Environmentalism as Religio-Medical 'Worldview'

New Synergies Between the Palaeo-environmental Humanities, Ecological Public Health, and Climate-Change Activism

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Introduction

In his keynote paper, Riede (this volume) has presented a strong case for greater integration between archaeology and the aims and objectives of the environmental humanities including a much needed departure from the geosciences:humanities polarisations that underscore prehistoric and historic research areas. In this response I suggest three additional interdisciplinary alignments through which Riede's 'palaenvironmental humanities' programme might be further enriched.

First, I argue that more emphasis needs to be placed on the belief structures and 'worldviews' – religious, medico-environmental, or otherwise – that underscore the development of regionally and historically specific environment:human interactions and outcomes. Closer engagement with the anthropologies and text-based studies of religion is crucial if we are to move away from the prevalent focus on the technological drivers and solutions to climate change and environmental imbalance, and to give more weight to the underlying worldviews that perpetuate narratives of control

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over 'nature'. There is a tendency within environmental archaeological accounts to simplify and generalize religion as a discrete set of theologies and practices marginal to mainstream socio-economic concerns, rather than as 'worldviews' that pervade multiple dimensions of agrarian, technological, culinary, medicinal, and socio-economic life, and which are crucial for understanding the cultural and mental obstacles to tackling unhelpful socio-natural dynamics.

Second, I argue for closer engagement between the environmental and medical humanities and recent strands of biomedical and public health enquiry such as Planetary Health and One Health agendas (Watts et al. 2017; Whitmee et al. 2015), that highlight the deeply entwined environment:human health outcomes of unsustainable environmental practices. I draw in particular on developments within Ecological Public Health discourse (Rayner & Lang 2012; Morris & Saunders 2017) such as epigenomics and the related exposome concept (Wild 2005; Lioy & Rappaport 2011; Betts 2012; Buck Louis & Sundaram 2012; Miller & Jones 2014), which by emphasizing lifetime and intergenerational health impacts of environmental exposures help to break down the nature:nurture division that has traditionally separated the environmental and medical sciences from their humanities counterparts. In particular, the recognition of the combined human, environmental and climate-change impact of synthetic chemical use and waste (United Nations 2019) is important for broadening the rather myopic emphasis within recent scholarly and activism contexts on 'climate change' as the predominant fallout of unsustainable environmental practice, rather than as just one of its many symptoms.

Finally, and closely related to first two themes, I highlight the relevance of community forms of environmental control both past and present as a temper to the traditional emphasis on state-led environmental and ecological health-oriented directives. Not only do historical examples of community action, including those connected with 'religious governmentality' (Shaw 2016a), help to build more nuanced models of human-environment interaction in the past, but they are also instructive for present-day environmental and climate-change activism and for challenging the view that solutions to the human-environment imbalance depend largely on synergies between scientists and governmental legislators (United Nations 2019), whose own economic and political agendas are often at odds with the needs and interests of ecological public health and wellbeing. This is particularly crucial today when environmental activism is regarded as 'subversive civil disobedience' (Luke 1999) that may pose a threat to 'national economic security' (Newlands 2018).

Archaeology as Environmental Humanities: 'Worldview' and religion

My first suggestion is that archaeologists engaged in environmental and climate-change research need to give further thought to the underlying belief structures and 'worldviews' that shape attitudes towards the environment, and consequently long-term environmental and human-health outcomes. Although certain environmentalist positions have been described as forms of 'secular religion' (Latour 2013; Shaw 2016b), many such attitudes are related to deeper human:environmental epistemologies rooted in religio-philosophical thought. For example, while Rachel Carson's (1962) *Silent Spring*, cited as one of the major drivers behind the western environmental movement, drew largely on language of marine biology and toxicology, the other major influence in environmental humanities discourse is Arne Næss' (2003) 'Deep Ecology' which was closely aligned with specific religio-philosophical theologies such as later Buddhist notions of the Origination in Dependence (Dorje 2006: 1095).

Such alignments have been helpful for challenging western, and capitalist, worldviews based on the inherent separation between human and environmental welfare. Hence a growing religion-and-ecology discourse that has developed into a discipline its own right with several key journals, academic centres and discussion forums (Grim & Tucker 2014). However, archaeology has remained notably absent from such developments, mirroring its general dislocation, as discussed by Riede (this volume), from the broader environmental humanities. A recent major volume on religion and ecology, for example (Tucker et al. 2016), includes not a single archaeology-oriented contribution, and despite recognition by climate-change scientists of the importance of religion in disaster relief planning (Chester 2005; Hulme 2016), archaeology does not figure in such discussions. Not only does this impoverish archaeological accounts of major environmental change by perpetuating the emphasis on environmental technologies at the expense of the deeper and often multi-stranded religio-philosophical influences and outcomes of human:environmental transformations. But it also means that many idealized versions of environmentalism in antiquity go unchallenged, as highlighted in recent religion-and-ecology accounts of the supposed environmental focus of early Buddhist and Hindu thought (Shaw 2016a). In recent years archaeology has been instrumental in challenging some of the underlying premises upon which such discourse is built, particularly the utopian vision of, for example, India's pre-modern environmental past based on a universal reverence towards its primordial, untouched forests (Morrison & Lycett 2014). For example, recent studies have demonstrated

the long-term occupation of areas previously thought of as 'virgin forest' in Southeast Asia and the Amazon (Clement et al. 2015; Evans 2016) while evidence for the deep historical exploitation of forest products in India has highlighted the social construction of forests as the 'wild' other of cultivated agricultural zones, disconnected from broader networks of economic agency (Morrison & Lycett 2013, 2014).

Many other idealized accounts of traditional engagement with the environment need to be tempered by the diachronic perspective offered by archaeology, but equally the other way around, there is much scope for archaeological understanding of the environment to be broadened and contextualized through recognition of the religio-medical worldviews that shape socio-natural trajectories. Further future research challenges include questioning the multiple points of convergence and divergence between specific religious and 'scientific' environmental 'worldviews' and perspectives. For example, in many cultural contexts religious frameworks of understanding are the primary modulators of empirical knowledge about humans' place in the world, and for codifying frameworks of purity or cleanliness versus pollution or dirt, or of harmful versus safe human:non-human relationships (Shaw 2013, 2016a). This may be contrasted with secular contexts in which scientifically driven government legislation is often the last word for determining beliefs about climate change, environmental health, disease aetiology, and related consumption and lifestyle choices that impact on global climate patterns (Holm et al. 2015; United Nations 2019).

What is needed therefore is greater exploration of the worldviews and mindsets that shape consumption and behavioural patterns which perpetuate unhelpful human:environment relationships. As discussed later, a similar recognition is at the heart of emerging ecological public health and 'exposome' discourse (Miller & Jones 2014), aimed at highlighting the porosity between humans and their environment. Further, the question of how traditional definitions of sacred/pure v. polluted spaces, objects or foodstuffs correspond with modern medical and toxicological notions of cleanliness and 'hygiene' v. pollution deserves further archaeological investigation (Shaw 2016a; Shaw & Sykes 2019).

This is especially important in the light of Riede's (this volume: 18) comments about the potential dangers of fixing the onset of the Anthropocene exclusively in the nuclear age, with the result being that the 'pre-1950s past [is relegated] to some politically largely irrelevant "pre-Anthropocene"'. While it is important not to underplay the particular gravity and uniqueness of our current environmental crisis, whose close link with other toxic innovations of the petrochemical and agro-pharmaceutical industries, and associated use and disposal of synthetic chemicals on an unprecedented scale (United Nations 2019), set it apart from pre-industrial examples of

human:nature entanglements (Hodder 2012), we should also question the potential points of convergence between historical and modern notions of environmental pollution.

Such an approach would allow for the testing of what are sometimes over-idealized accounts of the potential for religious attitudes towards health and environment to shape modern responses to both medical and environmental challenges (Shaw 2016a). An often-cited example of clashing perspectives here is the Indian river Ganges (and the Yamuna) whose traditionally purifying waters are, within the language of environmental science, sources of hazardous industrial waste, untreated sewage and decaying human corpses (Alley 2002; Haberman 2006). Hence the revisionist picture of Hinduism as a distinctly *anti*-environmentalist tradition, which, through a belief in the Ganges' inherent purifying qualities, is able to transcend (and ignore) the 'reality' of a worsening environmental crisis. And yet there are important convergences between traditional and modern constructs of landscape and human wellbeing that offer useful scope for future environmental remediation and for mediating between the realms of superstition to those that foster constructive dialogue between traditional and modern religio-medical worldviews (Shaw 2016a; Yeh 2016; Yeh & Coggins 2014; Shaw & Sykes 2019).

Despite rather belated attempts to highlight the relevance of environmental archaeology to Anthropocene studies and climate change research (e.g. Ellis et al. 2016; Murphy & Fuller 2017), largely on the basis of deep-time human:environmental entanglements as represented by Neolithic agricultural innovations, envisaged collaborative frameworks tend to be limited to the environmental sciences, and the foci of enquiry, with recent exceptions (Lane 2015; Shaw 2016a), restricted to providing empirical evidence for practical and material responses to climate change and extreme environmental events, as relevant models for present:future challenges. For South Asia, my own research region, any serious consideration in such discourse of how posited changes in food production impacted upon and were digested by religio-philosophical traditions or by groups concerned with human health and wellbeing is notably absent, while archaeobotanical accounts of later agrarian shifts such as the spread of rice during the early-historical period, engage with religion, ritual and ethical concerns only in the most superficial and generalized way. Ritual is commonly treated as a discrete set of practices and theologies operating at the margins of society and disconnected in a polarized fashion from economic and technological spheres, as illustrated by recent discussions of whether rice in South India was being cultivated as an economic or 'symbolic' crop (Kingwell-Banham 2019).

Such attitudes reflect a dislocation from scholarship on religion-as-worldview that underscores major dietary trends and attitudes towards

the body, and overlaps closely with medical and environmental worldviews (Shaw & Sykes 2019). Other more nuanced accounts (Morrison 2016) refer to the 'ritual' status of rice while at the same time overlooking the highly divergent attitudes, both within and between religious communities and castes, towards different grains and their physical and 'energetic' impact on the body, with precise classifications and taxonomies that regulate the production and consumption of different foodstuffs varying according to different religious contexts (e.g. ascetic v. devotional).

There are additional disparities between the perceived ritual and health properties of rice: despite its much heralded 'auspiciousness' in Brahmanical temple ritual (Morrison 2016), irrigated rice and cultivated cereals in general were arguably rejected by Brahmanical ascetics in favour of horticultural-oriented food production, due to perceived links with harmful (*himsic*) human:non-human dynamics, and new 'urban' illnesses arguably connected with the birth of the Indian Ayurvedic medical system (Zimmermann 2004:274; Shaw 2016a).

This last point provides caution against overlooking divergent and often conflicting worldviews within single temporal or spatial scales, but also emphasizes the need for greater synthesis at the level of fundamental research design (including the choice of sites chosen for sampling), between the polarized science and humanities 'camps' that hamper the development of integrated socio-natural histories.

Archaeology, the medico-environmental humanities and biomedical research: A new entanglement?

My second suggestion, focusing this time on the *medical* worldviews that underscore changing human-environment entanglements, is that to Hulme's snapshot of 'humanistic disciplines producing relevant climate and environmental knowledge' (Riede this volume: table 1) should be added a number of key developments within both the medical humanities and biomedical sciences that demonstrate how our synthetically altered environment is changing human and non-human animals at an intergenerational level through epigenetic, genetic and endocrine disruption (DellaValle 2016; Parry & Dupré 2010; Dupré 2016; Genuis 2012; Mostafalou & Abdollahi 2013), and by extension that healing of the human body needs to go hand in hand with healing of the environment (Shaw 2016a, 2016b). The epigenetic model, and the related 'exposome' concept (Wild 2005; Lioy & Rappaport 2011; Betts 2012; Buck Louis & Sundaram 2012; Miller & Jones 2014) which refers to the summation of 'environmental influences and associated biological responses throughout the lifespan, including exposures from the environ-

ment, diet, behavior, and endogenous processes' (Miller & Jones 2014), introduce a crucial medical perspective to the deep-time human:environment 'entanglement' theme in archaeology (Hodder 2012) and the broader social sciences (Latour 2013). They also intersect closely with new sustainable development models (United Nations 2015), and related medical initiatives such as Planetary Health, One Health (Watts et al. 2017; Whitmee et al. 2015) and Ecological Public Health (Morris and Saunders 2017) agendas that recognize the health impact of our global environmental/climate change crisis (Shaw 2016b).

Crucially, these approaches have shattered old nature:nurture divisions, by emphasizing the 'permeability between humans and their environment' (Morris & Saunders 2017:21) through the articulation of the means by which both interact to alter gene and endocrinal behaviour (Miller & Jones 2014). The western medical view of the self-contained human body impervious to its surroundings is now seen as 'distressingly porous and vulnerable' to both the physical (Nash 2006:13) and socio-cultural landscape (Morris & Saunders 2017) in which they live. Indeed, the exposome model is described as an 'integrated science of nurture' (Miller & Jones 2014) that helps to 'fulfil the promises of the Human Genome Project' by elucidating the 'imbalance in the nature nurture interaction' and the 'interactions between our genes and our environment that determine health and disease'.

However, despite recognition of its relevance for environmental ethics in archaeology (Shaw 2016a) and bioethics (Lee 2017; Macer 2017), the epigenomic model, fundamental to the exposome concept, has been overlooked within broader discourse on the human:environment 'entanglement' theme. This is unfortunate given its scope for providing biomarkers for diachronic human:environmental intersections, but also for bringing 'green' agendas in the present into mainstream political activism. This is because it demonstrates most effectively that injury to the environment, of which climate change is but one outcome, can no longer be dismissed as something 'out there' that does not impact on human wellbeing unless one is affected directly by extreme weather events, but that conversely, as we alter our environment, so too are our bodies being changed (and damaged) through endocrinal and epigenetic alteration. It can also be applied fruitfully to challenge one-sided interpretations of environmentalism as being concerned with 'nature' as an entity removed from humans that underscore some of the more idealized accounts within religion-and-ecology discourse: much of the emphasis of early religious 'environmentalism' is focused on care towards animal welfare rather than to the human fallout of environmental stress (Shaw 2016a).

The growing interest in 'environment and wellbeing' offers particular scope here for bridging some of the aforementioned methodological and

theoretical divisions between the bio- and environmental sciences, and their humanities-orientated counterparts (MacBride-Stewart et al. 2019; Shaw & Sykes 2019) including various initiatives in the realm of 'ecological public health' (Morris & Saunders 2017). A key aim of the latter is to understand and address the relationship between environment and human health and wellbeing 'on vastly extended temporal and spatial scales' (Morris & Saunders 2017), with this diachronic emphasis offering obvious scope for archaeological input. Although not aligned in any explicit way with epigenomics, instructive examples of recent tie-ups between archaeology and biomedical research in this respect include evolutionary assessments of diabetes epidemiology (Wells et al. 2016) and gut microbiome health (Schnorr et al. 2016) that draw in part on broader archaeological evidence for the impact of the global shift from hunter-gatherer lifeways to domesticated agriculture during the Neolithic on human vulnerability to climatic instability and crop failure.

Others (Baker 2018) have examined Roman concepts of health in relation to air quality, albeit framed predominantly from the perspective of wellbeing rather than toxicology and environmental health (Shaw & Sykes 2019). Such discussions can be situated usefully within historical scholarship on gardens and 'pleasure groves' in antiquity as places of healing (Ali 2003) as well as modern public health discourse on ecotherapy, and 'nature' and wellbeing (Burls 2007), with the primary emphasis being on the psychological, sensory and experiential benefits of nature immersion, especially in childhood. However, the less pleasant sensory experiences that Baker (2018) alludes to in her discussion of 'bad' or putrid smells in antiquity have an obvious bearing on ecological public health discourse which has demonstrated that air pollutants are not just 'unpleasant' but can have a profound impact on physical health. Although recent media accounts and governmental reports have painted the distorted picture of 'air pollution' as standing solely for vehicular fumes (NICE 2019), studies on both outdoor and indoor air quality (Genuis 2012; Mostafalou & Abdollahi 2013; United Nations 2019; WHO 2016) have stressed the mutual link between major chronic illness and pollution using a much broader frame of reference – including synthetic chemicals and waste, plasters and paints, perfumes, cleaning products, pesticides and antimicrobials, wall and floor materials, poor ventilation, and damp and mould – that lends itself well to future avenues of archaeological enquiry (Shaw & Sykes 2019).

Central to the ecological public health agenda is a belated admission within the medical research community (Morris & Saunders 2017) of a failure to engage in a timely manner with the pioneering arguments of Rachel Carson (1962) regarding the negative human and environmental health impact of synthetic biocides and related chemicals, and the disloca-

tion between the human and 'natural' worlds that underscores the quest for profit (Rockström et al. 2009; Steffen et al. 2015). Although it is now widely accepted that synthetic chemicals are impacting on both human health and global climate-change in unprecedented ways (United Nations 2019), we need to give serious thought to the reasons why it has taken over 60 years for Carson's views to be taken on board by mainstream science, so that the remaining obstacles towards effecting remedial action might finally be tackled.

It is an unfortunate reality that similar health and environmental concerns expressed about various emerging threats from lead poisoning, to cigarette smoke, to climate change itself, have initially been dismissed as conspiracy by both industry and the public alike. Although the emerging ecological paradigm of medicine has demonstrated the environmental basis of various stigmatised and hitherto poorly understood illnesses (Genuis 2012), translating such findings into clinical, legislative and social contexts is a frustratingly slow process, just as the now-established germ theory that preceded it was also met, initially, with disbelief and hostility (Williams 2007). Aside from the multiple economic and political issues at stake, again we return to environmentalism – and indeed medicine – as forms of belief system, with the rejection of well-reasoned warnings evidently drawing on mindsets that have allowed 'human beings [to] have lived, moved, consumed, and pursued health and well-being as if humankind is distinct and separate from nature rather than integral to it' (Morris & Saunders 2017).

Here the 'social' model of illness (Cross 2007) and related developments in archaeology (Davis 2005) are particularly instructive, illuminating as they do the social arena of medicine or healthcare as worldviews rather than as discrete practices that take place within specific settings (Shaw & Sykes 2019). Indeed, central to the aforementioned exposome model is the acknowledgement that the body's cumulative biological responses, 'adaptations and maladaptations to external forces and chemicals' are intricately bound up with not only endogenous processes including epigenetic alterations and protein modifications but also behavioural factors such as 'personal and volitional actions and those that result from family, community, or social units' (Miller & Jones 2014). This recognition is important given the close correlation between indoor and outdoor pollution, low building standards, and health inequality (Morris & Saunders 2017; Prüss-Ustün et al. 2016; Royal College of Physicians 2016; The Marmot Review Team 2010), with harmful environmental and health triggers often originating in contexts removed in both time and space. Because such '"distal" pathways of ecosystem damage to human health and well-being' can confer a 'temporal and / or spatial remoteness that diminishes the sense of urgency […] a much fuller appreciation of the global connectivity of social, eco-

nomic, and ecological systems' (Morris & Saunders 2017:20; see also Morris et al. 2015; Adger et al. 2009) needs to stand at the very heart of future medico-environmental policy-making, in contrast to the current situation whereby regulations governing chemical use tend to be viewed as 'red tape' that stands in the way of economic progress and profit (Morris & Saunders 2017:21; Oldenkamp et al. 2016). Similarly, the United Nations' (2019) recent proposals for meeting its global synthetic chemical and waste management targets that formed part of its earlier 2030 Agenda for Sustainable Development (United Nations 2015), are framed exclusively within synergies between science and government legislation, with only marginal discussion of community input, and no consideration at all of religiously or culturally grounded environmental worldviews and attitudes.

Given the growing multi-agency commitment to tackling global environment-health challenges, there has never been a better time for archaeology to forge integrated links with the medico-environmental humanities and to demonstrate its unique capacity to provide diachronic insights into the global socio-ecological connectivities that drive the ecological public health project and similar initiatives. An additional and crucial challenge for the palaeoenvironmental humanities is to question how divergent and discordant attitudes towards the 'ecological public health' impact of anthropogenically driven environmental practices in the past played out at an archaeological level and influenced long-term outcomes. To what degree, for example, can differing regional patterns of agrarian technologies such as irrigation, crop use, animal rearing, and pest-control measures be related to underlying environmental ethics and to what degree are present-day ecological public health outcomes affected by such deep-time patterns (Shaw 2016b, and further papers in that volume)? Such questions are particularly important given the drive towards organic agriculture and sustainable water-use as measures for tackling the aforementioned planetary health problems and declining biodiversity levels (Sánchez-Bayo & Wyckhuys 2019).

Similar questions need to be asked of present-day human activities that impact on the environment. Might we expect, for example, those regions deeply aligned with 'Buddhist economics' (Harvey 2000; Shaw 2016a) and related notions of non-violence (*ahiṃsa*), to experience lower pesticide use? Whilst in Bhutan, Buddhist principles and a commitment to its 'gross national happiness index' are fuelling a drive towards an exclusively organic economy (Brooks 2013), justifications for pesticide use in other predominantly Buddhist regions can be unexpected. For example, in Thailand, the acceptability of pesticide use has been related to personal affordability (Harvey 2000: 166-168)! Other studies of 'Buddhist' environmental ethics and activism in Himalayan regions have highlighted unhelpful divisions between ritual/mythical and environmental/toxicological vocabularies and

points of reference (Yeh 2016; Yeh & Coggins 2014). Similar ironies and taxonomic clashes underscore the aforementioned examples of the Ganges and Yamuna rivers in India, and finding ways of bridging such discourses is crucial if the increasing prioritization of religious belief in global public health and environmental disaster relief (Chester 2005; Hulme 2010) is to prove effective.

Deep-time perspectives on community-led environmental activism versus state 'control'

The assumption that an increasing movement towards environmental control is an inevitable component of the formation of states, empires and complex society, is still an underlying premise of the teaching of world history, even if, as highlighted by Riede (this volume: 19; also Riede et al. 2016; Shaw 2016a), this quest for human 'mastery' over 'nature' risks our ultimate loss of control over global stability and wellbeing. What is often missing from standard historical narratives of progress is critical discussion of the more negative fallouts of urban 'development' in the past, such as health inequality, poverty, and pollution, many of which mirror the mixed fortunes of rapid urbanization today. Similarly overlooked is the contribution of smaller, devolved, 'alternative', and often dissenting communities, and associated worldviews and attitudes, in the shaping of human:environmental worldviews and physical trajectories.

An example here is the enduring influence, in regions ranging from the Near East, through South and Southeast Asia, to pre-Columbian Mexico, of Wittfogelian (Wittfogel 1957) models of land and water control that assume the intervention of centralized state administration of land and water resources. In South and Southeast Asia, although many early dams are indeed commissioned by imperial forces, and may be regarded as 'Big Dams' in terms of size and scale (Morrison 2010), their administration and maintenance is often associated with forms of local elite patronage (Stargardt 2018), and overseen by village councils, and 'religious governmentalities' linked to Buddhist monasteries (Shaw 2007, 2016a, 2018; Coningham et al. 2007; Gilliland et al. 2013) or in later periods, Hindu temples (Morrison 2010). Moreover, many premodern dams in South Asia followed highly localised design models (Sutcliffe et al. 2011), while contemporary ethnographic accounts demonstrate highly codified rules of community reciprocity over access to water supplies (Agarwal and Narain 1997).

Archaeological correlates for socially and environmentally-engaged forms of 'Buddhist economics' (Harvey 2000) are instructive for the modern ecological movement in offering 'non-violent' examples of collective, ide-

ology-based, models of land ownership and management, whereby 'states within states' act as alternative agents of socio-environmental change, in contrast to the monetary outlook of modern development-based governmental agendas, or to the left-right political spectrum. However, while early examples of Buddhist 'monastic landlordism' evidently tackled socio-ecological sources of suffering such as poverty, lack of water and hunger, at a community level (Shaw 2007, 2016a), we should not assume an outright separation between 'Buddhist' and state-level economics. Similar ambiguities exist for later forms of Hindu temple-oriented land-tenure and water control, given the entwined relations between imperial rule and land-owning Hindu deities (Willis 2009), and the ubiquitous linkages between dam building and power and profit (Morrison 2010).

Whether part of integrated agro-economies or associated with dissenting groups that opposed certain forms of agrarian development (as with the aforementioned Brahmanical ascetic groups which rejected rice agriculture in favour of smaller-scale horticultural food production), such community responses to perceived socio-environmental and related human health challenges are instructive for modern environmental activism. This is especially clear given recent calls from public health theorists who stress the element of community responsibility as a tool for tackling current health challenges (Deprez & Thomas 2016). It becomes particularly significant given the recent rise in public, and especially student-led 'climate-change protests' aimed largely at shifting government-oriented environmental legislation and policy making (Taylor 2019). Still, one should not overlook the potential power of local community action to effect bigger changes at a global level through critical acknowledgement of how individual habits and their underlying human:environment 'attitudes' and worldviews contribute to the overall ecological public health picture.

In short, there is little point in campaigning for governmental action, until one's immediate living, working, or educational environments are put in order. This means living by example, through individual and collective adherence to new, revised (or old, as may be the case) attitudes regarding our modes of interaction with the non-human environment that surrounds us, and in taking on board shifting medical worldviews and associated research findings regarding the inherent porosity of the human-environment encounter. In addition to technological solutions such as 'green' chemistry and sustainable agriculture (United Nations 2019), more thought needs to be given to historical models of community action and administration and to the underlying human:environment epistemologies and worldviews that may help to explain differing patterns of regional environmental outcomes and solutions that in the end impact on planetary health at large.

Conclusion: Reformulating environmental activism through an integrated palaeoenvironmental humanities programme

In order to fulfil the aims of a balanced ecological public health project, 'a total rethink of society, the economy, and our stewardship of the natural environment' is going to be necessary (Rayner & Lang 2012: cit. Morris & Saunders 2017:20), but also, for the development of nuanced, deep-time perspectives on such matters, new forms of interdisciplinarity within the broader remit of a palaeoenvironmental humanities programme are required. This means going beyond simply *engaging* with intersecting scholarly and activism-oriented debates, to actually reframing our research design along *active* collaborative lines of enquiry between environmental and medical scientists and their humanities counterparts, religious historians, as well as environmental / climate change activists and policymakers. In addition to researching and writing within such diachronic and interdisciplinary synergies, we should also be giving more thought to the ethical implications of our own actions and immediate environments as far as they impact on the growing crisis of climate change and environmental degradation. How might the indoor and outdoor spaces in which we live and work, for example, be adapted so as to act as showcases for our involvement in research agendas and ethics that highlight the long-term impacts of good environmental practice? By focussing on sustainable as well as healthy buildings and on integrated construction and management policies that transcend token 'green' initiatives and 'environmentally friendly' activities, we might also complement our formal research agendas with more outward demonstration of the multi-directional, inter-generational and interregional impact of individual, localized actions, consumption behaviours and engagements with the human:non-human:geological world.

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