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Medicine in the field: Growing connections between environmental and medical history

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Abstract

This article argues that Environmental History and History of Medicine are disciplines that are natural allies and productive partners; successfully working across the sub-disciplines will be essential to understanding current and future crises, including climate change and pandemics. While it is relatively easy to find acknowledged intersections between histories of science and/or technology and of the environment, so far these are less systematic and substantial in the history of medicine. Partly this is because there are points of serious methodological and theoretical tension, but I argue that these can function as moments of contact and provocation. Most obviously Environmental History poses challenges to historians of medicine in terms of the scale of our work in both its chronological and conceptual reach, and how we incorporate the non-human, and even the non-biotic as historical actors. History of Medicine offers approaches to help environmental historians negotiate their relationships with science, in particular the balance between science as a subject of study or as a source of data. Both disciplines share the struggle of combining focused, heavily contextualised local histories with the pressing need for globalised and 'big picture' historical explanations. In this review I will outline the main historiographical challenges to working across these subdisciplines—particularly in terms of scale and focus—and then consider the most productive

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intersections of these fields before making recommendations for future collaborative work.

Historians of medicine and environmental historians share the experience of working in a subdiscipline that is untethered by a geographical or chronological focus of expertise, and consequently most also identify as perhaps historians of the ancient or modern world, or of a defined region, or have a commitment to particular methodological approaches from Economic or Cultural history, and so on. This diversity is productive for our scholarship but needs to be acknowledged in an article such as this, where I am attempting to talk about both subdisciplines as coherent groups. As a consequence I will touch on work that spans the chronological reach from Ancient to Modern, and indeed that actively questions whether we should start including topics previously considered as 'pre-history' and beyond the historians' remit. Research discussed here is both intensely global and sophisticatedly local; it will encompass approaches from Economic, Social, Political, Cultural and Public History, and draw on work from sociologists, anthropologists, and ethnographers. I also discuss the role of histories of science and technology, a subdiscipline whose historiography has more consistently and obviously integrated and shared with Environmental History, and in what follows I want to try to use this literature, but where possible to separate out histories of medicine and health to highlight the particular synergies between Environmental History and History of Medicine which remain comparatively underdeveloped.

In particular I want to highlight that History of Medicine and Environmental History have a great deal to say about the most pressing issues of our age: climate change and environmental degradation, nationalism and fascism, and emerging pandemics. When combined that insight has potential for real political and social influence (Algona et al., 2020; Soens et al., 2020; SSHM https://sshm.org/portfolio/history-of-epidemics-public-engagement). Through the first half of this overview I will list and then discuss the three main points of contact and tension between the subdisciplines; in the second half I will acknowledge the excellent 'cross over' work that is already being done, and close by highlighting promising avenues for future research.

There are three obvious points of contact and tension between historiographies in History of Medicine and Environmental History; these three are both topics of interest and methodological challenges. First is the role of STEM subjects in our work. Second is the inclusion of non-human actors, which is also a question of chronological scale. Third is the scale of place (Hughes, 2008). Some historians have worked extremely productively across these points, and they will be discussed below, but much remains to be done. The divide between STEM as a source of data rather than subject of study is a long-term tension for historians of medicine who have absorbed approaches from the History of Science more broadly, and from Science and Technology Studies especially. There is a recurrent and unresolved debate about how to combine histories that use scientific data—including cliometrics—to frame their arguments, with an ideological commitment to the idea that science is a socially constructed form of knowledge, made by particular people, in certain societies, at specific times (Prichard, 2014; Shapin, 2010). This is a genuine barrier to collaboration—as recently as 2019 Hersey and Brady (2019), in a review article for *American Historian*, asserted that "methodological tensions between environmental historians (who often employed science as evidence) and historians of science and technology (who saw science as a subject of enquiry) made for a fraught disciplinary intersection" (see also Lewis, 2014).

Although the framing here is histories of 'science and technology' this tension is of course familiar to historians of medicine. Indeed, the founding members of History of Medicine as a discipline, particularly Erwin Ackerknecht, George Rosen, and Henry E. Sigerist themselves favoured a form of medical history that, borrowing from medical geography, was deeply concerned with using scientific data and statistics to track epidemics, death rates and meteorological phenomena (Rupke, 2000; Valenčius, 2000). Even though both subdisciplines participated in the social and cultural turn at the end of the twentieth century that questioned such empirical work, there is still no shortage of historians of medicine pursuing similar empirically orientated work, just as there are those counting rainfall in

Environmental History (White, 2004). In the 21st century genetic data became a source for some historians, again in disputed ways; historians of medicine have embraced or rejected the opportunity to perform retrospective diagnoses through genetic sequencing and bioarchaeology (Buchanan, 2021; Cooter, 2010; Karenberg, 2009; McGough, 2005). Historians of pandemic and epidemic diseases have made the strongest case for absorbing STEM methodologies, most obviously Monica Green's work (2012, 2015) on using scientific approaches to reconsider the history of plague and other pandemics (for an excellent history of modern plague from an Environmental History perspective see Staub, 2022.)

Both subdisciplines therefore wrestle with STEM-as-data versus STEM-as-subject, and this tension need not prevent productive cross-disciplinary work. The bigger challenge to collaborative work is more in the use of science to facilitate the historical study of non-human actors—botic and abiotic (Jones, 2005; Nash, 2021). Environmental History can take a chronological scope of aeons rather than lifetimes, and push its historical analysis into spaces without human record, even without human agency. This goes far beyond the familiar—if challenging—'big picture' of the *Annales* school that historians of medicine may work with, and includes the non-human animal and the non-human ancestor. Some historians of medicine have edged into this territory already, especially through the inclusion of approaches within Animal Studies. From Latour (1993) urging the agency of the microbe, to entangled biographies of mosquitos and colonialism, anthropologies of the microbiome, or the ways that dog shit have shaped urban public health, the non-human animal already has a place in histories of health and medicine (Benezra et al., 2012; Deb Roy, 2017; Pearson, 2019). But even the trend to 'One Health' in international health campaigns and resulting funding interest has not resulted in the routine inclusion of animal health and non-human actors in most histories of medicine. This therefore remains an area where History of Medicine needs to be challenged and pushed into unfamiliar territory (Kirk et al., 2019; Woods et al., 2018). Environmental History works as a useful provocation here as its historiography repeatedly and relentlessly questions the apparent divide between the human (animal) and nature (Piper, 2013)—it is no coincidence that one of the most cited 'formative' articles of the discipline, William Cronon's 1996 piece "The Trouble with Wilderness", precisely demonstrates the artificial and culture-bound concept of a world without us, of a history that assumes human beings are a distinct and separate category. This critical lens on what are both scientific and cultural boundaries has been used within the History of Medicine but in a less visible and systematic way (Cassidy, 2018).

Again then, both subdisciplines share an interest in including the non-human animal and investigating the cultural and intellectual processes by which the human is separated from the animal. What is more problematic is the idea that *natural* history is history, and the concurrent acceptability of narratives where environments shape human destiny in a deterministic way. Historians of medicine may well baulk at articles that enthusiastically cite popular works of environmental and technological determinism, especially those that reach into pre-history to explain contemporary national and political situations, and which eagerly take up controversial (and often debunked) theories of evolutionary psychology. It is only fair to acknowledge that many environmental historians are also critical of overly deterministic 'just so' stories, but this is a space where History of Medicine can offer useful interventions and cautions. It is hard to imagine a roundtable of historians of medicine claiming that "the stereotype of the genetic determinist bent on annexing the humanities and social sciences was always something of a caricature and… focused attention on a strand of evolutionary thought that has since run its course" (Roundtable members, 2014) when it is quite evident that determinist and often racialised thinking in some forms of sociobiology persists and thrives, inside the academy as well as outwith it (in the same roundtable see the caution of Gordin, 2014; elsewhere see Gil-Riaño, 2017; Nash, 2015a). Historians of medicine have ideas to contribute here about the rise of neo-Malthusianism in global public health and reproductive health movements (Bashford, 2008; Merchant, 2022) which are so entangled with the history of environmentalism. Environmental History also has warning stories about the elision of natural history with human history, or the suggestion that biology should be the arbiter of truths about the human past and, by implication, present (Carey, 2014; Weiner, 2005). Peder Anker's work (2001) has discussed the situations where non-human ecology became human-ecology, and was then used by politicians like Jan Smuts to justify segregationist racist social reforms, or by figures such as the British sci-fi writer H.G. Wells to argue that human ecologists, not humanities scholars, were best placed to be professors of history.

For a more progressive approach to combining histories we can turn to Chakrabarty's (2009) four theses to guide historians engaging with the Anthropocene: that natural and human histories are one continuous discipline; that we must recognise humans as a geological force; and that we should attempt species-level histories of humans, which must then be aligned with the history of global capitalism to probe the limits of our historical understanding. *Pace* earlier attempts to join natural and human history Chakrabarty (2016) rejects suggestions that his framework dethrones history in favour of biology or offers a determinist and essentialist account of human histories and future, distancing himself from other works in this vein and posing his theses as ontological puzzles of scale and motivation. He admits these scales may be incommensurate; Thomas (2014) points out that most of us are not motivated to write by the mere hope of survival for our species through millennia, but rather by our desire to maintain specific ways of life and thinking, to preserve ecosystems in particular forms, on the scale of a generation or two (see also Coen, 2016). We also need to be aware the word 'Anthropocene' can exclude natural history or the non-human animal (Guerrini, 2016) not least due to the highly politicised debate about the start dates of this epoch, ranging from 1784 to 1950. We also need to note that the connection between histories of climate and capitalism can be read to suggest that certain futures are 'locked in' deterministically, leaving historians space to understand *how* "colonial expansion and capitalist accumulation produced both historical inequalities and locked in future climate instability" (Emmett & Lekan, 2016, p. 8)—a strange situation in which the future is determined, but the past is underdetermined and ripe for more study. It is in this gap that history, whether it is a history of humans or one that incorporates the natural world, can contribute to our understanding of climate change as both a global, geological event *and* a localised human experience.

Scale is, therefore, the core challenge of all three areas of provocation between History of Medicine and Environmental History: scale of our disciplinary reach (including STEM as methodology, data, or subject of study?); scale of our chronologies (including natural history, non-human actors and 'pre-history'?); and finally scale of *place* (Nash, 2015). This final scale is probably the easiest and least challenging for collaborative work between History of Medicine and Environmental History. Even historians who entirely reject environmental determinism, cannot incorporate STEM as data, and do not see natural history as part of their discipline, generally agree on the significance of place as a context for historical analyses. Here the challenge is instead how we integrate deeply contextualised local studies with ambitious globalised histories (Lewis, 2005). Recently environmental historians have made a strong and persuasive case for routinely considering the environment as part of the context in which other social and cultural factors are at play. As Hou (2019) argues in a chapter on comparative history, it is bizarre to consider things like religion, economic structure or political systems as points of similarity between cultures, while not considering if they share similar environments. "When nature is recognised as a formative and significant force in human history, [any] parallelism in natural settings offers a solid foundation for comparative scholars" (Hou, 2019, p. 132). While responses to environments can be culturally bound—forests may be a crucial economic resource or a dangerous source of miasma—there is nonetheless much more scope here for trans-national histories of health and disease that pair and consider hot weather cities, that explore concepts of 'fresh air' in places that do or do not have access to the sea, altitude, or forests. Likewise there still a gap in our understandings of the ways that health beliefs about sleep, mental health and metabolic rhythms are formed in places where days change length, or remain constant (Hussey, 2022).

Of course historians of medicine have considered the relationship between environment and disease/health, and I will highlight good examples of this cross-over work below, but 'scale of place' particularly speaks to the drive across historical subdisciplines for more representative, global, and international histories. While this can draw attention to globalisation and interconnections it also highlights resistance to imposed Western models of knowledge, including Western biomedicine, environmentalism and the term 'Anthropocene' itself (Baldwin & Erickson, 2020; Mathews, 2020). Previously underrepresented voices, particularly from Indigenous groups, have upended Western histories of knowledge exchange and cultural encounters both appropriative and violent (Todd, 2016; Wright & Tofa, 2021). Generalising the arc of this story, it moves from the dispersal of a benevolent ('true') knowledge about the environment and human bodies, to the imposition of a foreign and partial way of knowing, to stories of resistance. These latter are increasingly histories of partial adoption, adaptation, and the reclaiming of non-Western knowledge

systems as significant and global, impacting in more nuanced flows of encounter and intersection. Consequently both historians of medicine and of the environment have had to shift their focus, alter their citation practices, and considerably complicate centre-periphery models (Beattie, 2012; Haila, 1997; Saikku, 2019).

One significant limitation to the writing of new, globalised, and trans-national histories is that Environmental History is still dominated by North American scholarship, specifically post-colonial USA—both as topic of study and location of scholars (Chiang, 2014; Weiner, 2005). This is in part an artefact of the origins of the discipline itself, but it is still a major limiting factor in engaging beyond national histories (Isenberg, 2014b). In the flagship 2014 *Oxford Handbook of Environmental History* the majority of the chapters entirely or predominantly draw on US History—not just in the text, but also in their bibliographies—and this includes the chapters on race and gender, national parks, owning nature, even 'chemistry' (Isenberg, 2014a). Comparatively the 2013 *Oxford Handbook of Medical History* makes a deliberate attempt to gesture towards a global history, even if its core expertise is (and most of its authors are) located in Europe or the broader Western world (Jackson, 2013). It is notable, then, that the texts which most successfully bridge between historians of the environment and of medicine—those that are as likely to be cited in scholarship in either subdiscipline, or that get mentioned as 'classics' in the field—are precisely those that go well beyond the North American story, for example, Grove's *Green Imperialism* (1997) or Merchant's *The Death of Nature* (1989). These are perhaps better categorised as histories of *life science* (Oreskes, 2014) than of medicine, compared to other crossovers such as Mitman's (2007) deeply interdisciplinary work on allergy and the making of US environments and sense of place, or Valenčius (2002) and Nash's (2007) examinations of the co-construction of health, place and national identity in the USA. Perhaps the less common use of these latter works in history of medicine syllabi outside the USA is because of the geographical focus, but they should be acting as inspirations for similar cross-over studies that consider such questions in other geographical regions, or through transnational comparisons.

Despite, or possibly because of the points of tension outlined above—the role of STEM, scale of chronology and non-human animals, reconsidering place—there is much evidence that bridging work is productive, and what follows is an outline of some of the move provocative and useful interdisciplinary examples. The obvious starting point is where the environment is believed to affect health, mental and physical, Earlier I noted that the origins of History of Medicine are tightly connected to Medical Geography, and while contemporary historians of medicine, at least social historians of medicine, are more likely to write histories *about* Medical Geography (or its cousin 'disease ecology', Anderson, 2017) than to do epidemiological work themselves or borrow the methodological tools of geographers, the topic remains current (Otter et al., 2015). At its most basic the idea that environments are thought to have affected health is an ancient belief in almost every culture, and in many cases extends to a firm belief that *place* makes personalities, civilisations and races (on modern nationalist use of 'deep time' see Bashford et al., 2021). Within Western medicine historians seem obliged to cite Hippocrates' *Air, Water, Places* as evidence of ancient origins, but the relationship between place and peoples gained new emphasis and raised new questions because of increased global travel and European imperialism in the Early Modern period. Here beliefs about place extended into deeply racialised assumptions about acclimatisation, adaptation and eventually environmentally determined evolution—of individual people and of whole nations. Consequently the environment was used to provide biomedical justifications for slavery, and to enhance or moderate fears of tropical degeneration (Arnold, 1996; Beattie, 2006; Carey, 2011; Fisher, 2021; Seth, 2018).

For Europeans, whether traders, settlers, missionaries or scientists, the exploitation of new territory required a careful reconsideration of the role of the environment in the making or a person or a peoples. Could humans (and plants and animals) be safely moved from one climate to another? The changing answer to this question, as views on race and acclimatisation seem to harden through the nineteenth century, have been well explored by historians, often as the pre-history of Tropical Medicine which emerged as a specialism at the turn of the twentieth century (Anderson, 2000; Harrison, 1992, 1999; Livingstone, 1987, 1991, 2012). Also established is that Western biomedicine constructed the tropics as places of danger as well as bounty and—egged on by new Darwinian theories of slow evolution—the peoples of those places as biologically doomed to laziness, primitiveness and sometimes bound for extinction (Hulme, 2011; Osborne, 2014; Sutter, 2014; Worboys, 1996). It is less obvious where this explicit tool

of Empire (Osborne, 2000) leads in the twentieth century, although some historians have begun to consider the *after*-history of Tropical Medicine, as well as its origins (Anderson, 2006b; Heggie, 2019a, 2019b). Here Environmental History fills in some gaps in History of Medicine scholarship, as the science of environmentalism was of course also a tool of Empire, and the imbricated relationships between Indigenous peoples and their environments shaped biopolitics in the twentieth century as clearly as in the sixteenth, whether they were cast as 'Noble Savages' in touch with the rhythms of nature, or as backwards primitives unable to preserve or industrially exploit the wilderness in which they lived (Haila, 1997; Banivanua-Mar, 2010; Saikku, 2019). As Warwick Anderson's work (2000, 2006a) has shown, one way of dealing with the challenges of colonial environments was to elide indigenous populations and non-European settlers with the 'sickly' environment, regarding them and their pathogen-hosting bodies as the real threat to white settlement; thus the major shift from miasmatic to bacterial or viral understandings of disease, which were so crucial to Tropical Medicine and Environmental Public Health, occurred without significantly altering the racist and racialised understandings of health and belonging that persisted for centuries.

While such studies of environment and health obviously make the case for the specificity of *place*, they also speak to Chakrabarty's call for the integration of global capitalism into our histories of human and non-human actors. Knowing an environment deemed 'exotic' to Europeans could provide marginal historical actors with clams to specific, rare expertise in fields from meteorology to medicine (Reidy, 2011; Seth, 2018). Histories of Tropical Medicine inevitably comment on the flow of people, goods and ideas across the world, and the intersections of economics, trade and scientific ideas. Thus the environment-health-commerce nexus draws us to the issue of bioprospecting, and the encounters between European biomedicine and other, usually Indigenous, knowledge systems. As Smith (2012; citing Aroha Mead) argues, it is particularly in the worlds of environmental science and of medicine that Indigenous knowledge is misappropriated; I argue this makes it essential that historians of both topics work together to reframe the stories of these knowledge encounters. Critical studies of bioprospecting obviously exist in History of Medicine (Osseo-Assare, 2008; Soto Laveaga, 2005; Schiebinger, 2007; for human genetics see Kowal, 2013; Kowal & Radin, 2015) but this area could be reinvigorated—and given a full Environmental History context—by radical and innovating interventions coming from Indigenous scholars, as well as those not based in Western academia (Kanngieser & Todd, 2020; Kolopenuk, 2020; Todd, 2016; Verran, 2002). We must openly acknowledge the challenge such voices have had in establishing themselves in both disciplines, and that it is too often the *depoliticised* version of a historical sub-discipline that gets institutionalised, even when, as with both Environmental History and History of Medicine, it has roots in radical politics and campaigns (Banivanua-Mar & Edmonds, 2010; Hersey, 2019; Smith, 2012; Steinberg, 2019; Taylor, 2014).

Therefore, the racist and colonial vision that tied people to place was an essentialising and fundamentally *environmental* ideology that blurred the boundary between human and animal/natural (de Bont, 2015). Of course the idea that such a boundary exists outside of human mental construct is a core methodological debate in Environmental History (as discussed above) and consequently is a sore point which Mitman (2005) suggests has been a limiting factor preventing closer association between historians of medicine and the environment. Taking a narrow view of the History of Medicine, which focuses only on human health and disease can certainly seem too anthropocentric for Environmental History. But in the years between Mitman's article and this one a boom in Animal Studies within the History of Medicine has belied the idea that histories of health are necessarily only human histories (Kirk & Pemberton, 2013; Klingle, 2018; Woods et al., 2018). While OneHealth has its political critiques it may be that one outcome of the global Covid pandemic of the 2020s will be to reignite interest in the more specifically environmental and animal aspects of health and disease. Narratives of ecological destruction and exploitative human interventions leading to the production of devastating diseases from monkeys, bats, and other (often endangered) animals have served to solidify the boundary between human and nature in popular discourse, and are therefore ripe for more sophisticated reconsiderations. This is more pressing in the light of an eco-fascist renaissance, and debates about global populations and the earth's 'carrying load' for 'viral humanity' (Peretti, 1998).

Reconsidering the non-human animal offers a real opportunity for new kinds of environmental-medical global histories which particularly consider the movement of global commodities (Chakrabarty, 2009). Staying with *place*,

as one major critique of mainstream Environmental History is its inability to reframe the dominant North American story as part of an international narrative (Lekan, 2005; Sutter, 2003), here is a useful point to work with History of Medicine, not only in bioprospecting but also in the broader nexus of works that tie racism, colonialism, trade, and the prioritisation of 'Western' principles together in (capitalist) moments of exploitation and intervention. For example, there are the ambiguous and problematic narratives of rhino poaching for the 'traditional Chinese medicine' market, which are critiqued in very different ways to the exploitation of resources to produce foods for European consumers or products for *Western* medicine (Takeshita, 2000). This nexus of nature and health highlights imposed binaries—white hunter/black poacher, rational medicine/superstitious traditions—which require much further analysis from historians of medicine and the environment (Hübschle, 2017; Reeves, 2022). Such interactions between identity, knowledge and place provoke questions about how people(s) belong to and own spaces, about responsibility for maintenance, protection or exploitation; these might seem more relevant to environmental historians but I would press them on historians of medicine as vital future topics (a great starting point is Walker, 2014). The climate crisis is a health disaster; it is essential that historians are able to rise to the challenge of telling a clear and instructive story about the ways in which environmental harm is done to people and communities, how this had been mitigated, or ignored and downplayed.

Collaborating to understand human beings both as active agents of geological change and also victims of an unfolding biomedical-environmental disaster is crucial, and as well as the intersections above one final disruptive methodological approach brings the two subdisciplines together: broadening our understanding of what an 'environment' could be. Mitman (2005) has suggested that environmental historians were discouraged from engaging with the History of Medicine because of its focus on urban spaces, but the last decade shows a substantial shift in that prejudice, as environmental historians have begun to reconsider the urban and industrial as appropriate topics for their attention (strongly advocated by Nash, 2015). There are still many stories of environmental health and wellbeing that have not been pursued fully into the cities and buildings of industrial and post-industrial societies (Craddock, 1999; Culver, 2014; Sutter, 2013). Take for example, the smell of pine: the switch from regarding woodlands as sources of toxic miasma to spaces of 'pure healthful air' has been well discussed by historians of the environment, at least in the North American context where health tourism led people to travel to pine woods for the cure of everything from hayfever to tuberculosis (Mitman, 2003, 2005; Thompson, 1976). But the scent of pine has only recently been pursued into the urban context, where it has been abstracted, made artificially, and mass marketed as a symbol of hygiene, and the ways in which this 'natural' science has impacted our experiences of spaces such as hospitals or our own homes has only just become part of this story (Hickman, 2022). Further stories of 'wilderness for health', of exercise on prescription, hugging trees for mental health, or bringing the outside inside with bird song in hospices, all offer opportunities where new stories can be told and old ones reinvigorated by ideas drawn from both subdisciplines (Thompson, 1978; see also the engagement with space and architecture in the Sensing Spaces of Health Care project, https://hospitalsenses.co.uk/ 2022).

If pine scent or bird song can make urban-industrial spaces more 'healthy', then in return the products of urban-industrial spaces are also acting to make 'natural' spaces 'unhealthy'. The by-products of the industrial revolution very obviously cause cancers, respiratory diseases and other life-limiting conditions, while traces of the nuclear and plastic revolutions can be found even in the remote corners of the earth. Sick buildings, polluted seas and lead-mine spills are obvious coincidences between Environmental History and History of Medicine (Murphy, 2006; Nash, 2004). Medical products can also be pollutants—while the 'environmental' impact of the Pill is usually framed as its role in shaping population change, it is also a hormone released into our waterways from trace residues in urine, with impacts on wildlife that are only just being recognised. So here is a clear space for reconsidering our histories of reproductive health and the pharmaceutical industry as parts of a broader environmental story. Further, such topics draw our attention to *place* and can close the gap between the need for careful local contextualisation and the demand for international histories—pollutants are (in)famously global objects, whether deliberately traded away or accidentally blown across a border. The artificiality of national borders as a way of organising our historical expertise becomes starkly obvious when one is considering the downstream pollution of a river or drifting nuclear fallout (Petryna, 2004).

Beyond these obvious intersections there are also more radical potential outcomes from collaboration. The anthropocentric bias of History of Medicine could be upended by re-integrating the agency of the rest of the natural world, whether a pangolin with a viral payload or the jet stream. Environmental History could break out of its North American bubble by collaborating on stories of trade, transmission and travel—in particular by thinking about food and agriculture. Armiero, 2019 has shown how considering the 'world in a tin can' can link environmental, global and public health histories to stories of race and immigration (and to pollution, e.g. mercury in fish, Egan, 2013). Engagement with histories of technology is productive: refrigeration obviously impinges on food history, but also the transportation and storage of medicine, and as Hobart (2016, 2022) has shown is part of the identity politics of race, imperialism and gender. Taking seriously the environments that we *create*, with air-conditioning or central heating, is a rich seam for inter-disciplinary work, particularly framing occupational health and medicine, architecture and urban planning, and pollution and toxicity (Borowy, 2021; Merleaux, 2021). Our scale can get smaller as well as bigger (a political act, King, 2004): the microbiome is a recent emergent topic in biomedicine, crucial for everything from depression to antibiotic resistance. What if we not only take ourselves seriously as animals moving through or impacting on an environment, but also consider ourselves to *be* environments; complex, interrelated objects of colonisation, extinction and unclear boundaries, even to the point that we are entangled with the world through 'chemical embodiment'? (Thomas, 2014).

Even in a necessarily brief overview such as this, it is clearly evident that History of Medicine and Environmental History have a great deal to offer to and learn from one another: our struggles with STEM as data source or subject of analysis, our need to move beyond North American or Euro-centric stories, our desire to find new voices in a globalised historical marketplace demanding both local and international explanations. There are many threads to follow, and as I write this in the shadow of a pandemic while wildfires and extreme weather rage, it is easy to feel the most politically pressing topic is the intersection of climate and health. Together we need to work on issues that draw on race science, on (climate) immigration and population debates, on the long shadow of colonial practices that changed our urban and rural environments, and on our difficulties as human beings in, firstly, conceptualising ourselves as the makers of 'geological' scale change, and, secondly, understanding whether we live in, with, alongside, or as part of, the 'natural' world.

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The authors declare no conflicts of interest.

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