

This article was downloaded by: 10.3.97.143

On: 01 Apr 2023

Access details: *subscription number*

Publisher: *Routledge*

Informa Ltd Registered in England and Wales Registered Number: 1072954 Registered office: 5 Howick Place, London SW1P 1WG, UK



Routledge Handbook of Health Geography

Valorie A. Crooks, Gavin J. Andrews, Jamie Pearce

After posthumanism

Publication details

<https://www.routledgehandbooks.com/doi/10.4324/9781315104584-20>

Cameron Duff

Published online on: 11 Jun 2018

How to cite :- Cameron Duff. 11 Jun 2018, *After posthumanism from: Routledge Handbook of Health Geography* Routledge

Accessed on: 01 Apr 2023

<https://www.routledgehandbooks.com/doi/10.4324/9781315104584-20>

PLEASE SCROLL DOWN FOR DOCUMENT

Full terms and conditions of use: <https://www.routledgehandbooks.com/legal-notices/terms>

This Document PDF may be used for research, teaching and private study purposes. Any substantial or systematic reproductions, re-distribution, re-selling, loan or sub-licensing, systematic supply or distribution in any form to anyone is expressly forbidden.

The publisher does not give any warranty express or implied or make any representation that the contents will be complete or accurate or up to date. The publisher shall not be liable for an loss, actions, claims, proceedings, demand or costs or damages whatsoever or howsoever caused arising directly or indirectly in connection with or arising out of the use of this material.

20

AFTER POSTHUMANISM

Health geographies of networks and assemblages

Cameron Duff

This chapter explores some of the ways in which health geographers have debated, contested and adapted ideas and concepts drawn from contemporary discussions of posthumanism. I will start by briefly introducing the key features of posthuman, nonhuman and more-than-human geographies (see Castree et al., 2004), before considering how health geographers have contributed to these discussions. My goals are to synthesize the ideas, concepts and controversies of key relevance for health geographers; to highlight the most engaging and innovative of contemporary researches; and to briefly map some possible future directions for health geography after the posthuman turn (see also Rock, Degeling and Blue, 2014).

Reflecting on the reception of posthumanism among human geographers, Castree and Nash (2006, p. 501) argue that posthumanism has been taken to describe both a “historical condition” and a critical “theoretical perspective” on that condition. With respect to the former, posthumanism calls attention to contemporary developments in philosophy, the life sciences and biotechnology, and their blurring of conventional distinctions between a *natural* human subject and the *artificial* cultural and technological contexts in which that subject is embedded. This concern has helped fashion richer understandings of the “complexity and interconnectivity of life” (Panelli, 2010, p. 79) and the ways in which human and nonhuman forces ramify in the articulation of more-than-human subjectivities. The second current is more concerned with questions of ontology and epistemology and with the social, political and historical organization of the categories *human*, *nonhuman*, *nature* and *culture*. Drawing theoretical resources from continental philosophy, science studies and feminism, posthumanist research is concerned with tracing the complex relationalities and generative capacity of these ontological categories and the social and political debates they sustain. With each line of inquiry, posthumanism has provided resources for investigating the “recombinations and disruptions” (Castree and Nash, 2006, p. 502) resulting from innovations in philosophy, biotechnology and the life sciences, while refining understandings of how the categories of human, nature and culture are disrupted and reasserted in this innovation.

The lived experience of health and illness, and the scope and methods of the health sciences, have provided especially rich contexts for these investigations (see Andrews, 2014; Duff, 2014, for reviews). Analysis of the implications of posthumanism for the study of health and illness has largely followed the scission noted by Castree and Nash (2006), with important contributions emerging in health geography (Andrews, Chen and Myers, 2014; Foley, 2011; Greenhough, 2011), social and cultural geography (Dilkes-Frayne and Duff, 2017; Conradson, 2005) and political geography (Atkinson, 2013; Rock, Degeling and Blue, 2014). Within health geography more narrowly, scholars have grappled with the implications of posthumanism for thinking

about the meaning and experience of health and illness, undermining established ways of investigating person-place interactions, the social determinants of health, even how the notion of health itself ought to be conceptualized and investigated (Andrews, Chen and Myers, 2014). This chapter will explore how health geographers have tackled these challenges, mapping some of the ways in which health geography has been reoriented after the posthuman turn. I will start, however, with a brief review of how the discipline more broadly has engaged with posthumanism, noting the debates and controversies of key relevance for health geographers.

Posthuman geographies

While one might identify some degree of convergence in geographical discussions of posthumanism, it is important to avoid reifying either the term itself or the ways in which geographers have engaged with it. Fifteen years ago, Castree and colleagues (2004) cautioned against treating posthumanism as an internally coherent theoretical position, referring instead to diverse “theorizations of the posthuman” (p. 1341). In the same vein, there has been little agreement among geographers about either the meaning or the significance of the posthuman turn for human geography. It is for this reason that human geographers have referred to “non-human,” “more-than-human” and “post-natural” geographies alongside the language of the posthuman (Lorimer, 2009, pp. 344–346). What is rarely contested, however, is the profound challenge that posthumanism presents to figurations of the *human* in and for human geography.

Among geographers, the key issue has been to overcome the naturalization of the human – what Badmington (see Castree et al., 2004, p. 1348) calls the “obviousness” of humanism’s “common sense” approximations of the human condition – in order to open up new insights into the ways in which the human emerges as a distinctive structure of feeling in specific collocations of affect, practice, discourse, space and power. Dismissing the dyadic separation of nature/culture, object/subject, inside/outside and agent/structure, geographers interested in the posthuman turn have worked to revise classically humanist concerns, such as agency, desire, responsibility, choice and intentionality, in other-than-human terms (see Greenhough, 2014, for a review). This has mainly involved rejecting the humanist premise of an autonomous, pre-cultural, self-identical subject and replacing it with an assemblage, network or field of human and nonhuman associations and encounters (Atkinson, 2013; Duff, 2014).

The relational ontologies this orientation prefigures have been a mainstay of science and technology studies, feminism, assemblage theory and new materialisms. Each has been prominent in the articulation, analysis and discussion of posthumanism within health geography (see Apostolidou and Sturm, 2016; Davies, Day and Williamson, 2004; Greenhough, 2011). While there is not the space here to review the varied contributions each area of inquiry has made to discussions of the posthuman, some indicative remarks should be helpful. Science and technology studies (STS) has arguably made the most significant theoretical and conceptual contribution to discussions of posthumanism within health geography (see Greenhough, 2014), particularly by way of the reception of actor-network-theory (ANT) and the writings of Bruno Latour and John Law (Duff, 2012; Davies, Day and Williamson, 2004). Also important have been feminist critiques of science and technology, including seminal works by Donna Haraway (1991), Elizabeth Grosz (1994), Rosi Braidotti (2002), Karen Barad (2007) and Jane Bennett (2010).

STS and feminist critiques have been important for the ways in which they overturn earlier geographical understandings of the relationships between human subjects, sexual difference, knowledge, technology and power (see Whatmore, 2006, for a review). Rather than treat subjects as masters of passive technological artifacts that remain always under their authority, or as passive end-users of technologies that ultimately determine by their very structure the manner in which they are deployed, STS and feminist scholars treat science and technology as co-constituted effects of networks and associations linking heterogeneous human and nonhuman actors, bodies, spaces and forces (see Barad, 2007; Latour, 2005). This means that technologies

and subjectivities are co-constituted, made or transformed in specific “relational arrays” (Law, 2002, p. 92) in which objects and subjectivities, and the practices, affects and relationalities that bind them, are constantly produced and reproduced.

The challenges these propositions present to conventional, humanist accounts of human subjects, and their experiences of health and illness, are far-ranging. Arguably of greatest significance for health geographers is the way STS and feminist critiques dislodge the human subject from the center of accounts of social change, technological development, progress and politics (Greenhough, 2014; Lorimer, 2009; Whatmore, 2006). Ushering in a key pillar of posthumanist thinking, this work refuses to treat human subjects as the drivers of technological, social and political development, instead seeing this development as an effect of networks of human and nonhuman forces, in which all such forces must be treated “symmetrically” (Latour, 2005, p. 26). This means there can be no *a priori* distinction of subjects and objects and no elevation of active human subjects above passive technological processes. Instead, all forces must be parsed for the contribution they make to the distribution of agencies throughout a socio-technical network. This gesture effectively replaces the humanist subject with a theory of subjectivation and an empirical account of the ways in which subjectivities are expressed, transformed or disrupted in relational arrays linking human and nonhuman forces (Duff, 2014).

Building on generations of scholarship, feminists have focused on the gendered effects of these processes and the ways in which humanist accounts of subjectivity and technology tend to privilege the white male protagonist of technological innovation, marginalizing female, queer and non-white bodies and voices (Barad, 2007; Whatmore, 2006). These critiques of subjectivation have influenced broad swathes of human geography in the last 15 years (Lorimer, 2009), including groundbreaking work in health geography (Andrews, 2014; Atkinson, 2013; Duff, 2014), leading to detailed studies of the role of affects, spaces, events, objects and relations in the lived experience of health and illness (Apostolidou and Sturm, 2016; Davies, Day and Williamson, 2004; Duff, 2012; Dilkes-Frayne and Duff, 2017).

Within geographical discussions of the significance of the critiques of humanism pursued by feminist and STS scholars, assemblage thinking (DeLanda, 2016) and various new materialisms (Coole and Frost, 2010) have offered important refinements and elaborations (see Anderson et al., 2012; Kirsch, 2013; Whatmore, 2006, for reviews). Both approaches abandon the humanist subject in favor of a flatter ontological reckoning of the assemblages and material infrastructures in which subjects emerge (DeLanda, 2016). New materialism is especially attentive to what Jane Bennett (2010, pp. 1–3) calls the “vibrancy” of matter and the ways in which matter itself exerts an active or vital force in the varied networks and assemblages in which it emerges and circulates. Health geographers interested in assemblage thinking and new materialisms have used this work to account for the ways in which capacities, agencies, affects and norms circulate in networks or assemblages of diverse human and nonhuman forces, attaching to human and nonhuman bodies and transforming their variable scope of activity (see Atkinson, 2013; Andrews et al., 2012; Foley, 2011; Greenhough, 2010, for reviews). This research has opened up novel ways of accounting for the positive (or substantive) features of health and well-being, rather than regarding each as registering the simple absence of disorder (Andrews, 2017). In this vein, health geographers have tended to regard posthumanism as a political and ethical project concerned with development and expression of new human/nonhuman hybrids that exceed the fixed social, ontological and political constraints of the humanist subject.

More-than-human health geographies

Among health geographers, the posthuman turn has served to theoretically, conceptually and ontologically ground long-standing interests in the social, spatial and material contours of health and illness (King, 2010). With its focus on the more-than-human aspects of relational life, posthumanism makes human life, subjectivity and identity a function of varied “molecular” or “pre-personal” forces, rather than their cause or origin

(Lorimer, 2009, pp. 347–349). The implications of this approach for thinking about health and illness are profound. For one, overturning the notion of an ahistorical subject brings into question the very idea of health as the normal condition of that subject (Duff, 2014). In doing away with the notion of a bounded, *natural* biological subject, posthumanism also does away with commonsense understandings of the identity and condition of the entity to which *health* and *healthiness* ostensibly attach (Atkinson, 2013; Greenhough, 2011). This is a profound challenge to the humanist ontologies that undergird the health sciences, whereby the human subject is understood to be naturally healthy barring the intervention of agencies, organisms or events external to that subject (King, 2010).

According to these ontologies, humanism installs a series of dualisms at the heart of the health sciences (subject/object, inside/outside, agent/structure, nature/culture) that necessarily remove the subject from its social, affective and material contexts (Fox and Allred, 2016, pp. 131–149). This dualism is at work, for example, in all accounts of the social determinants of health (Marmot et al., 2008), in which social and structural factors such as power, class, income inequality and gender are said to have a causal effect on the health of populations and the individuals and groups that they comprise. According to this logic, structure and agency, object and subject, outside and inside are ontologically and empirically severed, such that one may make claims about the ways nonhuman structural factors mediate the health of human agents. Posthumanism overturns this schism in favor of an ontological flattening of inside and outside, structure and agent, and a novel focus on networks or assemblages of health and illness (Andrews, 2017; Greenhough, 2011).

This ontological flattening, with its associated focus on networks and assemblages, entails a profound reorientation of the aims and methods of theoretical and empirical inquiry in health geography. From its inception, health geography has prioritized analysis of the relationship between people and environments, health and place (Kearns and Moon, 2002). Yet this focus has mainly cohered with related work in public health that treats human agents as ontologically distinct entities that may be analytically separated from their environments and contexts in ways that make the very logic of person–place interactions intelligible (Rock, Degeling and Blue, 2014). In other words, health geographers have mainly endorsed the humanist abstraction of subjects from their contexts, even if they have worked ever more assiduously to complicate the conceptual and empirical terms of this abstraction. Cognate work after the posthuman turn has, however, sought new ways of accounting for the distribution of health and illness in place (Greenhough, 2011; King, 2010; Whatmore, 2006). Rather than investigate how certain environments either prevent or enable the transmission of infectious conditions within a population, or how such environments promote or inhibit the adoption of health–promoting habits and practices, health geography after the posthuman turn has invoked networks or assemblages as the primary unit of analysis (Atkinson, 2013; Duff, 2014). This has involved a shift away from attempts to isolate and determine the specific causal contribution of discrete factors in the incidence and prevalence of a given disorder – whether those factors be pathogens, attitudes, norms or practices – in favor of renewed interest in the emergent and dynamic complexity of health in its social, affective and material becoming.

Such interests suggest that it is not a space, a pathogen, a practice or an attitude that makes an individual human subject ill; rather, illness emerges within an assemblage of human and nonhuman forces (Andrews, 2017; Atkinson, 2013; Foley, 2011; Duff, 2014). In other words, it is the assemblage, rather than any one individual body (human or nonhuman) within it, that becomes ill. This approach extends the logic of earlier attempts to formulate a political ecology of health (King, 2010) by making the ecology (or the assemblage) itself the focus of analysis (Atkinson and Scott, 2015). Although it may be important for clinicians to concentrate on the habits of individual human bodies, health geographers after the posthuman turn have sought to understand the ways health emerges as a social, affective and material expression of human and nonhuman encounters within an assemblage of heterogeneous forces. Health is less an attribute of individual bodies and more a function of encounters immanent to a specific assemblage.

My own research into young people’s experiences of recovery from mental illness has emphasized the varied assemblages in which these experiences unfold (Duff, 2012; 2016). This focus has required me to shift

my gaze from the (human) subject of mental illness to the processes of *becoming well* that recovery partially describes as it advances and retreats within an assemblage of human and nonhuman forces. In this respect, I have refused to treat participants as the locus of their own individual recovery journeys, focusing instead on social, affective and material encounters within an assemblage of forces, and the lines of becoming well that some of these encounters express. This does not mean that I have ignored the role of human agency in recovery, as if individuals who experience mental illness have no impact on their own recovery. Yet it has meant that I have sought to understand human agency as an effect of encounters between forces, not as an innate characteristic of discrete human subjects. I have adopted this perspective mainly because I have wanted to account for the force of the myriad nonhuman bodies that have emerged in the varied recovery processes and contexts I have participated in (see Vannini, 2015).

What I have discovered is that while clinicians and psychiatrists may regard mental illness as an exclusive property of (some) human brains, the process of recovery from mental illness far exceeds this locus, branching out to include a host of human and nonhuman forces. This includes the social, affective and material support of clinicians, carers, friends and family, but also the force of nonhuman objects, factors and settings, such as the guitar that helps to settle feelings of anxiety or boredom, the park bench in the sun that affords views of the city center, or the car that opens up a territory to new encounters and opportunities (Duff, 2016). As each of these human and nonhuman forces is drawn into an assemblage of health, novel lines of becoming emerge, tracing the social, affective and material contours of recovery. Recovery, in this respect, is a function of a broader assemblage of health, rather than a condition of any one body or force within the assemblage.

Emerging lines of inquiry

Health geographers are only beginning to grapple with the challenges presented in and by posthumanism for the study of health and illness and its social, affective, material and discursive contexts. One of the key tasks for pioneers like Atkinson (2013), Andrews (2014) and King (2010) has been to determine what is significant about posthumanism for health geographers and how posthumanism differs from, or coheres with, cognate theoretical and conceptual developments in science studies, continental philosophy, feminisms and social theory. One might reasonably note that health geographers currently enjoy a surfeit of theoretical resources and orientations. Indeed, it is common for scholars to adopt ideas and concepts from diverse theoretical orientations, blurring distinctions between them (see Kearns and Moon, 2002). For this reason, one of the key challenges for health geographers interested in exploring the implications of posthumanism for their discipline may well lie in determining with greater clarity what specific resources may be derived from discussions of posthumanism for the study of health geography and how these resources may be used either in tandem or in creative tension with conceptual and empirical developments in cognate theoretical discussions. Given recent interest among health geographers in assemblage thinking (Anderson et al., 2012; Atkinson, 2013; Dilkes-Frayne and Duff, 2017; Foley, 2011) and affective atmospheres (Bissell, 2010; Boyer, 2012; Conradson, 2005; Duff, 2016), one particularly fruitful line of inquiry may be found in considering how posthumanism might help sharpen and refine the empirical analysis of assemblages and atmospheres by clarifying how human and nonhuman objects, bodies and spaces interact in particular contexts.

One area of research in which this kind of clarification would be especially useful is ongoing analyses of the social and structural determinants of health. The challenge for health geographers interested in the social, economic and political contexts of health and illness is to carefully document the ways distal social and economic forces come to mediate the proximate lived experience of health and illness in specific settings. The challenge is to explain how remote human and nonhuman forces actually work *at a distance* to socially, materially and affectively shape lived experience. As I have argued elsewhere (Duff, 2014), most social-scientific discussions of these matters simply take social determinants like class, income inequality and gender as given – as aspects of a wider social context – and neglect to indicate how these aspects actually come to matter in a given setting (see also Andrews, 2017; Fox and Alldred, 2016). In this way, the social

determinants of health become reified as invariant features of social context, as an indefinable background to the major focus of attention, without ever crystallizing into a coherent, empirically verifiable feature of health and illness as each manifests in a specific time and place.

Posthumanism is uniquely placed to help health geographers overcome this reification of the social determinants of health and to begin, once again, the patient empirical work of tracing how diverse bodies, objects and forces actually come to shape, disrupt and transform experiences of health and illness in place. By helping health geographers conceptually and empirically come to grips with how heterogeneous forces combine in the rhythms and pulses of subjectivity, with the ways in which place itself is made and unmade, and with the ways in which health and illness are expressed in an assemblage of forces, recent discussions of posthumanism might finally help health geographers overcome the false antinomies of inside and outside, subject and object, proximate and distal that continue to dog discussions of the social determinants of health (see also Andrews, 2017; Greenhough, 2010; Whatmore, 2006). Following these lines of inquiry ought to open up new ways of conceptualizing and interrogating the link between health and place, as well as new ways of thinking about the lived experience of health and illness. In pursuing these lines, geographers have begun to assemble the rudiments of a novel posthuman, more-than-human, health geography.

References

- Anderson, B., Kearnes, M., McFarlane, C. and Swanton, D. (2012). On assemblages and geography. *Dialogues in Human Geography*, 2(2), pp. 171–189.
- Andrews, G. J. (2014). Co-creating health's lively, moving frontiers: brief observations on the facets and possibilities of non-representational theory. *Health & Place*, 30, pp. 165–170.
- Andrews, G. J. (2017). "Running hot": placing health in the life and course of the vital city. *Social Science & Medicine*, 175, pp. 209–214.
- Andrews, G. J., Chen, S. and Myers, S. (2014). The "taking place" of health and well-being: towards non-representational theory. *Social Science & Medicine*, 108, pp. 210–222.
- Andrews, G. J., Evans, J., Dunn, J. R. and Masuda, J. (2012). Arguments in health geography: on sub-disciplinary progress, observation, translation. *Geography Compass*, 6, pp. 351–383.
- Apostolidou, S. and Sturm, J. (2016). Weighing posthumanism: fatness and contested humanity. *Social Inclusion*, 4(4), pp. 150–159.
- Atkinson, S. (2013). Beyond components of well-being: the effects of relational and situated assemblage. *Topoi*, 32(2), pp. 137–144.
- Atkinson, S. and Scott, K. (2015). Stable and destabilised states of subjective well-being: dance and movement as catalysts of transition. *Social and Cultural Geography*, 16(1), pp. 75–94.
- Barad, K. (2007). *Meeting the universe halfway: quantum physics and the entanglement of matter and meaning*. Durham, NC: Duke University Press.
- Bennett, J. (2010). *Vibrant matter: a political ecology of things*. Durham, NC: Duke University Press.
- Bissell, D. (2010). Passenger mobilities: affective atmospheres and the sociality of public transport. *Environment and Planning D: Society and Space*, 28(2), pp. 270–289.
- Boyer, K. (2012). Affect, corporeality and the limits of belonging: breastfeeding in public in the contemporary UK. *Health & Place*, 18(3), pp. 552–560.
- Braidotti, R. (2002). *Metamorphoses: towards a materialist theory of becoming*. Cambridge: Polity Press.
- Castree, N. and Nash, C. (2006). Posthuman geographies. *Social & Cultural Geography*, 7(4), pp. 501–504.
- Castree, N., Nash, C., Badmington, N., Braun, B., Murdoch, J. and Whatmore, S. (2004). Mapping posthumanism: an exchange. *Environment and Planning A*, 36(8), pp. 1341–1363.
- Conradson, D. (2005). Landscape, care and the relational self: therapeutic encounters in rural England. *Health & Place*, 11(4), pp. 337–348.
- Coole, D. and Frost, S. (eds.) (2010). *New materialisms: ontology, agency, and politics*. Durham, NC: Duke University Press.
- Davies, G., Day, R. and Williamson, S. (2004). The geography of health knowledge/s. *Health & Place*, 10(4), pp. 293–297.
- DeLanda, M. (2016). *Assemblage theory*. Edinburgh: Edinburgh University Press.
- Dilkes-Frayne, E. and Duff, C. (2017). Tendencies and trajectories: the problem of subjectivity in posthumanist social research. *Environment & Planning D*, 35(5), pp. 951–967.
- Duff, C. (2012). Accounting for context: exploring the role of objects and spaces in the consumption of alcohol and other drugs. *Social and Cultural Geography*, 13(3), pp. 13–26.

- Duff, C. (2014). *Assemblages of health: Deleuze's empiricism and the ethology of life*. Rotterdam: Springer International.
- Duff, C. (2016). Atmospheres of recovery: assemblages of health. *Environment and Planning A*, 48(1), pp. 58–74.
- Foley, R. (2011). Performing health in place: the holy well as a therapeutic assemblage. *Health & Place*, 17(2), pp. 470–479.
- Fox, N. J. and Alldred, P. (2016). *Sociology and the new materialism: theory, research, action*. London: Sage.
- Greenhough, B. (2010). Vitalist geographies: life and the more-than-human. In: B. Anderson, ed., *Taking place: non-representational theories and geography*. Surrey: Ashgate, pp. 37–54.
- Greenhough, B. (2011). Citizenship, care and companionship: approaching geographies of health and bioscience. *Progress in Human Geography*, 35(2), pp. 153–171.
- Greenhough, B. (2014). More-than-human-geographies. In: A. Paasi, N. Castree, R. Lee, S. Radcliffe, R. Kitchin, V. Lawson and C. Withers, eds., *The Sage handbook of progress in human geography*. London: Sage, pp. 94–119.
- Grosz, E. (1994). *Volatile bodies: toward a corporeal feminism*. Indianapolis: Indiana University Press.
- Haraway, D. (1991). *Simians, cyborgs, and women: the reinvention of nature*. New York: Routledge.
- Kearns, R. and Moon, G. (2002). From medical to health geography: novelty, place and theory after a decade of change. *Progress in Human Geography*, 26(5), pp. 605–625.
- King, B. (2010). Political ecologies of health. *Progress in Human Geography*, 34(1), pp. 38–55.
- Kirsch, S. (2013). Cultural geography, materialist turns. *Progress in Human Geography*, 37(3), pp. 433–441.
- Latour, B. (2005). *Reassembling the social: an introduction to actor-network-theory*. Oxford: Oxford University Press.
- Law, J. (2002). Objects and spaces. *Theory, Culture & Society*, 19(5/6), pp. 91–105.
- Lorimer, J. (2009). Posthumanism/posthumanistic geographies. In: R. Kitchin and N. Thrift, eds., *International encyclopedia of human geography*. London: Elsevier, pp. 334–354.
- Marmot, M., Friel, S., Bell, R., Houweling, T. A., Taylor, S. and Commission on Social Determinants of Health. (2008). Closing the gap in a generation: health equity through action on the social determinants of health. *The Lancet*, 372(9650), pp. 1661–1669.
- Panelli, R. (2010). More-than-human social geographies: posthuman and other possibilities. *Progress in Human Geography*, 34(1), pp. 79–87.
- Rock, M. J., Degeling, C. and Blue, G. (2014). Toward stronger theory in critical public health: insights from debates surrounding posthumanism. *Critical Public Health*, 24(3), pp. 337–348.
- Vannini, P. (ed.) (2015). *Non-representational methodologies: re-envisioning research*. London: Routledge.
- Whatmore, S. (2006). Materialist returns: practising cultural geography in and for a more-than-human world. *Cultural Geographies*, 13(4), pp. 600–609.