relatedly, with 'life', the body, biology, vitalism, etc. Yusoff describes this preoccupation as 'a mistake' (Yusoff, 2024: 12), because in failing to confront the undeserved coherency ascribed to these 'bio' topics, i.e., in failing to address how Blackness is made, these disciplines are left ill-equipped

to challenge how Blackness is used. The preoccupation with 'life itself,' in short, is an expression of the forgetting of the racialised severance of the *bios/geos* relation.

Do animal researchers focus too much on *bios*? It is true, on the one hand, that many of the concerns animals raise, especially in the context of the Anthropocene, are biopolitical. In social science and humanities animals scholarship especially, such concerns pertain, for instance, to the brutality of human control over domesticated animals' lives and deaths, which includes control of their time, movement, sleep, nutrition, reproduction, sexuality, parenting, and friendships, or to the invasive surveillance of and interference with free roaming animals that is intensified and legitimised by the spread of zoonotic diseases, species extinction, bio-diversity loss, conservation efforts, etc. On the other hand, animal studies scholars rarely fail to address the role of stratification as a method – from at least Aristotle's *scala naturae* onwards – for organising animal-human relations, and justifying the profound instrumentalization and exploitation of animals and of humans deemed proximate to them. As many researchers have demonstrated, the subjugation of animals, across a diverse range of contexts, is not unconnected to their exclusion from the intellectual ('cognitive'), moral, and political 'high ground' (the plateau, as Yusoff might put it) occupied by those who are constituted human. What *has* been somewhat neglected, perhaps, is not stratification per se, but the stratification that is achieved, specifically, by the geologic dimension of species, and how it shapes understandings of animals living today. Evidence of this, I think, is found not in the attention to *bios,* but in the relative inattention to the relation between *bios* and the perceived inseparability of deep time and species identities. This inattention is all the more surprising given that, in the sciences, the temporal aspect of species is far from forgotten, and is often actively celebrated.

Take domesticated dogs, by way of example. In *Dog Politics: Species Stories and the Animal Sciences* (2024)*,* I showed how, especially since the late 1990s, scientific accounts of dogs' speciation have drawn on the full force of palaeontology, archaeology, comparative anatomy, comparative psychology, behavioural science, evolutionary biology, evolutionary anthropology, classical and contemporary ethology, and genetics to explain what domesticated dogs 'are' today, what humans can 'objectively' expect from them, and 'therefore' how they should be treated. These particular forms of biopolitical governance (that affect not just captive dogs, but many free roaming dogs as well) find their originary justification in the naturalisation of the dog-human relationship that is said to extend back anywhere between 11,000 and 135,000 years. This ancient canine 'geostory' (Yusoff, 2024: 40) – or 'species story,' as I put it – is distinctive, because it proposes that dogs did not have a species identity 'of their own' prior to domestication. That is, it is not that dogs were dogs *and then* they were domesticated; rather, dogs were wolves (and would, presumably, have remained wolves) *until* they were domesticated. The upshot, to be succinct about it, is that '[t]here are no dogs *qua* dogs without humans' (Motamedi Fraser, 2024: 131). Pity the individual dog who does not agree.

Like all speciation theories, these accounts of dogs allow for the crossing of temporal thresholds (Yusoff, 2024: 450) – the ancestor of 'the dog' is the grey wolf, is the coyote, etc. – and in this regard they differ from the geological ossification of race in time.[2] Nevertheless, the story of how dogs became dogs is intelligible only if these temporal crossings are understood to stop dead at some (contested) point, after which dogs are, to all intents and purposes, locked into a species identity for perpetuity.[3] The particularities of the stratal stories ascribed to different groups of animals will, by definition, differ. Broadly speaking, though, I would argue that the concept of species turns animals, and especially those with well-developed species stories, into various forms of 'living *geos.*'

It is notable that, while the idea of animals as living *geos* barely merits comment, the moment Anthropocene debates bring humans into view as a species – even as they often reaffirm the exceptionality of *Homo sapiens* – a kind of dismay about the concept is readily expressed. Claire Colebrook writes:

> We are not faced with infinite and open potentiality or becoming; the modern notion of self-definition and a world devoid of any kinds or essences is giving way to differences and distinctions that force themselves upon us; we cannot look back on what we have become and how we have evolved and argue that nothing prevents us from becoming anything we want to be (Colebrook, 2022: 3).

Indeed. Animals have long had experience of this. Or rather, they have long had experience of the consequences that follow when humans conceive of them in this way. The erasure of animals as individuals is key among those consequences (Motamedi Fraser, 2024). Gabriele Dürbeck and Philip Hüpkes, summarising Dipesh Chakrabarty, write: 'human individuals cannot experience themselves as a species or as a geological force' (Dürbeck and Hüpkes, 2022: 3, references omitted). Neither, one imagines, do animal individuals experience themselves as a species, even though this is the scale, especially in Anthropocene discourses and practices, at which decisions regarding their lives and deaths are most often executed. It is worth recalling in this context that a species cannot act, it cannot give its consent, nor can it resist.

I am suggesting that the concept of species, *when it categorises animals*, gives rise to identities that are nearly always inseparable from the perceived stasis of *geos*, from the arrest of time, and from the impossibility of transformative achievement over time. As I will discuss below, any variations in 'species-typical' behaviours, any differences between groups of animals, are usually ascribed to, and understood to be dependent upon, local, short-term, conditions. Far from being forgotten, stratigraphic stories of animals have long defined, and in defining fixed, the contemporary biopolitical lot of a species (what are the life and death 'needs' of this species, the 'wants' of this species, the minimum or maximum this species can expect from the earth and from humans). I deploy the term living *geos* in order to bring an argument that I have developed elsewhere into line with the conceptual frame of Yusoff's *Geologic Life*, and I hope she would not disagree with it. The question, for me, is how the idea of animals as living *geos differs* from Blackness, and with what implications, for animals.

Variation and time

I agree with Yusoff that there can be 'no going back to before colonialism.' Yet one can identify, before colonialism, the emergence of two elements that would form the core of colonialism's racialisation as Yusoff describes it, and that have since been refigured (but far from abandoned). These elements, in my view, are variation and time, one specific constellation of which undergirds the solidification of race and species in the century *about which* Yusoff is writing, another that accounts for the partial transformation of these categories in the century *in which* she is writing. The difference between them is important: it means that the racialised origin story of the earth, which cannot be *untold*, can at least be *retold* – as it is retold, for example, by Yusoff, as a historical story, located in onto-politics, rather than an eternal story, located in nature. Can species stories be retold? I return to this question in the final part of the paper.

In his analysis of race in early modern philosophy, Smith (2015) argues that '[t]here is a problem of philosophical anthropology that would have been there had there been no New World encounter with Native Americans, and had there been no transatlantic slave trade' (Smith, 2015: 5). Although the transatlantic slave trade had been operational from the early sixteenth century onward, it did not immediately, Smith suggests, '[take] on a rigidly racial dimension for Europeans' (Smith, 2015: 5). 'Somehow,' he writes, 'between the 1500s and Jefferson's 1787 work [*Notes on the State of Virginia*],[4] modern slavery in the Atlantic world had come to be seen as fundamentally racial, as grounded in racial difference rather than simply rationalized post hoc in terms of it' (Smith, 2015: 5–6). Over this period, two factors in particular contributed to making variation meaningful: the 'collapse of a certain universalism about human nature' (Smith, 2015: 7), and the objectification

of the body as nature. Descartes is an interesting figure here. On the one hand, Descartes 'consciously determines not to place [cultural difference] at the center of his philosophical inquiry' because, 'in its variability,' difference 'seems unable to offer any answers to the universal questions that are of interest to him' (Smith, 2015: 15). On the other hand, by secularising the copresence of the soul and the body in the Christian tradition (Qiujano, 2000: 554–556), Descartes initiates a conception of humans in which difference or variation comes to have real significance. For by privileging humans as '*natural* beings,' Descartes simultaneously renders them 'no less susceptible to classification in terms of a naturalistic taxonomy than any other natural being, plant or animal or mineral' (Smith, 2015: 8, original emphasis).

And indeed: during the early modern period, systematisers and naturalists – or perhaps 'naturalisers' would be the better description – ceased defining animals and plants on the basis of their symbolic relationships with humans, or their use value to humans, in favour of classifications based on their 'intrinsic qualities' (Thomas, 1984: 52). Carl Linnaeus' *Systema Naturae* (first published in 1735) is usually considered to be a landmark contribution to this project, for it was the first to classify humans, too, into varieties (initially, four varieties, then six). The fact that Linnaeus used the term variety rather than race does nothing to challenge his dismal place in the historical development of the concept of race, nor is it especially significant that he did not consider his varieties to be 'intrinsic,' but rather determined by geography and climate. With regards to the first point, as Roxann Wheeler explains, '[u]ntil the very end of the [eighteenth] century, *variety*, not *race*, was the scientific term of choice to designate different groups of people. There was one human race divided into several varieties of "men"' (Wheeler, 2000: 40, original emphasis). With regards to the second: '[i]t was the practice of taxonomizing the human species' *itself*, Smith argues, 'and of elaborating differences between groups, even if these differences were not explicitly held to be essential … that served as the principal support of modern racism' (Smith, 2015: 34–35). Thus it is that Linnaeus's *Systema Naturae* has come to mark, the historian of science Staffan Müller-Wille argues, the first of two 'discontinuities' that characterise historiographies of race (I will return to the second below): it is 'the beginning of the story of race … the invention of race by European naturalists and anthropologists' (Müller-Wille, 2014: 598).

The 'invention of race' inevitably brought questions about the temporality of variation to the fore, particularly in the context of the 'historical (on-going) negotiation of the rules of faith and the rules of biology' (De La Cadena, 2019: 480). Although Linnaeus allowed that, through hybridisation, varieties might change over time, he nonetheless understood these hybrid varieties to represent the realisation of preordained God-given potential and, in this way, preserved the 'impotence' of earthly time. (God determines the forms of things, and their transformations). Jean-Baptiste Lamarck's 'law of use and disuse,' which relied upon the idea of inheritance over time, more clearly posed a question to creationism, and especially the creationist view of a 'young earth.' Although Lamarck died 'in 'poverty and scientific disrepute' (Boakes, 2008: 2), he was not entirely alone in his thinking: '[a]t least within scientific circles, there was [at the beginning of the nineteenth century] rapidly weakening belief in the estimate, derived from Biblical texts, that the earth had existed in its present form for about four thousand years' (Boakes, 2008: 2). The contested age of the earth would be an important mediator of variation, as it was (and is) differently understood by creationists and evolutionists. Two years after Lamarck's death, Darwin took with him, on HMS Beagle, the first two volumes of Charles Lyell's *Principles of Geology*. It was on this voyage that he became convinced of 'the antiquity of the earth's crust' (Boakes, 2008: 3).

In her discussion of Louis Agassiz, Yusoff illustrates how Agassiz converts geographical determinism, of the kind described by Linnaeus and in which variation is conceived of primarily in spatial terms, into geological determinism, which is spatio-temporal. Alongside this use of 'temporal spacing … to solidify political markers of racial difference' (Yusoff, 2024: 124), however, Agassiz maintained creationism intact by asserting that after every catastrophe God created

species anew (the 'flawless fit' of a species to its niche serving only to confirm the perfection of divine creation). In this way, Agassiz used an admix of religion and geology to situate variations among humans *in* time, while simultaneously precluding any possibility that they might change *over* time. Not for nothing does John Wilkins, historian of biology, describe Agassiz 'the last fixist' (Wilkins, 2017: 30).

Agassiz was a polygenist, a member of what Stephen Jay Gould calls 'the American school of Anthropology' (Gould, 1996: 74), which included George Robbins Gliddon and Josiah Clark Nott – authors of *Types of Mankind* (1854) and *Indigenous Races of the Earth* (1857) – and the craniometrist Samuel George Morton. Although many, if not most, accounts of nineteenth century racist science address themselves to the differences between the 'two hostile camps' of monogenism and polygenism (Desmond and Moore, 2009: 243), from the perspective of variation and time, these doctrines are not fundamentally at odds. For sure, monogenists believed variations to be degenerations from a single origin (Smith, 2015, chapter five), while polygenists held variations to be illustrative of multiple, separate, origins. Their common belief, however, was that variations neither transform themselves in time, nor could they be transformed over time. This is in part where the power of their racializing racisms lies: in the conjoined claim that variation has political significance (rungs on the ladder of perfection for monogenists, or of advancement for polygenists), but no organismic – or in today's terms, no biological – significance. Variation, for both the polygenists and monogenists, and the 'justification' variation provides for extractivism, exploitation, and oppression, is thus immune to challenge over time. Immune, one might say, to time itself.

'[W]hen the principles of evolution are generally accepted, as they surely will be before long, the dispute between the monogenists and the polygenists will die a silent and unobserved death' (Darwin, 1981: 235). Unlike both the monogenists and polygenists, Darwin argued that substantial variations can exist within a species, and that, under the right conditions, these variations can convert into differences between species. Time is crucial here, not only because conversions take place over time, but also because time introduces unpredictability to the encounter between random variation and non-random selection (Grosz, 2004: 7). Simply put, if the clock were to run again, the outcome would be different. Even though Darwin's theory of evolution revivified gradualism and failed to contest, if not further consolidated, the racist hierarchies that defined his century (Motamedi Fraser, 2024: 196–201), in principle this reconception of the relation between variation and time marks a significant moment with regards to how race would come to be understood and defined in the twentieth and twenty-first centuries. At least theoretically, Darwin replaced the 'essentialist thinking' of the monogenists and polygenists with 'population thinking' (Wilkins, 2017: xxi, emphasis omitted). Genetics would later do away with the final vestige of essentialism in Darwin's theory, his own essentialism of individuals (Grosz, 2004: 42), by abstracting variation from any single body in favour of patterns of variation – or of difference, as Elizabeth Grosz puts it – across constantly shifting populations. As Grosz explains: '[w]hat evolves are not individuals or even species, which are forms of relative fixity or stability, but oscillations of difference (which underlie and make possible individuals and species) that can consolidate themselves, more or less temporarily, into cohesive groupings only to disperse and disappear or else reappear in other terms at different times' (Grosz, 2004: 24).

The radical potential of Grosz's reading of Darwinian evolutionary transformation is arguably betrayed by the privileging, in science, of the very long durée. In practice, this temporality serves to foreground not oscillations of difference, but species stability and, concomitantly, genetic similarity. This is why, for Müller-Wille, the story of race, which begins with Linnaeus's identification of four varieties of man, ends with the 1950 United Nations Educational, Scientific and Cultural Organization (UNESCO) Statement on Race (Müller-Wille, 2014: 598). That statement makes its case for the expunction of race 'in popular parlance' on the grounds that genetic variation cannot be called upon to support its existence:

> National, religious, geographic, linguistic, and cultural groups do not necessarily coincide with racial groups: and the cultural traits of such groups have no demonstrable genetics connexion with racial traits. Because serious errors of this kind are habitually committed when the term 'race' is used in popular parlance, it would be better when speaking of human races to drop the term 'race' altogether and speak of ethnic groups (UNESCO, 1950: 6).

Together, the naturalisation of human beings and the objectification of the body, the roughly four and a half billion-year age of the earth, and Darwin's population thinking, supported by genetics, bear powerful testimony (Stengers, 2000) to an event that authorises, 'in truth,' that it is not *race* but processes of racialisation that endure over time.[5]

Homo narrans

What is the time of race then, if it is not for *all* time? It is, as Yusoff argues, 'political time' (Yusoff, 2024: 4). The substitution of race with 'processes of racialisation,' enabled in part by a twentieth century arrangement of geological time (understood to give rise to species) and biological non-variation (witness to *Homo sapiens* homogeneity), binds race, by definition, to the duration of particular social and cultural modes of thought and practice. In Yusoff's analysis, race is not 'really' of deep time (that is her point); deep time is exploited to make and use race. 'The specific invention of geologies of race is historical, not natural' (Yusoff, 2024: 142), Yusoff writes, which statement enables her to identify precisely the historical moment (the eighteenth and nineteenth centuries, with implications flowing into the twentieth and twenty-first centuries), and precisely the historical events (slavery, settler colonialism, geology, palaeontology), that are responsible for that '*specific* invention.'

I am not suggesting that science is solely responsible for the politicisation of race.[6] Yet it would be an oversight, I think, to imagine that 'the demise of race as a viable biological concept' (Müller-Wille, 2014: 598) renders biology irrelevant to contemporary conceptions of the category race. The dissolution of race as a biological concept, and its concomitant 'liberation' as a political concept (a concept that is made and used), depends on the stability of biological species. After all, it is precisely the 'relative fixity,' as Grosz puts it, of the human species boundary that 'enables proportions of human similarity (greatly similar) and difference (not very different at all) to be identified' (Motamedi Fraser, 2024: 195). This perceived stability/fixity might explain why efforts to politicise biological species are more commonly a politicisation of historical species variants. When Sylvia Wynter, for example, points out that 'our present model of being "Man," as totemized in the Indo-European middle-class physiognomy (together with European cultures, ways of life, and rationality) was and is the only possible model of biologically (that is, eugenically) selected "normal being"' (Wynter, 1995: 42), her critique is aimed not at species per se, but at the way a *member* of the species class stands as *representative* of the class (Wynter, 1995: 43). Wynter's point is important: the very fact that different variants of the human species – or 'genres of humanness' (Wynter in Wynter and McKittrick, 2015: 18) – have been narrated over time indicates that the privileging of any one variant (e.g., the genetically determinist, biocentric, variant) is contingent and open to challenge. What is *not* open to challenge is species itself or, in Wynter's argument, the capacity for narration and story-telling that defines the human species in its singularity.

'[I]n heretical opposition to Charles Darwin's "part science, part myth" proposition that we humans are constituted solely by laws of bioevolution in *pure continuity* with those of the rest of the living world' (Ambroise, 2018: 847, original emphasis) – a position, to recall, that was prefigured by Descartes' objectification of the human body, and the precipitation of humans into the sphere of classification – Wynter describes (classifies) '"us" as the hybridly *biological* and

storytelling/mythmaking *symbolic species* that we are – that is, what she terms "*Homo narrans*"' (Ambroise, 2018: 848, original emphasis). As Wynter explains:

> So here you have the idea that with being human *everything is praxis*. For we are not purely biological beings! As far as the eusocial insects like bees are concerned, their roles are genetically *preprescribed* for them. Ours are not, even though the biocentric meritocratic IQ bourgeois ideologues, such as the authors of the Bell Curve, try to tell us that they/we are (Wynter in Wynter and McKittrick, 2015: 33–34, original emphasis).

Acknowledging her debt to Judith Butler's 'redefinition of gender as a praxis rather than a noun,' Wynter extends praxis – or verbs, perhaps (McKittrick, 2015: 3) – to '*all our roles*, of all our *role allocations* as, in our contemporary Western/Westernized case, in terms of, inter alia, gender, race, class/underclass, and, across them all, sexual orientation' (Wynter in Wynter and McKittrick, 2015: 33, original emphasis). But not species. Species, it appears, is a noun.

Where Wynter claims that 'Yes, we are a single species!' (Wynter in Alagraa, 2021: paragraph 11), the sociologist Yasmin Gunaratnam and geographer Nigel Clark propose by contrast that 'in no way can we take human "oneness" as a given' (Gunaratnam and Clark, 2012: 7). I want to explore Gunaratnam and Clark's position briefly here, because it is a rare contribution to the idea that species too (or at least the human species) might be understood as a verb. Gunaratnam and Clark's starting point is the Anthropocene, which for them represents an invitation to rethink, rather than continue to disavow, the significance of intra-species physiological, biological, and genetic variations. They trace these variations to the evolutionary multiplicity of the *Homo genus*, that is, to the multiple human species that '[t]ime and time again … would have had to face the rapid onset of [significant climate change]' (Gunaratnam and Clark, 2012: 6):

> So whenever evidence from human biology is rolled out to make the case that 'The differences attributable to "race" within a population are as great as that between racially defined populations,' it is important to remember that this claim depends on the contingent condition of a single surviving human species. As an assertion of unity, it teeters on the shaky foundation of successive extinctions (Gunaratnam and Clark, 2012: 6, references omitted).

Genetic variations in contemporary human populations – such as the different percentages of Neanderthal and Denisovan variations in Europeans, Asians and Papua New Guineans (Gunaratnam and Clark, 2012: 6) – supports paleoclimatic and paleoanthropological data that suggests that no single migrant *Homo* population ever entirely replaced another. That many of these variations (e.g., one class of the HLA gene) pertain to immunity is significant, Gunaratnam and Clark argue, for immunity would have been an especially valuable asset to have been gifted by '"archaic" populations' to 'new arrivals [trying] to survive in novel environments' (Gunaratnam and Clark, 2012: 6). Extrapolating forwards, they ask provocatively what other contemporary physiological variations – including 'that most historically fraught of visible markers, the colour of our skin' (Gunaratnam and Clark, 2012: 7) – might come to matter as *Homo sapiens,* spared for nearly 10,700 years from 'heavy weather' (Gunaratnam and Clark, 2012: 8), enters a period of potentially radical climate change.

The aim of Gunaratnam and Clark's argument, with regards to race, should be understood in the context of their critique of various forms of historic and contemporary climate injustices, and especially the 'modern ideal of juridico-political impartiality' which considers itself obliged, in principle, to be 'unswayed by visible or reputed difference' (Gunaratnam and Clark, 2012: 4). Their agenda is to use human variation, understood as a sign of long-term struggles with climate change, as a way to 'arrest the slide from impartiality to indifference' (Gunaratnam and Clark,

2012: 8). Nevertheless, they recognise that their analysis risks returning race thinking to the past, to 'discredited geographical or environmental determinisms – and the raciologies they have previously supported' (Gunaratnam and Clark, 2012: 7). It might also, however, represent a risk to race thinking in the present, for in rendering physiological difference significant, Gunaratnam and Clark tap at the roots of human species homogeneity, and in this way weaken the particular configuration of (species) time and (genetic non-) variation that has upheld, since the first half of the twentieth century, non-biological race. It seems inevitable to me that, in their conclusion, they cannot answer the question as to whether their analysis dissolves or multiplies race (Gunaratnam and Clark, 2012: 8). For it is difficult to anticipate what race could possibly mean, when the 'one-ness' of *Homo sapiens* is contested.

With regards to species, Gunaratnam and Clark's aim is to dislodge the priority ceded to biology in its making. For them, 'the sheer improbability' of maintaining an '"an unbroken genetic line" that arcs over several million years of wildly vacillating climate' (Gunaratnam and Clark, 2012: 6, references omitted) must be attributed to the 'hard won' modes of knowing and living, and 'considerable inter-generational effort,' that is required 'to endure environmental forces long enough for them to impact upon a population's genetic make-up' (Gunaratnam and Clark, 2012: 7). By their definition, physiological variation is 'the *tribute* that biology plays to successful cultural innovation and social organization' (Gunaratnam and Clark, 2012: 7, my emphasis). What would it take to conceive of animal variation similarly? Minimally, it would require understanding animals as capable not only of solving problems in an endless series of presents, but of setting and posing problems that have significance over time, including devising and negotiating the conditions, or what might even be considered the preconditions, that ensure the possibility of the *on-going* problematisation of social and biological life. It would amount to recognising that animals *have* their own histories, as the historian Éric Baratay (2022) argues, and that, more than this, they *are* their own histories (which is different to identifying historical events that led animals to become speciated). Plenty of empirical studies exist in the sciences and social sciences and humanities to support such a claim, yet this evidence rarely adds up to a genuine challenge to the notion that animals are essentially the products of natural selection (which means, in other words, that animals' histories have nothing to do with the making of species). In the following, final, section I offer some preliminary thoughts as to why this might be, and what, minimally, would be required to make it possible.

Animal making

Evolutionary theories are all about the making of species; or rather, as I have already discussed, the undoing of species as '*fixed* natural kinds' (Smith, 2015: 51, original emphasis). As such, evolutionary theories could potentially be an invitation to understand and appreciate the awesome complexity and multiplicity of creative animal modes of living (van Dooren and Despret, 2019) as evidence of endurance as inventive praxis (to borrow praxis from Wynter). Yet what evolutionary theory promises with one hand, it takes away with the other. For unlike processes of racialisation, which are recognised to be many and varied, and subject to change over time, speciation is explained with reference to a single, and by comparison relatively uncontested, mechanism: natural selection. This is probably why it is 'easier' to critique how species is used, than to analyse how species are made; why it is easier to work with species as a noun, than to explore the implications of species – if one insists on maintaining this concept at all – as a verb. Selection, natural or artificial, is the 'how' of all species, the 'how' of each and every organism's evolutionary achievement, despite the diversity of animals' ways of being in their worlds.

A single, universal, 'timeless' (Baratay, 2024: 6) mechanism should not be confused, however, with a specific, empirical, explanation. Are empirical explanations of deep time speciation possible?

Given the long durée of (especially zoological) evolution, from a human perspective, they will at best be speculative. (Stories, perhaps, that *cannot* be told). To wit: scientific theories of speciation are subject to frequent contestation (Cunningham et al., 2024), arguably rarely persuasive (Motamedi Fraser, 2024, chapter two), and fairly arbitrary 'even' when it comes to humans (Gunaratnam and Clark, 2012: 6). As Gunaratnam and Clark note, it is difficult to 'fully bring to light' in what ways contemporary humans are indebted to the strategies of their *Homo* ancestors (Gunaratnam and Clark, 2012: 8). Darwin himself could not look into deep time. When he asked what was to become one of the most significant scientific questions ever, which is whether wild animals might, like domesticated animals, share a common ancestor, he was prompted by conjecture and metaphor: by the conjecture that resemblances could be identified between the fossils he was collecting and the animals he was encountering on his voyage on HMS Beagle (Boakes, 2008: 3), and by the metaphor that artificial selection offered to natural selection (Motamedi Fraser, 2024: 66–68).

So, natural selection speaks on behalf of animals' becoming over time, without necessarily offering much supporting detail. What the slow pace of zoological change adds to this, is a reason not to be too bothered. While it is important, if not urgent, to understand how processes of racialisation operate – for there are numerous ways in which a human may acquire a racialised identity over the course even of a single lifetime – an animal will never be differently speciated. The location of the 'origin' of species in deep time erases the value of attending to the making of species because species are largely perceived, by both scientists and non-scientists (Smith, 2015: 51), to be what they 'are' for all time. As Smith notes, it is almost '[universal] to suppose in our ordinary lives that a species is a really existing kind of thing' (Smith, 2015: 51); at best, an actual biological infrastructure that may be torqued, but is neither produced nor determined, by political and economic factors (Kirksey, 2015). To this I would add: a really existing *one* kind of thing. What scientists forget, writes Baratay, is that the animals they see before them are not the same as those (of the same 'species') who existed previously. Differences over time are 'overlooked, minimised or denied,' he writes, 'and we are quick to claim, without proof, that the observers of old were obviously mistaken if they contradict contemporary knowledge' (Baratay, 2024: 1). In keeping with the histories outlined above, Baratay attributes this perception of the enduring 'sameness' of animal species to Greek philosophy and Christian theology, whose legacies were further developed and exploited, Yusoff would argue, in eighteenth and nineteenth century Western philosophy and science. Yet the shift in the twentieth century, from the atemporality of typology to the deep time of evolution, does little to challenge the notion that animal species were and are 'ever thus.'

Of course, it is not as if researchers do not recognise differences between groups of animals. Indeed, such differences have been much celebrated, especially since the 1990s, when it finally became acceptable for ecologists and ethologists to conduct 'sociological, ethnographic, geographical, and cultural studies of animals' which speak to perennial differences (Baratay, 2024: 5). But as Baratay illustrates, these differences between groups of animals' behaviours are nearly always ascribed to space, 'concretised', he writes, 'as a diversity of "environments" which are the locus of differentiation' (Baratay, 2024: 6). Time, by contrast, is 'of no interest in itself' (Baratay, 2024: 6). This should perhaps not be surprising. For all Darwin's attention to time, his substitution of what Peter Godfrey-Smith, summarising Richard Lewontin, describes as an internalist explanatory regime (in which 'changes undergone by species were understood as analogous to the unfolding of a developmental program') with an externalist one (in which 'the ordering mechanisms of evolutionary change [are located] in the environment') (Godfrey-Smith in Odling-Smee et al., 2003: 373), encourages researchers to look to animals' geographical and ecological location to account for changes in physiology and behaviour. By way of example, one might consider the plenty of comparative analyses of the behaviours of present-day free roaming dogs who live, say, in the Global South, with captive dogs who live, say, in the Global North. In most of these

studies, these dogs are presented as the *same* dog, making a different living (see, for instance, Wynne, 2020: 75–83).

The will to overturn this orientation towards space and place is doubtless hindered by the practical problems raised by the study of animals over time, of which Baratay identifies three. They are: experiential, on account 'of the fleetingness of animals and the haste of humans' (Baratay, 2024: 6); institutional and financial, given that science today favours 'short stays and rapid returns;' and geographical, in the sense that 'material conditions have deteriorated significantly, in many places' (Baratay, 2024: 6). Wretchedly, these problems may be somewhat displaced by the Anthropocene, inasmuch as 'human-induced rapid environmental change' (HIREC), as evolutionary ecologists Sih et al. describe it, 'puts organisms into evolutionarily novel conditions that typically involve more rapid change than organisms have experienced in their evolutionary past' (Sih et al., 2010: 367). HIREC gives scientists reasons to shift their attention away from deep time speciation, especially with regards to 'species with slow life histories [for whom] genetic adaptation is difficult to achieve over short time periods' (Gruber et al., 2019: 2), and to address the more immediate ways in which animals 'adapt' – i.e., take control, or attempt to take control, of their lives. To be blunt, rapid environmental change leaves no time, either for scientists or animals, to wait around for natural selection to do its work.

If something is to be salvaged from this, it might be to think of HIREC less as a work-around for the obscurity of deep time, and more as a test-case for the relevance or not of species as a touchstone for animals' making. Sih et al.'s study of HIREC reveals, for example, that over condensed periods of time and within confined spaces, animals categorised as the same species, living in the same environments, fail to display the same behaviours (Sih et al., 2010: 367–368). HIREC is an open invitation to bring the sciences and social sciences and humanities together, to address whether species enables the 'right questions' (Despret, 2016) to be asked of animals and, if it doesn't, to formulate new ones, preferably with animals' input. Unfortunately, and more commonly, the concepts and tools deployed to explain animal behaviours in the context of HIREC seem to amplify cross-disciplinary antagonism.

For example: in addressing more immediate 'adaptations' of animals, scientists, and especially behavioural scientists, are often drawn to the concept of culture, usually via the concept of 'social learning over time' for which it is a frequent synonym (e.g., Gruber et al., 2019; see also Fragaszy and Perry, 2009: 2–3 for a summary of scientific debates on the culture/social learning distinction). Social learning in animals, or what comparative psychologist Dorothy Fragaszy and evolutionary anthropologist Susan Perry call 'the biology of traditions' (Fragaszy and Perry, 2009), refers to 'the continuation of behavioral practices across generations' (Fragaszy and Perry, 2009: 2). As such, social learning brings temporal focus and specificity to the study of animals. Scientists consider it especially important with regards to HIREC, because social learning enables animal 'innovations' in an environment to become, over generations, 'modifications' of that environment. Cognitive scientist Thibaud Gruber and his colleagues call this 'cultural niche construction' (Gruber et al., 2019: 4).

It is only a short step from here, however, to understanding all cultures, including human cultures, as biological/evolutionary phenomena (as a second inheritance system). Which is 'an affront,' anthropologist Tim Ingold writes, 'to the millions of intelligent human beings for whom traditions are real and important but who are not, on that account, trait-bearing cultural clones whose only role in life is to express – in their behaviour, artefacts, and organizations – information that has been transmitted to them from previous generations' (Ingold, 2007: 4). It is a disciplinary affront, too, according to archaeologist Robert Spengler, who suggests that '[c]reating a solitary term [niche construction] to describe the complexity of everything that humans do could be construed as standing in direct opposition to an anthropological approach' (Spengler, 2021: 940). The wrath with which theories of cultural evolution have been received is somewhat ironic, given that many of its key proponents understand their work to provide a 'bridge' to the human

sciences precisely on the grounds that cultural evolution is *not* solely about genes, but is rather about 'the active role that organisms play in the evolutionary process' (Odling-Smee et al., 2003: 27–28). 'Humans,' write John Odling-Smee, Kevin Laland and Marcus Feldman, 'are the ultimate niche constructors' (Odling-Smee et al., 2003: 28).

The authors, of course, are missing the point. For the objection relates not to whether humans are passive evolutionary vehicles or active evolutionary agents, but to the idea that all human activities – passive, active, whatever – are ultimately no more than souped-up evolutionary mechanisms. This is what is precious about the two-speeds distinction identified by Spengler, who argues that 'cultural behaviors allow humans to more rapidly adapt to new environments than evolutionary change' (Spengler, 2021: 940). Cultural time exempts humans from evolutionary time (at least temporarily) and in the same gesture confers other-than-evolutionary meaning on their behaviours. This returns my discussion to 'race.' For not *all* humans, Kathryn Yusoff would argue, are eligible to be thus discharged from deep time. And *no* animal, I would argue, is eligible. Or at least, not until HIREC.

The politicisation of race turns, in large part, on time: it takes race out of the 'forever' of *geos*/deep time, and situates its making in history, where it becomes available for analysis and critique. When it comes to the making of species, it appears that only the collapse of earth's atmosphere can achieve the same. To date, animal species have been buried in deep time and, with them, the opportunity to reimagine how exactly, and by whom, 'species' are made. Rapid anthropogenic change does not, in my view, offer something new to the study of animals; only, it illuminates what has been true of them all along (along all evolutionary time), which is that they inhabit many different forms of time, including historical time, and that their histories are their own. Not until the sciences release themselves from the grip of natural selection however, and mainstream social sciences and humanities surrender their human exceptionalism, will this claim have any shot at legitimacy.

Conclusion

The central concern of this paper has been with the implications, for animals, of the becoming biological of species (for species was not always a biological category) and the becoming political of race (for race was not always political) in science. I have argued that this 'co-becoming differently' represents a temporal trap for animals. 'Like' Blackness, animals, via the concept of species, are indelibly written into deep time; unlike Blackness, animal species are almost impossible to politicise. Human self-interest undoubtedly plays a part here: for in casting animals as the same over time, and by extension as static/passive over time, species legitimates the idea that animals are *eternal* resources for human exploitation.

This is why, in this paper, I have paid so much attention to how species has been politicised historically, and how, for reasons no less political, it appears to be evacuated of politics today. The *category* species, certainly, is understood to be political, possessed of a history that is usually traced back to Plato's essential forms and Aristotle's conception of individuals as sharing the essence of their species. But species is not solely a category; it is a working explanation (Pušić et al., 2017) of the physiologies and behaviours of extinct or extant groups of animals who stand as 'evidence' of deep time processes of speciation. If deep time is inherently racialised, as Yusoff argues, then conceptions of race will necessarily affect conceptions of species. As I have illustrated, the 'erasure' of the significance of human biological variation in science bears on scientific understandings of animals because it depends upon, and in this respect further entrenches, the deep time 'guarantee' of species 'stability.' It is not critical enough, therefore, I don't think, to assign species to the *bios* side of the *bios/geos* distinction, and to dismiss it as yet another manifestation of the racialised preoccupation with the fantasy of 'life itself' (of life evacuated of any relation to the earth).

The presiding Anthropocene narrative powerfully amplifies one of the key prejudices of evolutionary theory, which is that humans are, and perhaps always have been, modifiers of

natural selection – 'through agriculture or medicine' (Fragaszy and Perry, 2009: 5), for example, or on account of their singular capacity for politics (Aristotle, 1981).[7] This is what, for many, the Anthropocene *is*: a new and accelerated phase of evolutionary history, in which the human species is, 'naturally,' the dominant force. Such hubris exemplifies what I would call *recursive anthropocentrism*, wherein histories of catastrophic human activities are further compounded by human-centred understandings of those activities and their consequences, leading to limited human-centred responses to it. Recursive anthropocentrism arguably informs the widespread conviction that, when it comes to the Anthropocene, humans and animals are divided 'between those who save (humans) and those who can only be saved (nonhumans)' (Braverman, 2016: 10). This division not only casts humans in the sole role of 'protectors' and 'saviours' of animals (so narrowing down the range of relations humans might build with them), but also, worse, suggests that animals' own epistemologies of climate crisis, and their responses/solutions to it, are of little value to anyone but themselves. 'Species time' authorises and justifies this, because if animals never really change (much) or enact enduring change, what could they have to teach? Yet 'new animal[s] of the Anthropocene' (Rutherford, 2018: 211), as Stephanie Rutherford puts it, proliferate, betraying their species identities by behaving in novel ways and/or defying them, by inventing themselves anew. As Rutherford argues in her analysis of the emergence of 'coywolves' (the outcome of the savvy activities of wolves, coyotes and dogs over the last hundred years), humans would be better off working to ensure that these animals are 'our accomplices in dwelling well in the Anthropocene' (Rutherford, 2018: 219) than quarelling over 'whether the coywolf is an actual "thing"' (Rutherford, 2018: 211).

I am not suggesting that there are not very good reasons to be concerned about the devastating effects of the Anthropocene on animals (Twine, 2024, chapter three). Animals, domesticated and 'wild,' bear a large part of the brunt of climate crisis, which is itself in large part a consequence of the exploitation of domesticated animals, by humans (Twine, 2024, chapter four). The suffering and deaths of animals are not incidental by-products of environmental catastrophe. They are, as the sociologist Richard Twine argues, further evidence of 'a systemic form of slow violence against animal life' (Twine, 2024: 98). My point here is that this catastrophe, this violence, should not yield to humans yet another opportunity to affirm their so-called supremacy. It is a chance, instead, to recognise animals as earth-long actors, from whom there might be something to learn, and with whom, with their permission, it might be possible to act.

Highlights

- Explores how mainstream Anthropocene debates frame animals, species, and race
- Interrogates the relations between animals, species, and race, historically and today, through a focus on time and temporality, and variation
- Argues that the contemporary 'liberation' of race as a political concept depends upon the reification of species in time
- Shows how biological species concepts obscure the creativity and invention of animals over time
- Via a critique of standard evolutionary theory, argues that animals not only *have* histories, but *are* their histories.

Acknowledgements

Sincere thanks to the readers who suffered this article at various stages of its genesis: Andrew Barry, Sue Donaldson, Charles Hirschkind, Michael Parker, Sarah Pike, Martin Savranksy, and Maisie Tomlinson. I would also like to thank the participants in the UCL Geography departmental seminar, the 'Talking Animals' seminar at the Cambridge Centre for Animal Rights Law, and the Ecologies, Culture and Society

reading group, for their patient comments. Above all, grateful thanks to the three anonymous reviewers, whose generous and striking insights genuinely improved this paper.

Data availability

Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

Declaration of conflicting interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author received no financial support for the research, authorship, and/or publication of this article.

ORCID iD

Mariam Motamedi Fraser https://orcid.org/0009-0005-4380-3094

Notes

1. And also perhaps points to the need for a radically different approach to 'the human.' Jackson (2020), for example, asks not *what* genres of species humans might be (Wynter), or *how many* they are (Gunaratnam and Clark), but *whether* species as a 'form' – indeed whether any form at all – can explain or contain the ontological instability/plasticity that she argues defines blackness.
2. Sometimes (less often than one might imagine), dog speciation is understood to be catalysed by climate change. But even when *geology* is shown to be eventful, the evolutionary story of dogs as a species – which is a story about dogs' relations with humans – remains static. Consider, by way of example, Braude and Gladman's (2013) allopatric model of dog speciation, in which the Last Glacial Maximum is crucial, but only insofar as it explains how populations of 'hunting' wolves (not attached to humans) came to be isolated from populations of 'scavenger' wolves (attached to humans).
3. And once this happens, once this 'conclusion' is reached, dogs' species identity can be continually reinforced by what Paul Ricoeur calls 'narrative repetition': '[b]y reading the end into the beginning and the beginning into the end, we learn to read time backward, as the recapitulation of the initial conditions of a course of action in its terminal consequences' (Ricoeur, 1980: 183).
4. In which Jefferson argues that ancient and modern forms of slavery are essentially different and that, unlike in ancient times, any modern 'mixing' between 'slave' and 'master' should be condemned.
5. This has significant implications for how racialisation and racism can/should be understood. It is worth noting, for example, that the scientific 'dismissal' of genetic race does not equate to a dismissal of biocentrism per se (see discussion of Sylvia Wynter below). On the contrary, insofar as it endorses science as the final adjudicator of race, it leaves the question of biological race 'open' to scientific debate, as many scientists are uncomfortably aware (see for example Birney, 2019). More positively, the recognition that race, whether it is understood to be social or biological, does not '[reside] *in* bodies' (Jackson, 20202: 207, my emphasis) makes possible very different, and powerful, analyses of racism, such as Zakiyyah Iman Jackson's, in which she argues that 'antiblackness is ecological or total climate' – with all the implications that follow *for* black(ened) bodies (Jackson, 2020: 207; see especially Jackson's Coda, for an insightful account of the ambiguous promise of epigenetics in this context).
6. Not only did it take considerable time for scientists to 'officially' abandon biological race (Lewontin, 2006); not only does a race/racist science endure 'unofficially' (Duster, 2015); but the reception of the new genetic science in the early twentieth century was encouraged and supported by many social developments, including the civil rights movement, and the transformation of anthropology and sociology into the study of 'culture instead of race' (Roberts, 2012: 43).

7. For research on animal medication (of themselves, their kin, and others), see de Roode and Huffman (2024). For research on animal 'agriculture' (although I would be wary of the metaphor), see American Society for Microbiology (2017). For research on animal politics, see Donaldson and Kymlicka (2024).

References

Alagraa B (2021) What will be the cure? A conversation with Sylvia Wynter. *Offshoot* 7 January. Available at: https://offshootjournal.org/what-will-be-the-cure-a-conversation-with-sylvia-wynter/ (accessed August 2024).

Ambroise J (2018) On Sylvia Wynter's Darwinian heresy of the '*Third Event*'. *American Quarterly* 70(4): 847–856.

American Society for Microbiology (2017) The leaf-cutter anti's fifty million years of farming. 26 September. Available at: https://asm.org/articles/2017/september/the-leaf-cutter-ant-s-50-million-years-of-farming (accessed December 2024).

Aristotle (1981) *The Politics*. Trans. Sinclair Trevor. London: Penguin Classics.

Bakker K (2022) A hidden world of sound. Transcript, page 14. Many Minds podcast with Kensy Cooperrider. Season 4, Episode 7.

Baratay É (2022) *Animal Biographies: Towards a History of Individuals*. Translated by Turner Lindsay. Athens: University of Georgia Press.

Baratay É (2024) Scales: temporal. Animal Scales: Thinking Animals in and Through Scales. UCL Anthropocene seminar series, University College London (February-December). Available at: https://www.ucl.ac.uk/anthropocene/resources/event-recordings

Birney E (2019) Race, genetics and pseudoscience: an explainer. Ewan's Blog: Bioinformatician at Large. Available at https://ewanbirney.com/2019/10/race-genetics-and-pseudoscience-an-explainer.html (accessed August 2024).

Boakes R (2008) *From Darwin to Behaviourism: Psychology and the Minds of Animals*. Cambridge: Cambridge University Press.

Braude S and Gladman J (2013) Out of Asia: an allopatric model for the evolution of the domestic dog. ISRN Zoology. Article ID 841734. Available at: https://onlinelibrary.wiley.com/doi/epdf/10.1155/2013/841734 (accessed April 2025).

Braverman I (2016) Lively legalities. In: Braverman I (ed) *Animals, Biopolitics, Law: Lively Legalities*. Abingdon and New York: Routledge, pp.3–16.

Chakrabarty D (2018) Anthropocene time. *History and Theory* 57(1): 5–32.

Clark N and Gunaratnam Y (2017) Earthing the Anthropos? From 'socializing the Anthropocene' to geologizing the social. *European Journal of Social Theory* 20(1): 146–163.

Colebrook C (2022) We have always been post-Anthropocene: The Anthropocene counter-factual. In: Grusin R (ed) *Anthropocene Feminism*. Minneapolis: University of Minnesota Press, pp.1–20.

Crist E (2013) On the poverty of our nomenclature. *Environmental Humanities* 13(1): 129–147.

Cunningham P, Shankar M, vonHoldt B, et al. (2024) Coyotes can do 'puppy dog eyes' too: comparing interspecific variation in *Canis* facial expression muscles. *Royal Society Open Science* 2 October.

Darwin C (1981) *The Descent of Man, and Selection in Relation to Sex*. Princeton: Princeton University Press.

De La Cadena M (2019) An invitation to live together: Making the 'complex we'. *Environmental Humanities* 11(2): 477–484.

De Roode J and Huffman M (2024) Animal medication. *Current Biology* 34: R1–R5.

Desmond A and Moore J (2009) *Darwin's Sacred Cause: Race, Slavery, and the Quest for Human Origins*. London: Penguin.

Despret V (2016) *What Would Animals Say If We Asked The Right Questions?* Minneapolis and London: Minnesota University Press.

Donaldson S and Kymlicka W (2024) Scales: political. Animal Scales: Thinking Animals in and Through Scales. UCL Anthropocene seminar series, University College London (February-December). Available at: https://www.ucl.ac.uk/anthropocene/resources/event-recordings

Dürbeck G and Hüpkes P (2022) The Anthropocene as an age of scalar complexity: Introduction. In: Dürbeck G and Hüpkes P (eds) *Narratives of Scale in the Anthropocene: Imagining Human Responsibility in an Age of Scalar Complexity*. New York and London: Routledge, pp.1–20.

Duster T (2015) A post-genomic surprise: The molecular reinscription of race in science, law and medicine. *British Journal of Sociology* 66(1): 1–27.

Fragaszy D and Perry S (2009) *The Biology of Traditions: Models and Evidence*. Cambridge: Cambridge University Press. (On-line publication date).

Gould S (1996) *The Mismeasure of Man*. New York: W. W. Norton.

Grosz E (2004) *The Nick of Time: Politics, Evolution and the Untimely*. Sydney: Allen and Unwin.

Gruber T, Luncz L, Mörchen J, et al. (2019) Cultural change in animals: A flexible behavioural adaptation to human disturbance. *Palgrave Communications* 5(1): 1–9.

Gunaratnam Y and Clark N (2012) Pre-race post-race: Climate change and planetary humanism. *Darkmatter* 9(1): 1–11. Available at: https://www.researchgate.net/publication/236149540_Pre-Race_Post-Race_Climate_Change_and_Planetary_Humanism (accessed August 2024).

Ingold T (2007) The trouble with 'evolutionary biology'. *Anthropology Today* 23(2): 13–17.

Jackson ZI (2020) *Becoming Human: Matter and Meaning in an Antiblack World*. New York: New York University Press.

Kim CJ (2015) *Dangerous Crossings: Races, Species, and Nature in a Multicultural Age*. Cambridge: Cambridge University Press.

Kirksey E (2015) Species: A praxiographic study. *Journal of the Royal Anthropological Institute* 21: 758–780.

Kitcher P (1984) Species. *Philosophy of Science* 51(2): 308–333.

Lewontin RC (2006) Confusions about human races. Social Science Research Council. Available at: http://raceandgenomics.ssrc.org/Lewontin/ (accessed March 2021).

McKittrick K (2015) Yours in the intellectual struggle: Sylvia Wynter and the realization of living. In: McKittrick K (ed) *Sylvia Wynter: On Being Human as Praxis*. Durham and London: Duke University Press, pp.1–8.

Moore JW (2017) The capitolocene, part 1: On the nature and origins of our ecological crisis. *The Journal of Peasant Studies* 44(3): 594–630.

Motamedi Fraser M (2024) *Dog Politics: Species Stories and the Animal Sciences*. Manchester: Manchester University Press.

Müller-Wille S (2014) Race and history: Comments from an epistemological point of view. *Science, Technology, and Human Values* 39(4): 597–606.

Odling-Smee FJ, Laland KN and Feldman MW (2003) *Niche Construction: The Neglected Process in Evolution*. Princeton, NJ: Princeton University Press.

O'malley MA and Dupré J (2007) Size doesn't matter: towards a more inclusive philosophy of biology. *Biology and Philosophy* 22: 155–191.

Pušić B, Gregorić P and Franjević D (2017) What do biologists make of the species problem. *Acta Biotheoretica* 65: 179–209.

Qiujano A (2000) Coloniality of power, Eurocentrism, and Latin America. *Nepantla: Views from South* 1(3): 533–580.

Ricoeur P (1980) Narrative time. *Critical Inquiry* 7(1): 169–190.

Roberts D (2012) *Fatal Invention: How Science, Politics and Big Business Re-Create Race in the Twenty- First Century*. New York: The New Press.

Rutherford S (2018) The Anthropocene's animal? Coywolves as feral cotravelers. *Environment and Planning E: Nature and Space* 1(1–2): 206–223.

Sih A, Ferrari M and Harris D (2010) Evolution and behavioural responses to human-induced rapid environmental change. *Evolutionary Applications* 4(2): 367–387.

Smith JE (2015) *Nature, Human Nature, and Human Difference: Race in Early Modern Philosophy*. Princeton and Oxford: Princeton University Press.

Spengler R (2021) Niche construction theory in archaeology: A critical review. *Journal of Archaeological Method and Theory* 28: 925–955.

Stengers I (2000) *The Invention of Modern Science*. Minneapolis: University of Minnesota Press.
Thomas K (1984) *Man and the Natural World: Changing Attitudes in England 1500–1800*. London: Penguin.
Twine R (2024) *The Climate Crisis and Other Animals*. Sydney: Sydney University Press.
UNESCO (1950) UNESCO and its programme. III: The race question. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000128291 (accessed August 2024).
Van Dooren T and Despret V (2019) Evolution. In: Turner L, Sellbach U and Broglio R (eds) *Edinburgh Companion to Animal Studies*. Edinburgh: Edinburgh University Press, pp.160–180.
Wadiwel D (2020) The working day: Animals, capitalism, and surplus time. In: Blattner CE, Coulter K and Kymlicka W (eds) *Animal Labour: A New Frontier of Interspecies Justice?* Oxford: Oxford University Press, pp.181–206.
Wheeler R (2000) *The Complexion of Race: Categories of Difference in Eighteenth-Century British Culture*. Philadelphia: University of Pennsylvania Press.
Wilkins J (2017) *Species: The Evolution of the Idea*, 2nd ed. Boca Raton, FL: CRC Press.
Wynne CDL (2020) *Dog Is Love: Why and How Your Dog Loves You*. Boston, MA and New York: Houghton Mifflin Harcourt.
Wynter S (1995) 1492: A new world view. In: Hyatt VL and Nettleford R (eds) *Race, Discourse and the Origin of the Americas*. Washington, DC: Smithsonian Institution Press, pp.5–57.
Wynter S and McKittrick K (2015) Unparalleled catastrophe for our species? Or, to give humanness a different future: Conversations. In: McKittrick K (ed) *Sylvia Wynter: On Being Human as Praxis*. Durham and London: Duke University Press, pp.9–89.
Yusoff K (2024) *Geologic Life: Inhuman Intimacies and the Geophysics of Race*. Durham and London: Duke University Press.