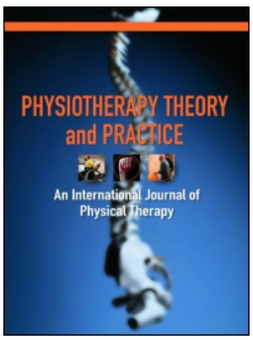

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Environmental physiotherapy and the case for multispecies justice in planetary health

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ABSTRACT

Background: Global environmental change is fundamentally altering the composition and functioning of our planetary ecosystem. Effectively presenting the largest threat to the health of present and future generations, these changes and their health impacts are forcing us to think and practice healthcare in much broader terms than ever before. **Objective:**In this article, we provide an early outline for a radically otherwise, yet strangely familiar, environmental physiotherapy developed through a succession of carefully developed arguments. **Discussion:**We show how an underpinning belief in human exceptionalism has engendered an exploitative relationship with our natural planetary environment that has both shaped Western science and healthcare and led to our current environmental health crisis. Building on the dependence of human health on our planetary ecosystem, approaches like planetary health hold great promise for a corresponding, paradigmatic turn in healthcare. They fall short of this however, where they perpetuate anthropocentric interests and interventionist practices that have underpinned healthcare to date. Drawing on ethical and post-human philosophies we argue against human exceptionalism and for a solidarity that includes other-than-humans as the primary characteristic of planetary existence. **Conclusion:**Building on this foundation, we provide an early outline for a radically otherwise, yet strangely familiar, environmental physiotherapy, grounded in ecological awareness, multispecies justice, and a range of consonant practices of passivity and accompaniment, conceived as an alternative to the commonplace interventionism of healthcare.

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Introduction

Today's world is marked by unprecedented, large-scale environmental degradation. The composition and functioning of our planetary ecosystem are changing fundamentally as a result of human-driven land-use and climate change, biodiversity loss, air pollution, ocean acidification, changes in biogeochemical flows and resource depletion (Steffen et al., 2015). These changes are disrupting the very conditions that have been essential to human life and flourishing over the last twelve millennia. As a result, they are are now driving increases in the frequency, incidence and severity of non-communicable, infectious and vector-borne diseases, malnutrition, water scarcity, extreme weather events and social conflicts, causing physical trauma, displacement, and human misery (Myers, 2017; Watts et al., 2019).

Governments, policymakers and healthcare professions have now recognized the urgent need to adapt to changing environmental conditions and mitigate further deterioration to improve human health and flourishing around the world. International strategies like the United Nations (UN) Agenda 2030 Sustainable Developments Goals (SDGs), the World Health Organization (WHO) Global Strategy on Health, Environment and Climate Change, and the Paris Agreement provide clear evidence of this as they build on the recognition of the close relationship between health, environment, society, and economy (United Nations, 2015; United; Nations, 2016; World Health Organization, 2020). Notwithstanding their variations in emphasis, the overlapping goals of these efforts are directed at reducing global poverty and hunger, improving health and wellbeing for all, promoting sustainability, and averting planetary cataclysm.

Accelerating environmental degradation has recently also led to increasing interest in planetary health, sustainable healthcare, One Health, GeoHealth and EcoHealth (Walpole, Barna, Richardson, and Rother, 2019; Zinsstag, 2012). Taking the recognition that human health depends on just and equitable societies that honor our dependence on a functioning planetary

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ecosystem as their starting point, these concepts and approaches articulate the urgent need to think and practice healthcare in much broader terms than has previously been the case (Horton et al., 2014).

Despite a small number of recent calls for action from physiotherapists, relatively little work on the relationship between environment, health and functioning exists in the physiotherapy literature (Clarridge, 2013; Foo, 2016; Jones, 2009a; 2009b). Nevertheless, there is some recognition of the importance of different environmental aspects in occupational health, animal physiotherapy and our professions focus on low-carbon modalities like touch, movement and communication (Boucaut and McPhee, 2013; Gibson, Nicholls, Synne-Groven, and Setchell, 2018; Maric and Nicholls, 2019). Recent engagement with the SDGs is providing further indication that physiotherapy has a role in sustainable development, environmental sustainability and environmental stewardship (Maric and Nicholls, 2020a; Narain and Mathye, 2019).

From the Lancet Countdown on Health and CXlimate change (Watts et al., 2019), to the UN 2030 Agenda for Sustainable Development (United Nations, 2015), and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) Global Assessment for Biodiversity and Ecosystem Services, it has been recognized that diverse and transformative change is needed to meet the health and environmental challenges of our time. This includes 'fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values' (Díaz et al., 2019). We focus here on some of the fundamental ethical and philosophical foundations that need addressing if we are to achieve such a transformative paradigm shift. This focus is needed because planetary health is still grappling with its philosophical foundations and in need of new narratives to shape the called for 'renaissance in how we define our place in the world' (Myers, 2017); and to help us move away from the paradigms and practices that have underpinned healthcare thus far, but are deeply implicated in today's environmental crises.

We use the term planetary health here as an umbrella term for resonant efforts across sustainable healthcare, including One Health, EcoHealth and Geo Health. While this does not do justice to their finer distinctions and different histories like the public health origins and focus of planetary health, the ecosystems and biodiversity emphasis of EcoHealth, and the OneHealth emphasis of the animal-human interface we believe that the argument we develop here remains relevant to developments across these approaches (Lerner and Berg, 2017). We envisage environmental physical therapies[1] as discrete, but interconnected approaches to health, functioning and the environment, that can flexibly move between these communities, and create unique collaborations and contributions to the broader field. As inherently transdisciplinary fields that have more in common than they have differences, ultimately, all of these 'communities stand to gain from shared information, resources and collaborative action' (Zinsstag, 2012).

Our paper begins by exploring the shift from a traditional Western healthcare focus on the individuated body, through the more holistic, situated and social human, and on to the idea of planetary health. Rather than accepting planetary health as a given, however, we highlight what we see as a latent anthropocentrism in the planetary health movement, that is, a belief in the preeminence of human interests and capacities above all else. This leads us to argue for a more symbiotic, non-anthropocentric approach, based on ecological awareness and multispecies justice.

From extractive industrialism and science to healthcare

In many ways, the environment has always been about health, and health has always been environmental. Whenever human civilizations have told stories that touched on the human condition, health and the environment have been interwoven. From the Garden of Eden and indigenous connections with the earth, to ancient philosophies like Ayurveda and the pagan healing practices of the Middle Ages, through the Victorian taxonomies and beliefs in miasmas, to Darwinism, Gaia and germ theory, the environment has always been implicated in health.

In the 'modern' industrial era beginning in the early 17th century, however, Western science and culture began a process of differentiation from the environment. In contrast to the paganism, animism, and superstition that had dominated many pre-industrial cultures, the Enlightenment saw human social progress as the primary goal of society. Nature was something to be tamed; something that existed external to the body beyond mankind. The 'man-made' world came to represent civilization, and the natural world became a symbol of brute competition, untamed mystery, wilderness, libidinal desire, and primitivism (Thomas, 1987). The natural world became a source of wonder, but also a resource to be tapped to fuel the engine of economic progress

¹We use the term environmental physiotherapy in reference to the current healthcare milieu. Later in the text we use environmental physical therapies to embrace a more diverse set of post-disciplinary practices and approaches.

(Grzywacz, 2019). The biological sciences, zoology, botany, chemistry and applied fields like archeology, geology and medicine that were borne in this period, gave scientists and natural philosophers insights into the workings of the natural world that would become the basis for applied fields like government, politics and healthcare.

Spurred by the belief in human dominion over the natural world, scientific progress went largely unchallenged until the publication of Rachel Carson's (1962) ground-breaking book *Silent Spring*. Prior to this, resource extracting industries like mining, oil drilling, and industrial-scale food production, had grown into massive worldwide enterprises. The widespread land degradation, pollution, colonization and displacement of first-nations peoples that modern industrial industry brought in its wake, however, remained largely unexamined. Carson's work changed all of this and sparked diverse expressions of what is now known as the environmental or *green* movement. Over time, environmentalism increasingly drew on the social and political sciences to critique the conditions that made the current climate crisis possible, and serious attention is now being given to considering the most effective means by which we might change our social structures and practices to avert planetary cataclysm.

Notwithstanding its manifest achievements, commentators like Alan Schnaiberg have suggested that we consciously act against the natural world because modern industrial capitalism puts economic growth above the health of the ecosystem. When we experience a shortage of natural resources like oil, coal, minerals, or clean water, rather than slowing down consumption and protecting regional ecologies, we prefer to relax government regulations to allow for more mining, drilling and extraction (Schnaiberg, 1980). This treadmill of production, as Schnaiberg (1980) called it, has the effect of centralizing the economic, social and health benefits in the already affluent Global North, while concentrating the resulting ecological degradation, human alienation, and secondary health consequences within already vulnerable and marginal communities.

Building on the development of Western science, industrialism and economic growth, Western medicine has kept in step with many of these practices. Medicine, for example, has pioneered methods for abstracting people away from the messiness of home, the community, and the natural world, situating them, instead, within the clinic, laboratory, and other sites of detached objectivity, reductionism, and value neutrality (Foucault, 1973; Freidson, 1970; Illich, 1975). The focus of Western healthcare has historically located illness within the body, and seen the environment as an external variable that, at times, needs 'managing' in the interests of public health. People are seen less as cohabitants of a complex ecosystem and are, instead, encouraged to become alert to the ways in which bodies could be polluted, infected, or colonized by opportunistic pathogens. "The environment" represents an extrinsic variable and threat to the body's sovereignty, security, and autonomy, and it has been constructed as a major vector for illness and diseases like tuberculosis, influenza, polio, cholera, typhoid, diphtheria, malaria, and corona virus.

The Enlightenment idea that humans were sovereign in the world and nature resided 'outside,' created a positive feedback loop for professions like medicine, who took on the responsibility for policing the precarious boundary between body and environment. In so doing, medicine, and the professions allied to it, helped to maintain a large, mobile, fit and healthy labor force for the growing industrial economies in the West (Burns, 2019; Johnson, 1972). The combined effects of industrialization, and subsequent environmental degradation, created pathologies, injuries and illnesses that medicine was then able to service.

By embracing Enlightenment ideals of sovereignty and autonomy, and embracing the freedom to intervene in and command nature, Western healthcare has promoted human exceptionalism and is deeply implicated in today's ecological crisis. Notwithstanding its remarkable achievements in supporting human flourishing, medicine has also helped adapt the planetary ecosystem to suit humanity's needs. Medicines' approach to health and illness has resulted in the manufacturing and overprescribing of mass-produced antibiotics, analgesics and opioids; the production of billions of non-reusable cleaning products; has supported the development of energy and resource-intensive technologies (Eckelman and Sherman, 2016; Karliner et al., 2019); and has helped to marginalize non-Western approaches to health, including those of indigenous, pre-modern and non-Western peoples, whose philosophies have, for millennia, promoted ecological co-existence (Ratima, Martin, Castleden, and Delormier, 2019; Ratima, Waetford, and Wikaire, 2006; Redvers, 2018). How, then, have these issues shaped physiotherapy?

The isolated body in physiotherapy

Given its symbiotic relationship to Western medicine, physiotherapy has mirrored many of its most basic principles, including its extractivist assumptions and resulting practices. Physiotherapy assumes, for example, that therapy works best in abstracted clinical environments be it the hospital ward, clinic room, or

rehabilitation facility. And while physiotherapists may design activities, movements, and functions to simulate a patient's "normal" living and working environment, the "environment" in this instance, constitutes little more than the person's immediate surroundings: the surface of ground reaction forces, the ventilated air, or their bed height. Physiotherapy is also underpinned by the core tenets of biomedicine: normalization, the search for specific etiology, reductionism, and treating the body-as-machine (Nicholls, 2017). Notwithstanding some of the recent challenges to this approach coming from qualitative research, person-centered care, the biopsychosocial model, the democratization of health expertise, and the growing influence of alternatives to orthodox Western healthcare, physiotherapy remains a classically interventional profession.

Physiotherapists are trained to bring objectivity to their assessments and diagnoses, and structure goals and treatment plans that make a virtue of their distinctive expertise. They are trained to direct and facilitate therapeutic movements and functions to enable the person to return to socially acceptable norms, and to intervene to reduce pain and suffering, functional limitation and incapacity. The physiotherapy profession discovered early in its development that a biomechanical approach to the movement of individual bodies could be a powerful accompaniment to orthodox medicine, as well as a means of securing social capital as a profession (Nicholls, 2017); and so other bodies and forms of movement that might have broader environmental health implications (e.g. air pollution, access to clean drinking water, geological movements, traffic control affecting traumatic injury rates, and urban overcrowding) were either ignored, or marginalized as irrelevant to the profession's professionalization project.

There are a small number of exceptions to this, however, particularly among those physiotherapists who focus heavily on the role that non-human bodies play in people's lives (e.g. animal physiotherapy and areas like occupational health and ergonomics); but these are very much the exception, and even here a biomechanical orthodoxy pervades. Animal therapists for instance have adapted and applied classically Western concepts of human form and function to animals, and in both cases the magnetic pull of the sovereign, autonomous, enlightenment body, draws the therapist back to the individual in front of them and pushes the ecosystem to the margins.

Over the years, some physiotherapy scholars have attempted to see physiotherapy more holistically. Both Cott, Finch, and Gasner (1995) and Broberg et al. (2003) saw physiotherapy as implicitly connected to a broader ecosystem and more recently Vaz et al. (2017) have argued for the integration of ecological principles into rehabilitation research and practice. In tens of thousands of other research reports published by physiotherapists over the last half century, however, the focus of treatment has remained assiduously on the rehabilitation and treatment of individual human bodily function, and the profession has remained steadfast in its fidelity to the idea of the body-as-machine (Nicholls, 2017).

Physiotherapy's lack of engagement with planetary health is one manifestation of a longstanding silence on broader social issues like precarity, incomes and poverty; poor access to schooling and healthcare; freedom from discrimination, bigotry and prejudice; affordable housing and neighborhoods that are safe and clean; and the role of high-quality education in improving people's long-term health and wellbeing. Addressing these social determinants of poor health, however, has been shown to be much more powerful for improving people's long-term wellbeing than behavioral approaches, while 'individual prevention strategies' have been shown to be 'costly and not particularly effective' (Liburd and Bowie, 2010; Marmot, 2001). However, to adopt a more socially oriented approach would require physiotherapists to lift their gaze from the body of the person in front of them and engage with a broader and thus far less familiar set of issues. It is perhaps surprising then that, given how often physiotherapists now talk of looking for a bigger purpose for the profession (Gibson, Nicholls, Synne-Groven, and Setchell, 2018; Nicholls, 2017), more work has not been done to connect the profession with the world around us.

Physiotherapists are not alone in this though. Ecophilosopher Timothy Morton (2017) has referred to the extractivist separation that underpins a broader societal disinterest in expanded environmentalism as "The Severing": a 'foundational, traumatic fissure between reality (i.e. the human-correlated world) and the real (i.e. ecological symbiosis of human and non-human parts of the biosphere).' Because of the distinction it creates, this severing suppresses and disrupts our ability to care for other-than-humans (Nicholls, 2019a). Maintaining this separation, however, is no longer tenable as we face increasingly urgent social and environmental issues and confront a fourth industrial revolution that threatens the historical privilege of professional elites like never before (Burns, 2019; Susskind and Susskind, 2015).

It is our belief that physiotherapy's historically extractivist attitude toward health and the environment is unsustainable and damaging to the future of global health and environmental care. Given that the health professions have an urgent duty to consider how they

can help address some of the most pressing societal and environmental issues, like anthropogenic climate change, loss of biodiversity and environmental justice, it seems unacceptable that these concepts are almost invisible in physiotherapy theory and practice to date. Fortunately, there is now a significant body of work we can draw on to reshape our work, not least in areas like planetary health, environmental ethics, and multispecies justice; three themes we now explore in more detail.

Planetary health and human survival

In recent years there has been a greater willingness to link, and in some cases dissolve, some of the hard boundaries that used to exist between environmental issues and social welfare agencies like medicine and healthcare. Questions of food security, energy efficiency, climate change, the pollution of land and water, consumption and free-market economics, are much more common in the broad medical literature now. Facilitated by advocacy from major international organizations like the WHO and the UN, developments across planetary health, EcoHealth, One Health, and sustainable healthcare articulate the dependence of human health on the environment in healthcare research, education and practice (Myers, 2017; Rubin et al., 2012; Walpole, Barna, Richardson, and Rother, 2019). Human health and flourishing are recognized as depending on the relative stability of the environmental conditions that have supported human existence throughout the 12,000-year-long Holocene that are now destabilized due to human industrial activity and resource exploitation (Cooper et al., 2018; Newbold et al., 2016; Steffen et al., 2015; Zalasiewicz, Waters, Summerhayes, and Williams, 2018).

Notwithstanding the positive contributions made in sustainability over recent years, however, there remains a problematic tendency to see climate change as a threat to human flourishing, and planetary health as primarily an issue of human health. The 2015 Lancet Commission on planetary health, for example, states that 'the concept of planetary health is based on the understanding that human health and human civilization depend on flourishing natural systems and the wise stewardship of those natural systems' (Whitmee et al., 2015). This language is certainly advantageous in aligning planetary health efforts with key publications and policies like the IPCC's special report on global warming and the UN SDGs, which, equally foreground the importance of protecting and maintaining functioning ecosystems *for* human health and wellbeing (United Nations, 2015).

Recent calls for 'symbiotic flourishing' (Salk, 2019) and 'defending and synergistically enhancing the health of humans, animals, and our shared environment' perhaps evidence a gradual shift to more inclusive, ecocentric perspectives (Amuasi, Lucas, Horton, and Winkler, 2020). Yet, all too often the primary focus remains with the 'quest to ensure the health and continued existence of humanity' (Amuasi, Lucas, Horton, and Winkler, 2020). Efforts in planetary health and sustainability thus risk continuing the same anthropocentric, extractive and exploitative relationship with the environment that created the problems in the first place, as long as they continue foregrounding human survival as its primary goal and human intervention in nature as the primary solution.

To find other motivations and ways to engage in planetary health, 'saving the earth,' as Morton (2017) emphasized, must be more than 'infrastructural maintenance,' underpinned by a desire to preserve 'a reasonably human-friendly environment.' Difficult as it may be to move beyond human survival, this is necessary because the harm done to some in favor of the survival of others can be exacerbated precisely because survival narratives pass by questions of morality and our ethical responsibility *for all* in their surge toward urgent and drastic solutions *for us*. If we are to justify why health professionals should engage in expanded environmentalism for reasons that go beyond extractivism and human exceptionalism we must therefore ask how we might be responsible for ourselves and our other-than-human planetary co-inhabitants.

Environmental ethics

For some years now, proponents of virtue ethics like Hans Jonas and Knud Ejler Løgstrup have argued against the survivalist tendency to exploit others for human gain, and for ethical frameworks that include and respect the intrinsic value of all forms of biological life (Jonas, 1984; Løgstrup, 1997; Morris, 2013; Sviland, Martinsen, and Nicholls, 2020). But as approaches based in virtue ethics, these frameworks tend to reduce ethical responsibility to an option, or a form of "moral appeal." By contrast, ethics philosopher Emmanuel Levinas (1969, 1998) argued that ethical responsibility is, firstly, motivated by a fundamental ethical demand that is expressed before we gain the capacity to choose to hear it, and secondly, enacted in a fundamental response to this demand that equally precedes our capacity to choose to respond to it. Hearing the ethical demand of the other already constitutes a fundamental response: a full acknowledgment of the other, even if we turn away in its following. As a constitutive characteristic of human existence, ethics is not a matter of choice, but an inescapable expression of support for the other that does not

seek to limit, command, control, or bend them to our purpose.

The ethical perspectives of Jonas, Løgstrup and Levinas have greatly contributed to overturning hundreds of years of Enlightenment beliefs about the primacy of the autonomous, sovereign self and allowing the 'other' a much greater voice in questions of human ethics. Yet, much like the classical consequentialist and deontological theorists they critique, their work still privileges humans and, to some extent biological life, over inanimate matter, objects and things. Because so many of the questions being posed by anthropogenic climate change and environmental degradation involve human relations with non-human and inorganic entities like carbon dioxide, litter, corporations, oil, systems of privilege, micro-plastics, pesticide residues, and radioactive waste, such anthropocentric ethical frameworks are insufficient for an expanded environmental ethics.

Recent developments in posthuman philosophy have turned precisely to this issue by challenging the 'rigid partitions between humankind and nature' (Grzywacz, 2019). By highlighting the permeable boundaries between people, animals, plants and things, they show why we can no longer maintain an artificial distinction between humans and the environment, when almost everything that makes up a human is inorganic and organic compounds continually exchanged with the environment (Bennett, 2009; Morton, 2017; Prescott and Logan, 2019; Robinson and Jorgensen, 2020). Morton (2013) for example, draws heavily on the new philosophy of object-oriented ontology to call for a new, far more entangled understanding of the relationship between all things (Harman, 2018):

> *"I start the engine of my car. Liquefied dinosaur bones burst into flame. I walk up a chalky hill. Billions of ancient pulverized undersea creatures grip my shoes. I breathe. Bacterial pollution from some Archean cataclysm fills my alveoli—we call it oxygen. I type this sentence. Mitochondria, anaerobic bacteria hiding in my cells from the Oxygen Catastrophe, spur me with energy. They have their own DNA"* (Morton, 2013)

Closely resonating with this entangled understanding of reality, the COVID-19 pandemic has provided a poignant reminder that we can no longer logically distinguish something 'out there' from something 'in here' in the way that we used to. Even as we try to socially isolate the SARS-CoV-2 virus from human bodies, it remains within and among us. This is because its outbreak and spread are driven by the same anthropocentric and extractive practices that perpetuate the distinction between humans and the environment, and drive today's environmental and health crisis (IPBES, 2020).

Morton (2018) suggested that we need to reject the severing between humans and environment that has estranged us from what it means to be embodied human and non-human beings. Instead, we need to recognize the entangled reality of existence; a condition that he calls 'the symbiotic real' in reference to our existence as 'symbiotic beings intertwined with other symbiotic beings' (Morton, 2020), including other humans, biological entities, and the full cosmos of forms and things that surround and constitute us (Braidotti, 2013; Harman, 2018).

Based on the recognition of this symbiotic nature of reality, its dynamic entanglement and interpenetration, Morton further identifies cooperation and solidarity with other entities as the basic, 'zero-degree, cheapest coexistence mode' (Morton, 2017). Morton (2017) echoed Levinas's conception of ethics as something so fundamental it is 'still more default than empathy'; more default than mere virtue and choice. The idea of cheapness is important here, because much of what we have added to modern society in the pursuit of comfort, convenience, power and personal worth has added layers of unnecessary complexity to life that the symbiotic real neither needs nor demands. We believe that it is within this notion of fundamental solidarity with other forms of existence that a non-optional, non-anthropocentric ethical foundation for planetary health can be found.

Recognizing our entangled, symbiotic existence is not a denial of the existence of humanity. This would be hard to do given that, as Hamilton (2017) pointed out, 'the tiny quantum' that might remain identifiable as the human has been 'enough to shift the Earth's geological arc and to do so more or less consciously'. The critical point being made now by post-human philosophers, is that we may find less oppressive and more just ways of living out our symbiotic planetary existence by leveling the ontological relation between humans and other entities. The question this leaves open, however, is how we should convert this expansive solidarity that characterizes our symbiotic existence into action?

Ecological awareness and multispecies justice

To approach an answer to this question, we build on the resonance between Levinas's understanding of fundamental responsibility and Morton's notion of solidarity. Both of these notions are related to a strong sense of passivity that is opposed to the rather aggressive, extractive human activities we have described above. But while Levinas's argued that our passive ethical responsibility toward the other one that even precedes our hearing about or thinking of the other cannot be converted

into action in the conventional sense, Morton (2017) suggested that the fundamental solidarity of the symbiotic real points to a 'new form of action,' which can be a particularly meaningful foundation for planetary health.

Referring to it as ecological awareness, Morton (2017) argued that this new form of action seeks to reconnect 'the Severed parts' through a 'deliberate forging of links between humans and non-humans,' by witnessing, acknowledging, and appreciating the 'always-already quality of non-human impingement' and symbiotic interconnection. To some extent, this aligns with the proposed first learning objective for sustainable healthcare education to 'describe how the environment and human health interact at different levels' (Thompson et al., 2014). However, Morton's (2017) conception of ecological awareness goes much further than just describing these interactions. Borrowing from ecofeminist philosopher Donna Haraway (2018) ecological awareness aims at 'making kin' with all sorts of existences, including 'non-biogenetical ... generative and experimental categories of kindred, other sorts of 'we,' [and] other sorts of 'selves".

Becoming more familiar with our dynamic ecological entanglements and our kinship with the multiplicities of others we are symbiotically entangled with, underscores how problematic it is to set apart and foreground human interests over others. In doing so, ecological awareness invites us to: consider much more radically inclusive approaches to planetary health and flourishing; be more critical of and slow down our drive to intervene and fix things in a way that all too quickly neglects the complexities of the symbiotic real; and so challenges the perpetual interventionism enacted in the name of human progress and at the expense of broader ecological wellbeing.

The idea of slowing down the constant drive of industrialism and reducing its detrimental effects on the planet has been argued many times before (Rosa, 2015; Virilio, 2006). Arguing for less action or at least a slowing down, however, is a difficult argument to make to health professionals who are trained to think in terms of helping others, believing that their actions are beneficial, or at least non-maleficent. But as has been seen in the development of patient-centered care and critical insights from gender, postcolonial, and disability theorists in recent years, health professional interventions are often far more problematic than we like to think (Burns, 2019; Johnson, 1972; Larson, 1977; Susskind and Susskind, 2015). As we have recently argued elsewhere, for example, there is a real need to adopt more passivity in healthcare to reduce a fundamental violence embedded in the quick-to-act interventionism of much of healthcare science and practice (Maric and Nicholls, 2020b).

Before the background of ecological awareness, adopting more passivity by slowing down and decentering or even withholding human interests creates space for other-than-human interests to be heard, and so marks a turn to a broader environmental justice and politics. According to Levinas, justice and politics begin with the entry of the 'Third,' who reminds us that we are never only ever in relation to one, but many others, which, in drawing on posthuman philosophies, includes a multiplicity of other-than-human entities (Levinas, 1998). Consequently, justice is always already a multispecies question concerned with 'becoming responsible at all sorts of scales and configurations' (Haraway, 2018), and 'allowing and enhancing all kinds of enjoyment that aren't obviously to do with' the human (Morton, 2017).

Because it takes an extraordinary amount of concentrated work, energy and time to position ourselves outside of our ecological entanglements (i.e. consider the work needed to maintain biomedicine as a preeminent discourse) it will require a radical departure from our current ways of thinking and practicing health care in the West if we are to establish multispecies justice as an inescapable foundation of planetary health. However, we are frequently reminded of what happens when we ignore our symbiotic entanglements, abdicate our responsibilities for multispecies justice, or promote the interests of humans above all others (Van Dooren, Kirksey, and Muenster, 2016).

Deliberately engaging in planetary health in a manner that genuinely considers multispecies justice and holds 'onto competing ethical obligations, [and] multiplying perspectives on what counts as the good,' will not be easy (Van Dooren, Kirksey, and Muenster, 2016). Indeed, considering what justice and just responses might be in light of the competing and disparate demands to be heard will become increasingly complex and open up entirely novel questions in the process (Celermajer et al., 2020, 2021). Because we are entangled in 'relationships that can rarely be settled to everyone's satisfaction and never once and for all', engagement with multispecies justice will have to be an ongoing process that requires consideration of ever new particularities, differences, rights, and demands for health and care (Van Dooren, Kirksey, and Muenster, 2016). Multispecies justice might require departing from our survival narratives, which, as Morton (2017) noted, 'may look extreme, like allowing yourself to fall into a black hole.' Yet the temporary discomfort that comes with such difficult questions and possibilities may be necessary if we are to find more-than-human ways forward that live up to

the aspirations expressed in notions like One Health, EcoHealth, or planetary health.

Implications for future physiotherapy practice

In this article, we have tried to show how an underpinning belief in human exceptionalism has engendered a manipulative and exploitative relationship with our natural planetary environment culminating in our current environmental health crisis. The extractive practices characteristic of this exploitative relationship have shaped much of Western science and healthcare, and are perpetuated through the anthropocentric interests that drive much of the recent surge of planetary health. Drawing on ethical theories and recent developments in post-human philosophy we argued against human exceptionalism by highlighting the entangled nature of our symbiotic planetary existence and a non-anthropocentric solidarity as its most fundamental characteristic.

The shift to a practice grounded in such symbiotic solidarity will, therefore, require a complete re-imagining of how healthcare might work in the future. This implies that many aspects of contemporary healthcare practice will need to be replaced by novel approaches keeping with the times, if not calling for the radical and comprehensive restructuring of the healthcare professions suggested in much of the literature now emerging around post-professional work (Burns, 2019; Nicholls, 2019a; Susskind and Susskind, 2015). One of the primary functions of the healthcare professions is to serve the many publics in society. As we all face increasing pressure to respond urgently to climate change, social inequality, globalization, and a host of other 'hyperobjects,' as Morton (2013) called them, we believe that physiotherapists have a duty to play their part and proactively contribute to shaping planetary health care into the future. This may seem a daunting task at first, but we might consider that many of the radically different ways of thinking and practicing as health professionals via ecological awareness, passivity, and multispecies justice, for example are already implicit, if somewhat latent, within many forms of contemporary physiotherapy; and we believe that solidarity with others provides a particularly meaningful foundation to bring to the surface some of those approaches that are nested under the idea of environmental physical therapies.

The term solidarity implies being in service of others in a very physical sense. The Greek word therapeia, that forms the basis of the phrase physical therapy, means 'to serve, show attention, honor, show respect or reverence, more than to heal, nurse, or take care of' (Lykke, 2003). Significantly, 'Therapeia is an attitude to the Other without authority'; and 'does not rely on any scientific expertise about humanity' (Lykke, 2003). Therefore, it is perfectly reasonable to see physical therapy as an expression of the passive solidarity that characterizes the symbiotic real, because it is something provided by certain bodies/entities for other bodies/entities. Referring to bodies and entities reminds us that physical therapy is always already a multispecies service, because it cannot be confined only to the human without a determined effort to abstract out all of the other entities we are in confederacy with in our ecosystem. Physical therapy must therefore be one of 'the cheapest mode[s] of co-existence' (Morton, 2017), because it is a fundamental interaction between all things, and does not require the intermediation of expensive, resource depleting technologies of extraction for it to operate.

Because it is fundamentally enacted as a passive function, environmental physical therapy is opposed to all forms of forcible and extractive health care. It does not seek to direct, intervene, or interfere with the other. In this respect, it resonates with a Levinassian understanding of the ethical relation, in that it does not seek to reduce, restrict or limit the other to any single category or mode of being: be it human, biological, or otherwise (Maric and Nicholls, 2020b), since such categorizations cleave the other away from the highly complex and dynamic reality of this symbiotic planetary existence.

Nicholls (2019b) recently published an article that attempted to explore how different respiratory physiotherapy might be if it embraced its full potential and moved beyond its anthropocentric tradition. In the article, Nicholls argued that, 'Until recently there has been little room in respiratory care for the more humanistic, qualitative and subjective dimensions of breathing, and still less overlap between respiratory disease and ecological, social or spiritual dimensions of health on a cosmological scale' (Nicholls, 2019b). Taking oxygen, air and breath as three fundamental features of respiratory physiotherapy, Nicholls (2019b) asks:

> *How can I reasonably practice as a respiratory physiotherapist and not have a view on the interplay between the ecology of air, the biology of breathing, the lived experience of gas exchange, the spirituality of breathlessness, or the symbiotic relationship between objects that are neither defined by what they are, nor by what they do? How can I not be interested in designer face-masks, and the creative conversion of oxygen, air and breath in works of art; or be concerned for cities like Delhi, where levels of carbon monoxide were 25 times the WHO recommended level at times last year? How can I privilege an anthropocentric view of breathing and ignore breathing as a form of anarchy, air as 'landscape', a negative space, and terra infirma? Air as terror and*

> *medium of social control? Combat breathing or muscular armour? My practice and thinking, surely, has to embrace the use of breathing in films and role player video games? And if oxygen is the 'fuel', how can I understand the role it will play in future robotics and space travel? I have to be interested in breathing as memory and history, in iron-lungs, ventilators and machine-assisted breathing. And I surely must want to understand why the diaphragm is the only skeletal muscle in the body that is both under voluntary control and essential to life? What of the interstitial (liminal) spaces between things – so important for the micro-anatomy of the lungs – but applied elsewhere too?* (Nicholls, 2019b)

The argument that Nicholls (2019b) made is that a focus on an expanded view of planetary health opens up new vistas of practice that physiotherapy has only cast a passing glance to in the past. Standing back from the reductive and extractive forms of anthropocentric healthcare that have marked the history of our profession in the past, opens up a dynamic space for new forms of physical therapy thinking and practice. These approaches extend beyond our attempts to control and objectify the other and create a space where difference and otherness can breathe, move and flourish.

Although respiratory care shows some obvious connections between environmental practices and physical therapy, it is conceivable that solidarity applies across the entire professional discipline. Following Nicholls (2019b) rhetoric above and since physiotherapists often identify as movement specialists, how can physiotherapists not have a view about the movement of all things, from osmosis to diaspora; the interconnections between standing, the ground that lies beneath our feet (i.e. understanding), and political activism (i.e. standing up to be counted)? What of the balance of the body's physiological functions, and the homeostasis of the ecosystems the body's move within? What of activity for health and action for ecological justice? Or the role that the body's structure plays in spatial design, land use, and transportation?

Physical therapy, as a fundamentally low-carbon profession, might play a key role in moving from an emphasis on the body 'extrinsic' to the natural world, to one in which people are restored to their place as equal contributors to ecosystem health. Key to this transformation are different kinds of physiotherapy practice that privilege company and support for movement – in all its forms – without the need to direct the movement according to standardized predefined patterns and rigid norms. These need to be practices of 'making-kin' with other human and other-than-human entities, and hearing a much more dynamic multitude of voices (Maric and Nicholls, 2020b). Rather than folding these back into conventional notions of human movement, new forms of mobilization concern the provision of company and support for the other, which, as another practice of solidarity, might be referred to as accompaniment. Tellingly, some of these approaches might be drawn directly from recent insights from research in human movement and posture, that are already indicating a move away from conventional anthropocentric ideas of 'effective,' 'normal,' and 'purposeful' movement and toward understanding movement as environmentally embedded (Rabelo & Lucarel, 2018; Lederman, 2011; Piggin, 2020; Schmidt et al., 2018).

Solidarity, in the way we deploy it here, implies provision for the body and physical needs of others an attitude at the heart of many forms of contemporary physical therapy. How environmental physical therapies differ, however, is that solidarity also extends beyond merely human needs. Environmental physical therapies based on passivity and accompaniment would see issues concerning food sovereignty, water scarcity, changing land use, species extinction, poverty, civil strife, discrimination, displacement and social justice of all of our planet's multispecies co-inhabitants as central to their thoughts and practices, because they are critical to the physical flourishing of us all.

One of the ways in which physical therapists are particularly well positioned to promote the kinds of accompaniment that we are advocating here, is through practices of touch. Unlike highly teleological forms of mobilization and manipulation historically practiced by physiotherapists, the kinds of touch that promote accompaniment and solidarity are akin to what Levinas (1978) called 'the caress of a consoler.' Alphonso Lingis (1994) suggested that this caress 'is not investigative, does not gather information, is not a sense organ … does not apprehend or manipulate; it is not an instrument … not knowing what it wants to say, where it is going, or why it has come here. In its aimlessness it is passive.' Touch of this sort is the provision of caring physical company and support to others in need (Ahlsen, Ottesen, and Askheim, 2020). It is an unassuming and non-directive physical sociality; an inclusive emancipation of all kinds of others and otherness, toward the exploration of new futures and new possibilities for life and living.

No-one underestimates how much adopting such an intimate and aimless approach to touch would challenge a profession that has long tried to ensure its legitimacy and control its boundaries through the rigid regimentation of practices of touch, mobilization and manipulation (Dahl-Michelsen, Nicholls, and Groven, 2020; Nicholls and Holmes, 2012). Yet, acknowledging that physiotherapy is 'based on a form of intimate contact, which crosses the usual borders of physical, personal,

and emotional privacy' (Surbone, 2005), species boundaries, and effectively defies control, highlights that we must seriously reconsider our understanding and approach to therapeutic touch. Understanding that physiotherapy is based on all manner of multispecies contact, connections and relationships also underscores the paradox of establishing and maintaining such boundaries in the first place. It serves to negate the severing that has kept us from acknowledging and doing justice to our symbiotic existence. It also highlights that if touch is thought of and practiced as an exclusive professional practice, it closes avenue for boundary breaches and the radical opening to practice that planetary health promises. Our belief is that a more porous approach to boundaries is needed if we are to see an effective restructuring of the healthcare professions and the emergence of practices that are directly responsive to the complex needs of the many others we are always already in touch with and share this planet with.

Given physiotherapy's current form, an otherwise environmental physiotherapy based on ecological awareness, multispecies justice, passivity and accompaniment clearly cannot be achieved overnight. We believe, therefore, that we need to think about a staged process of change that begins with the steps we know we can take now and progresses into more challenging terrain when we have some of the groundwork in place. There is no reason, for example, why we cannot immediately invest in wide-ranging critical analyses of contemporary Western biomedical 'sickness-care,' audit physiotherapy's contribution to environmental degradation, including practices that support industrial capital and resource exploitation, and assess barriers to change. This work could be done on a micro scale, in clinical practices and departments, community centers and online sites, but also on a meso/macro scale at the level of national/international institutions and organizations, professional bodies, regulatory authorities and ministries.

While this work is being undertaken, our academics could be helping us to develop physiotherapy-specific approaches to radical passivity and accompaniment; new funding sources to support transition to new modes of practice; co-design approaches to establish new collaborative alliances with agencies beyond conventional healthcare; new curricula emphasizing environmental ethics and social justice; and our professional leaders and visionaries can be tasked with developing the necessary implementation and sustainability plans. None of this work is 'beyond' the profession, even now. What has been lacking, perhaps, has been a recognition of the inextricable environmental foundations of physiotherapy and the environmental catastrophe facing us; an understanding of how our profession contributes to it; and a route map to help guide us out. We hope that the argument and suggestions we have laid out here will present a helpful contribution in all of these respects and plan to continue developing this in future publications.

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