Sociology, environment and health: a materialist approach

Abstract

Objectives

This paper reviews the sociology of environment and health, and makes the case for a post-anthropocentric approach based on new materialist theory. This perspective fully incorporates humans and their health into 'the environment', and in place of human-centred concerns considers the forces that constrain or enhance environmental capacities.

Study design

This is not an empirical study. The paper uses a hypothetical vignette concerning child health and air pollution to explore the new materialist model advocated in the paper.

Methods

Not applicable: not an empirical paper

Results

Not applicable: not an empirical paper

Conclusion

A new materialist and post-anthropocentric sociology of environment and health radically reconfigures both sociological theory and its application to research and associated policies on health and the environment. Theoretically, human health is re-thought as one among a number of capacities emerging from humans interactions with the social and natural world. Practically, the focus of intervention and policy shifts towards fostering social and natural interactions that enhance environmental (and in the process, human) potentiality. This approach to research and policy development has relevance for public health practice and policy.

Introduction: sociology, humans and the environment

The interaction between the environment and human health has been of concern to medicine since Galen's theory of humours sought to explain disease as a dialectical relationship between bodily constitution and environmental or societal hazards.[1] While the rise of germ

theory and a medical model of disease undermined this dialectic, the emergence of public health in the Victorian era reflected continued humoralist concerns with the effects of the environment upon health.[2] The interaction between human health and the social and physical environment remains relevant to contemporary public health, epidemiology, environmental health and health protection.[3]

Sociology meanwhile has developed separate interests in both health and the environment, with health and illness the largest sociological sub-specialty, and a growing number of climate change specialists. More recently, sociologists have become increasingly interested in the interaction between environment and health, as attested by the establishment of a British Sociological Association study group, a one-day conference in 2016, and the papers in this issue. Research has explored the negative health effects of both the urban built environment [4] and the countryside [5], as well as research on risk behaviour associated with the environment [6], environmentalism [7] and the health effects of climate change.[8]

In this paper our aim is to bring to the attention of a public health audience some recent theoretical developments within sociology that offer a more sophisticated understanding of the relationship between environment, humans and their health, with consequences for sociology, and for public health policy and practice. We develop a 'new materialist' approach [9], that – rather than differentiating or even opposing humans and their health to the environment – promotes a 'posthuman' and ecological sociological perspective that cuts across the divide between nature and human culture, and sees humans as integral to the 'environment'. This 'monist' perspective shifts how to think about both 'health' and 'environment', and offers new possibilities for interventions to address the interactions between humans and their environment.

Sociological approaches to environment and health

Social scientists have engaged variously with issues concerning environment and ecology, typically differentiating between the physical and biological environment and the social and cultural environment. Sociologists have applied a broad notion of environment as a context for social action, in which 'the environment' is basically everything that is not part of a human body, a product of human agency, or a human construction. [10, 11] They analysed the

interactions between society and the environment – usually focusing upon how to manipulate the natural environment for the benefit of human kind, for example, to manage water or food supplies [7], or to enhance human health. [12, 13] In its original formulation, this amounted to what Catton and Dunlap called a 'human exemptionalist (or exceptionalist) paradigm'. [14] Stevens describes this as

> a fundamental separation between humans and the rest of the animal world, culture being a uniquely human quality that is more variable and able to change more rapidly than purely biological traits; that humans have freedom of choice, subject only to social and cultural factors; ... and that human ingenuity and problem-solving shows a cumulative progression that can continue to expand *ad infinitum*.[15]

From a second perspective, social scientists sought understanding of the part that the physical environment has played in shaping human existence: for instance, the particularities of climate and geology that determine cultural stability or environmental events such as frequent flooding; longer-term climatic changes that affect human endeavour [16]; or the psychological and social effects of the environment. [4,5,] They contributed to debates about the effects of the environment on humans, pointing to the social, psychological and cultural mediation of links between health and ill-health and the material environment [10, 17, 18], and offered critical insights into public understanding and construction of environmental hazards.[19]

Finally, since the 1990s sociologists addressed concerns that 'the environment' as a system is progressively being damaged by human social and economic activity. Furthermore, it must now be protected from the ravages of an 'anthropocene' era [20, 21] in which the physical attributes of our planet are increasingly affected (possibly irrevocably) by human activity.[10] Social theorists explored the problems and challenges scientists face when recommending cultural or behavioural changes to address threats from the environment [22], and suggested methods to assess quantitatively people's concern with environmental threats and 'ecological consciousness'.[23] This scholarship reflects broadly what Dunlap and Catton designated as a 'new ecological paradigm',[10] in which humans – though still distinct from the rest of nature – are part of a global ecosystem, and are governed by the same 'ecological laws' as other species, which they cannot flout with impunity.[15]

These sociological perspectives on 'environment' play out more concretely when addressing the interactions between 'environment' and 'human health'. We can identify five discrete models for this interaction applied across both social and medical sciences. First, human health has been seen as threatened by environmental factors such as floods, drought or climate change. This is a view widely held in public health and associated social science literature, in which the environment is a potentially dangerous place, full of hazards for unwitting humans.[6] The usual consequence of this perspective is an effort to find scientific, technological or social means to overcome these environmental threats.

Second, improvements to the environment have been regarded as means to enhance human health. This is the obverse of the first perspective, and requires intervention by humanity against a risky environment, for example by developing more effective and efficient means of growing food crops, improving the built environment to provide sanitation, or by building defences against natural hazards such as floods. [4, 24]

Third, scholars have identified how improvements in health and well-being threaten the environment by degrading or exhausting its natural resources, for instance through exponential population growth, economic development or unsustainable farming practices.[25] Critical social science responses to this have been to argue for the need to build environmental resilience into social development, and to recognize the finite resources of planet Earth.[26, 27]

The fourth perspective is a specific sub-case of the third, addressing the negative impacts of human health-care on the environment: for example, run-off pollution from pharmaceutical manufacture, oestrogens from contraceptives and even waste water containing anti-bacterial mouthwash causing negative effects upon river life.[28] The response here has been to develop initiatives that seek to reduce this negative environmental impact by managing health care systems.[29, 30]

Finally, some 'Gaia'-inspired holistic conceptions have regarded humans as part of a self-regulating environmental system. Over an extended span of time, this will compensate for the excesses of human social and economic activity, possibly quite dramatically, and in ways that will have very negative consequences for human health, including radical population reduction or even extinction.[31, 32]

These five perspectives have in common an implicit human/environment opposition. In all but the last, humans and their well-being implicitly or explicitly inhabit the privileged pole of the opposition. The fifth is a dystopian vision of how the environment will eventually bite back against human depredations, restoring nature's privilege over human culture, with the human era just a fleeting moment in the Earth's history. Though the polarity of privilege may be reversed here, the implicit dualism of human/environment remains.[20] This dualism, we argue, constrains both how we may understand health and the environment and how we may explore possibilities for policy and practice that do not differentiate humans and their health from the rest of the natural world. To overcome this dualistic perspective, we develop an alternative monist sociology of environment in the following sections.

'New materialism': challenging nature/culture dualism

Despite social science's shift from exceptionalist to ecological paradigm, it has remained fundamentally *anthropocentric*, placing humanity at the centre of its perspective. Arguably this anthropocentric distinction is deeply ingrained in the philosophy of the social sciences, with 'nature' having always been treated conceptually and politically as culture's 'Other'.[33] Historically, culture/nature dualism has been a neat way to set limits on the concerns of the social and natural sciences, respectively.[20, 34, 35] However, we would argue that models of environment/health interaction which sustain a distinction or opposition between humans and environment – with the environment, as Walker notes,[11] 'conceptually subordinate to society' – limit both social science's capacity to analyse these interactions and public health's capacity to intervene.

There are further justifications for a challenge to human/environment dualism. Haraway sees the anthropocentric privilege accorded to humans as founded upon colonialism, patriarchy and capitalist appropriation of nature for the exclusive benefit of culture.[36] Challenging this

privilege, she suggests, requires 'tearing down a Berlin Wall between the world of objects and the world of subjects', revealing that nature and culture are inextricably tied up in all bodies.[37] For Braidotti, the interests of humans are not divorced from the interests of other living things and of the physical Earth.[20] She advocates an alternative 'posthuman' project that is the basis for an eco-philosophy that can establish continuity between human and non-human matter, and a posthuman ethics for engagement with the environment, based on a new sense of inter-connectedness between environment and human.[20]

Some sociologists have sought resolutions to anthropocentrism and nature/culture dualism. Walker argued that sociology cannot successfully engage with environmental challenges because of its failure to recognize the dual character of humans as both cultural and biological.[11] In his view the solution lay in a synthesis between environmental sociology and cultural anthropology, to incorporate broader biological and environmental factors into an understanding of human culture. In similar vein, Stevens called for an 'ecosociology' that recognised environmental contexts as part of the human experience of embodiment, to 'help humanity come to terms with its unique, but not pre-eminent role in the global system'.[15] However, neither of these scholars attempted the radical ontological solution of cutting across the very dualism of nature/culture that places human and environment in opposition. It is precisely this ontological move that we propose here.

The 'new' materialisms that have emerged over the past 20 years in the social sciences and humanities supply a 'monist' ontology that does not differentiate between environment and humans,[9,] and hence the basis for a post-anthropocentric and posthuman theory of environment and health.[38, 39] This is achieved by two moves: the first concerning a shift from essentialism to relationality; the second acknowledging the capacity of non-human things, organisations and even abstract concepts to affect (in sociology a characteristic typically ascribed solely to humans, via the notion of 'agency').

In terms of relationality, new materialism asserts that there are not pre-existent, fixed entities such as humans, animals, bacteria, oil and coal, atmospheric conditions, climates, coastlines, economic and political systems, and all the other aspects of the world that might be part of an 'environmental' or a 'health' event. Rather, all these myriad materialities gain their apparent

form and continuity through their varied and fluctuating engagements with other material relations. To this list of materialities we must add the expressive relations deriving from human minds, cultures and societies, such as beliefs, desires and values, ideas and feelings, political movements and institutions, ideologies and discourses, and so forth, all of which can affect materially other constituents of a relational 'assemblage'.[40] From this perspective, all events or interactions should be understood as assemblages of interacting relations. Assemblages – and hence the world (social and natural) – are consequently fluid and continually in flux, as relations (bodies, things, social institutions and constructs) join or leave.[9, 41]

On the extension of 'agency', new materialism recognises that all the disparate materialities within an assemblage have capacities to affect, or to be affected by, other assembled relations: humans are no longer the prime movers in this ontology.[40] Rather, Clough suggests it is the collective 'economy' of affects within an assemblage that determines what it (and its constituent human and non-human relations) can do.[42] As a result, a relation's capacities are not due to inherent or essential attributes, but emerge as a consequence of interactions with other relations.[43, 44] From this it also follows that the breadth of any relation's capacities – be it a human being, another living organism or a physical aspect of the environment –will depend upon the richness of its interactions and capacities to affect or be affected, an important point to which we return when we consider policy development in the following section.

These two assertions establish new materialism's monism: there is no longer any differentiation between humans and their 'environment': the entirely of the natural and social world *is* the environment, with nothing beyond it. Applied to empirical research, this monist ontology of relations, assemblages and affects replaces the multiplicity of social theories that have been used to explain the production and reproduction of human culture (which in its broadest definition includes science and health care) with a simple focus upon the interactions between material forces, and the capacities thus produced. Matter is to be studied not in terms of what it is, but in terms of what it does: what associations it makes as it affects and is affected, and what consequences derive from these affective interactions. If there is to be a positive valorisation of events or assemblages, it is no longer in terms of

privileging human agency or humanistic values, but in assessing *the breadth of possibilities* that an assemblage's affects can produce in its disparate relations.[45]

Our objective in developing this materialist perspective is not theoretical, however. Rather it is to enable new understanding of human and health as integral to an environment from which it has been differentiated in the various models of environment/health reviewed earlier. To see the practical and research implications of this new materialist perspective for the sociology of environment and health, we now explore a vignette relevant to the work of public health specialists.

The environment and child health

The impacts of environment factors, from pesticides to air pollution to radiation fall-out have been of concern to public health [46], including effects of road traffic pollutants on children's health.[47, 48] To explore how a materialist sociology might address these interactions, consider a hypothetical policy initiative undertaken by public health staff in a UK city council to improve child health, of the type advocated by WHO.[49] This initiative sought to reduce the number of vehicles using the roads during peak times, thus cutting pollution and road traffic accidents, and encouraging people to walk more or use bicycles. We can begin a materialist, relational analysis of this policy by exploring the multiple relations involved in the 'road traffic/children assemblage' it addresses. These relations might be represented (in no particular order) as follows:

cars – public transport – bicycles – roads – fossil fuels – renewable fuels – airborne chemicals ('pollution') – schools – work places – shops – services – housing – workers – children – transport infrastructure – local employers – etc.

No doubt many other relations are also involved, but this is sufficient for the example. According to the materialist approach we are adopting, we need to ask some specific questions about this road traffic/children assemblage:

- What are the affects (and the affect economy) between these relations?

- What are the capacities produced in the different relations by this affect economy – what can the human and non-human relations do?
- What are the micropolitics of the event assemblage – what does the event reveal about which relations in an assemblage are powerful?

Analysis of the assemblage in terms of these questions reveals a multiplicity of 'affective flows'; for instance, an 'employment' flow that connects employers, workers, workplaces, wages, houses and economics; an 'education' flow between children, schools, teachers, homes, parents and so on; a 'transport' flow of roads, modes of travel, fuel, airborne chemicals and particles, housing, schools, workplaces and so forth; and a 'climate' flow of fossil fuels, industry and transport, the atmosphere, the sun etc. Together these affective flows produce all the events associated with the assemblage, including economic production, education, traffic congestion, poor air quality, climate change and deleterious health outcomes. Assessing the micropolitics of these flows reflects the disparate ways power flows through the assemblage, including the development of a city environment that bring workplaces and current and future generations of workers into proximity; the economics and physical logistics of managing daily transport; the economics and politics of cheap energy; and the democratic and technocratic processes of planning a city to achieve a range of sometimes contradictory objectives such as economic prosperity and human health/well-being.

This monist analysis suggests that an issue such as improving child health by tackling air 'pollution' (which might at first glance appear straightforward) is caught up in a highly complex assemblage, with multiple affective flows and contradictory micropolitics. Traditionally, public health interventions and social science analysis of such complex assemblages have sought to isolate a specific cause/effect flow of affect in the assemblage and intervene accordingly (for instance, banning all 'school run' journeys by parents transporting children to and from school, and providing an alternative public transport system). The materialist analysis that we are developing here suggests another approach which would aim for a more holistic engagement with the assemblage. Significantly, this would not make a foundational distinction between humans and 'the rest' of the environment; nor does it assume that some elements are 'independent' and other 'dependent' variables.

Instead it applies a posthuman sensibility that neither privileges nor denies human aspirations, values and desires, and treats all as part of 'the environment'. The stages in this process would be:

- Through detailed research data collection and analysis, seek a comprehensive understanding of the affects and the micropolitics that surround the interactions between children and transport.
- Subject the 'child health' assemblage to critical evaluation, to identify how it sustains particular patterns of social, economic and political power.
- Address the contradictions that emerge between the different affective flows between relations (for example, between the needs of industry and the health of citizens).
- Propose and develop possible interventions that might assure the breadth or richness of affective flows within the assemblage.

This analysis entails both assessment of data from a range of sources (including epidemiological, survey and qualitative data) and synthetic analysis that formulates and assesses possible futures.[35] However, such a post-anthropocentric analysis of the road-traffic/children assemblage is predicated upon different priorities from a traditional human-centred approach. Rather than simply focusing upon 'pollution' and its effects on child health, this materialist analysis requires dis-assembling the range of affective flows and consequent micropolitics that we identified earlier and then re-assembling them to engineer interactions in the assemblage that establish and foster a range of potentialities for the myriad relations in the assemblage; human and non-human. This re-engineering takes as its objective not simply improving human health, but more generally building richness of capacities into the human and non-human flows (education, employment, communication, climate, air/water quality and so on). Such a focus will implicitly aim to counter forces and affects that constrain the environment's potentialities – be that by exhausting natural resources, filling the atmosphere with greenhouse gases, or limiting human possibilities through poverty, inequity or threats to health – fostering in their place affects that enhance human and environmental potentiality.[50, 51]

Adopting such a post-anthropocentric framework would lead to the development of a sustainable transport policy that at the same time reduced carbon emissions, enhanced

working conditions, was energy-efficient, enhanced natural diversity, and generally made the city a more conducive place socially, psychologically and physically for humans and non-humans. Rather than being primary objectives, improvements in child (and general) health that would accrue from this re-engineering are 'side-effects' among a number of positive outcomes, though it might indeed be argued that a human's 'health' is itself a marker of the breadth of her or his capacities to act and affect.[45]

Discussion

Sociology has sought in various ways to explore, theorise and problematise the study of the environment, and interactions between environment and human health. However, despite advances from a position that gave automatic exemption to humans from participation in the rest of the natural world to one that acknowledged humans as part of a global eco-system [10], we have argued the need for a post-anthropocentric ontology that cuts through nature/culture dualism and takes matter rather than human agency as its focus. We have suggested a 'new materialist' approach that addresses the relationality of matter and what it can do, and that draws humans fully into an environment from which they have been ontologically differentiated and excluded. This materialist approach to environment and health has implications both for sociological theory and more importantly for research and practice, including public health.

For sociology, it means acknowledging that human endeavours are far less independent of the non-human world than has often been asserted. Practically speaking, it means designing and undertaking research that is capable of exploring the constellations of physical, biological, social, cultural and abstract relations that assemble around events, and of unpicking the affects, the capacities and the micropolitics that produce these assemblages. However, this re-formulation also provides the basis for a broader post-anthropocentric and post-human project that has practical and policy implications for how public health engages with environmental issues, and for shaping policy development and public health interventions.

To that end, we have offered an example of how a relational analysis can be applied to develop a radically post-anthropocentric approach to environment and child health, with significant implications for policy development and implementation. If followed through,

such an approach radically de-centres human well-being from its privileged position within public health discourse, to explore instead the multiple economies of affects within a broad assemblage of human and non-human relations. The aim of such an analysis is to provide a synoptic and holistic understanding of the environment in which events occur (including health events such as negative effects of air pollution). The objective is to apply this understanding to foster potential and capacities in this environment, across domains such as education, economics, health and weather cycles, too often treated as discrete systems. Improvements to health, in such an approach become spin-off benefits, rather than primary objectives, within a broader pursuit of environmental potentiality.

This does not mean that specific initiatives to improve health cannot be pursued, but instead that interventions are always seen against a backcloth of a broad environmental analysis, and are not privileged over a general aim of enhancing environmental possibilities. Such an approach may also be used to evaluate existing interventions and their efficacy, and to enhance understanding of how to develop new interventions more appropriately. This – we acknowledge – is a radical approach to public health policy development, which challenges some fundamental conceptions of health policy. Implementing this materialist, monist and post-anthropocentric perspective would draw public health further into a multi-disciplinary nexus that integrates a multitude of constituencies, from planners, entrepreneurs and local politicians to earth scientists, geographers and environmentalists, along with economists and social scientists, local stakeholders and even philosophers.[52] We hope that public health professionals may deem it a worthy challenge to apply practically this perspective and this agenda for action.

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Ethics

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