

Becoming urban: sitework from a moss-eye view

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Abstract. Discussing an urban walking event, “Moss-eye view”, held in the City of London, this paper considers the ways in which cities may be understood from the view of more- than-human processes and incorporations. The walk explores how distinct insights emerge into ways of ‘becoming urban’ by attending to organisms, environments, and forms of sitework that are not typically foregrounded in the usual economies of the City of London. Moss incorporates the material effects of urban ecologies across time and space, and thus forms a process of bio-indication in the city, capturing pollutants and making resources available for other organisms. Mosses in the city might be studied as sentient, more-than-human exchangers of and participants in urban energies, and as in-between and peripheral organisms that connect up sites by working across material, affective, political, socionatural, and imaginative registers. It is argued that the “Moss-eye view” walking event is a form of research that opens up infra-urban practices for understanding cities through alternative associations and incorporations of urban life.

Keywords: becoming urban, urban ecologies, walking, sitework, practical ontologies, incorporation

Practicing urban incorporations

“Next time you walk through a forest, look down. A city lies under your feet.”

Tsing (2011, page 5)

In what ways are cities not already given or established forms, but instead composed of shifting situations, materialities, and participants that are always *becoming urban*? The epigraph that begins this paper suggests that—with a change of perspective—the relationships that might be described as urban can be found in unexpected places. Yet this is not to say that cities may be found wherever there is a complexity of relationships, but rather that cities and their inhabitants might begin to be described through more processual associations and *incorporations*.⁽¹⁾ This question of how cities are continually becoming urban stems from several theoretical deliberations that push at the edges of what is normally assumed to characterize urban ecologies or urban dwellers (Hinchliffe and Whatmore, 2006); that relocate the sites, bodies, and processes of spatial participation or sitework (Woodward et al, 2010); and that suggest *becoming* may be a more apt way to understand subjects as they are incorporated into and expanded through ecological communities (Braidotti, 2006).

⁽¹⁾ While ‘incorporations’ is a term developed particularly in relation to the economies and ecologies of cities in this paper, and is a direct response to the theme of *corporation* for TINAG 2010, ‘incorporations’ is also a term that has previously been discussed in relation to life. In the edited collection *Incorporations*, Cray and Kwinter note, “every thing and every individual emerges, evolves and passes away by incorporating and being incorporated into, other emerging, evolving or disintegrating structures that surround and suffuse it” (1992, page 15). I have discussed incorporation in a waste-related modality in “Sink: the dirt of systems” (Gabrys, 2009).

This paper takes up these insights in relation to an urban walking event, “Moss-eye view”, which staged an itinerant investigation into urban ecologies in the City of London. The walking event, which I developed during the This Is Not a Gateway (TINAG) emerging urbanism festival, October 2010, investigated processes whereby more-than-humans become urban and the new collectives they form by focusing on the prevalence of bryophytes, particularly mosses (figure 1), in the Square Mile.

Through specific site studies and encounters, the moss walk engaged with the ways in which mosses are sentient, more-than-human exchangers and participants in urban energies. But this is not just a form of urban natural history. Mosses are in-between and peripheral organisms that work across material, affective, political, socionatural, and imaginative registers of sites. In this sense, mosses become urban in multiple and distinct ways. They incorporate the materialities of London by responding to and serving as indicators of air or water pollution levels. They may also have varying distributions depending upon temperature and water availability, as well as urban development patterns and climate change. Their spores may make far-flung journeys or persist in sites to which they are particularly well adapted. Mosses may signal sites of inactivity and decay, of neglect or vegetal invasion. They inhabit urban ecologies analogous to cliffs or streambeds, or display a unique capacity for growing within urban-specific forms, including Astroturf and tarmac (Porley and Hodgetts, 2005, pages 124–125).

Bryophytes are distinct expressions and indicators of urban ecologies. With moss, detections, speculations, and projections of urban incorporations may be made. Incorporation is not just a material effect, in this sense, but also a register of urban process and experience. Incorporation, as will be discussed below, is at once an attempt to think through other types of ‘corporations’ in the City of London, but also a technique for registering the processes and sitework in which nonhumans are embedded. Moss, as an apparently valueless and marginal organism, provokes different encounters with the incorporative processes of the City. Incorporation is a term that asks what are the material and collective expressions of



Figure 1. Moss.

urban bodies and collectives that are always in formation. In what ways is it possible to 'see' and experience incorporation in process? How do different forms of urbanism emerge through these incorporative processes?

In the City of London, an urban district ostensibly devoted to the running of finance, walking the Square Mile in search of mosses during a busy Friday lunchtime is explored as a collective practice for engaging with concrete urban ecologies. In what ways does this mobile and situated method draw attention to expanded urban communities? Or, in other words, in what ways does a rather literal practice of "botanizing on the asphalt" (Benjamin, 1999, page 372) reshape understandings of what constitutes "cosmopolitan bodies" (Clark, 2000)? The moss walk is a forum for asking: How might one overlooked yet pervasive group of nonhuman organisms provide insights into how specific urban incorporations take place? What new forms of urbanism emerge by studying these incorporations? And how might these alternative perspectives suggest possibilities for practicing new urban incorporations and ways of becoming urban?

London is a city with a long and detailed history of walking practices, guides, and narratives. From wandering and rambling to loitering and sauntering, walking is often a practice for accessing overlooked parts of the city, and for plumbing the depths of urban inhabitations that are well outside the official narratives of city life (Mabey, 1973; Sinclair, 2003 [2002]). The moss walk draws on these resonant practices of walking in London to develop a material enactment and engagement with urban ecologies. Working from within a practical ontology, the paper revisits the moss walk itinerary, and brings together moss identification and lore discussed and encountered during the event, and works through theoretical resonances related to more-than-human urbanisms that informed the event and are discussed in more detail here. This paper develops a mode of site-writing that moves in space and time with the walk while digressing along the way.

In the course of the walk an expert bryologist contributed to the identification and discussion of bryophytes and other plant life observed en route, and the participants on the walk similarly contributed their observations and knowledge of both the organisms and the places traversed. The walk did not have a singular narrative, but rather followed an itinerary where each moss-stop became a site for exploration, observation, discussion, and speculation. In this sense, this engagement with bryophytes in the City of London is not a process of 'following' scientists in the field. Anna Tsing suggests that a new type of "science studies" is emerging that engages with scientific practice as a way to mobilize publics, engage in philosophical speculation, and to "trespass across the boundaries between the natural sciences and the humanities" (2011, page 19; see also Gabrys and Yusoff, 2012). This presents a much different way of engaging with scientific practice and "citizen science"—not necessarily as an ethnographic object of study (Ellis and Waterton, 2005), but rather as a multiply constituted, concrete, and practical ontology that seeks to contribute to the expanded development of new forms of environmental engagement and narrative.

The processes in which bryophytes are embedded are not always readily available to moes of 'engagement', however, and these relations are not necessarily present within or seemingly relevant to human endeavors; indeed, they are part of the many urban ecological transactions that take place not in direct or proportional relation to humans, but in an 'asymmetrical' way (Clark, 2011; Hird, 2009). The moss-eye views that emerge in this study are not simple instances of relational correspondence or integration with nonhumans, but rather signal the multiple and different urbanisms that unfold often beyond human points of reference. In this way, sitework as the active processing of ecological community is not just about holding sites together, but also about setting differences to work.

More-than-human urban communities

The moss walk begins at Hanbury Hall, a well-known site of community gatherings and political activity. We linger on the crowded pavement, this starting point a concrete and brick assemblage of surfaces that reveals few signs of moss-life, except for bits of green making use of the microhabitat of the building's drain pipe. Given the barest of opportunity, common mosses will turn up in sites such as these. And yet, in discussions of urban communities, which may include a diverse range of participants, even these expanded renderings of urban life often exclude more-than-humans from urban communities. From this gathering site of urban community activity in east London, the walk participants set out to investigate the possibilities for encountering the more-than-human life of mosses in the city, and in the process to consider how to describe cities as incorporations of urban dwellers, materialities, politics, and ecologies.

Leaving Hanbury Hall, we travel along the eastern edge of the City of London, walking across Commercial Road along Lamb Street to the Elder Gardens public-private gated park space adjacent to Spitalfields Market. Upon entering the gateway of the gardens, we observe moss blanketing the ground. In and among the paving stones in Elder Gardens, we identify lines and clumps of the common wall moss, *Tortula muralis*, which form an inverse architecture to the concrete pavement along which we walk. Tracing the lines of the pavement, moss draws attention to the openings within these built urban architectures, and the infra-urban forces that transform their assumed solidity. The usual urban surfaces acquire a different texture and temporality here, where organisms have taken root, attempting to anchor or open up the urban spaces that we traverse.

Moss is adjacent to and contiguous with a whole range of urban forms. It quietly if pervasively inhabits cities and coexists with urban dwellers of all types. In this space, different modes of 'living together' become apparent, which begin to recast understandings of cities (Hinchliffe and Whatmore, 2006, page 134), since by living together new encounters and incorporations come into view. How do these mosses detect these openings and carve out a living in such a narrow zone of urban ecological opportunity? How do mossy organisms differently inhabit these urban architectures?

This living together and alongside one another is the subject of attention within multispecies analyses that address the intersections and relations, rather than the hard boundaries, of organisms (Haraway, 2007; Kirksey and Helmreich, 2010; Matsutake Worlds Research Group, 2009). By living together, however, more-than-humans do not become interchangeable with the human, but rather challenge the ways in which humans are understood as discrete entities. Whether shoring us up or predating our short if furious planetary transformations, a whole host of organisms works in and through dynamic environments with us. In Elder Gardens a pocket park unfolds not as an architected space, but as a contingent urbanism that is differently articulated and even rearranged through other organisms.

Other modes of 'becoming urban' begin to emerge within the habits and habitats of this overlooked organism. "Ecologies becoming urban, and cities becoming ecological", as Hinchliffe and Whatmore suggest, is a process whereby more-than-human participants and ecologies emerge in urban locations as distinct and situated material-political entities (2006, page 128). While 'nature' may appear to be 'returning' to the city, following the relative improvement of air and water quality, not to mention increasing encroachment or urbanized development upon formerly nonurbanized lands, this return is not simply a matter of mosses and wrens and foxes now proliferating in the spaces between buildings. Nonhumans do not simply *return* to the city, but rather *become urban* as part of the urban political ecologies in which they are situated and to which they contribute (Gandy, 2002; Heynen et al, 2006; Kaika, 2005; Swyngedouw, 2006). Organisms may be recognized as distinctly urban in their

inhabitations, even having more in common with their urban cross-species neighbors than the same species type in a nonurban setting (Douglas et al, 2010; Hinchliffe et al, 2005; Wolch, 2002). At the same time, urban nature is a conjugation of human and more-than-human life that exists in distinct relation to the politics, productions, and management of life (Braun, 2005; Castree, 2003). At the intersection of plans for sustainable cities, development schemes, nonhuman migrations, biodiversity policies, and environmental rhetoric, distinct urban ecological processes emerge.

Becoming urban involves processes that are expressed through specific material, political, and collective entanglements—or incorporations. Becoming urban then also involves rethinking forms of becoming through discussions of sitework and ecological views of subjects. This sitework, as I develop it here, is informed by Keith Woodward, John Paul Jones, and Sallie Marston's discussion of the "work" of sites as consisting not just of given arrangements, but of actively laboring bodies that "participate in the production of the fields of force through which they aggregate" (2010, page 273). Here is a way of understanding sites as immanent and formed through situated practices that traverse and transform human and more-than-human materialities.

The settlements and incorporations of sites occur through the work of bodies, but may not always be readily evident. Changing the perspective of encounter may make these incorporations more present—for these authors, the fly-eye view contrasts with the eagle-eye view. In this walk, a moss-eye view offers up distinct encounters with forms of becoming urban in the City of London. A moss-eye view does not simply signal a visual encounter with the city, whether from below or from a micrological angle; nor does it focus on an individual species, but instead works toward new understandings of how collective urban embodiments unfold within and through more-than-human processes.

From these altered perspectives, sites could be described through processes of "becoming with" others, as Donna Haraway has suggested (2007, pages 4–5). Sitework gives rise to new aggregations—and these aggregations may also, as Rosi Braidotti indicates, recast our view of subjects as "non-unitary" and constituted through "ecologies of belonging" (2006, pages 11, 37; Deleuze and Guattari, 1987 [1980]). For Braidotti such incorporations point toward new approaches to a subject as "environmentally bound" because it is "an embodied entity [that] feeds upon, incorporates and transform its (natural, social, human, or technological) environment constantly" (page 41). The environmental incorporations that take place here span across human and nonhuman subjects. The sites, sitework, and subjects that emerge, moreover, could be seen as distinct forms of becoming urban. From expressions of possible genetic differentiation across urban and rural blackbirds, to aggregations of mosses, insects, and vascular plants, specific urban embodiments emerge that are at once material and relational expressions of urban sites, as well as ongoing formations and transformations of those sites.

Becoming urban, in these shared accounts, is not simply a process of urbanization—the usual use of 'becoming urban' as a term—where urban institutions and economies are seen to transform 'nature' into a (managed) resource. In this rendering, ecologies become urban in the ways they are extracted, distributed, and transformed [an analysis often brought to bear in research on urban political ecology (for instance, Smith, 1984)]. But another version of urbanization emerges through these writings that points to the ways in which new urban subjects, bodies, spatialities, and temporalities emerge as distinct and shared forms of life. Cities are not fixed a priori agents acting on their urban inhabitants, but rather are sites of continually articulated ecological community. Urbanity, what constitutes cities, also shifts in this context, and this shift can come about through new conjugations of urban subjects within more-than-human communities. How and where the political is located shifts in this

investigation into becoming urban, since from a moss-eye view urban ecologies may be focused not just on questions about the politics of resources, for example, but also concerned with the ongoing articulations of urban subjects and ecological communities—and the possibilities for urban becomings to take place (Stengers, 2005; 2010).

Mossy collaborations

Mosses are a part of these multispecies communities, inhabiting the dark edges and crevices of so many urban spaces. While our walk begins by identifying the most common moss, *Tortula muralis*, we encounter forty-two bryophytes altogether, including many mosses and liverworts that are considered weedy or common, but which are well adapted to the urban contexts of hard surfaces, polluted sites, and disturbed ground. What they seemingly lack in usefulness, they make up for in prevalence. Over 60% of total flora by number in the UK consists of bryophytes, including liverworts, hornworts, and mosses. There are 1055 bryophytes in the British Isles, which includes 754 mosses (Porley and Hodgetts, 2005, page ix). There is an abundance of bryophytes in the British Isles which is often referred to as a ‘green and mossy land’, due to the humid, oceanic climate (page 1). Even in the center of the City of London, a generous number of mosses can be found in and around gardens and squares.

On this urban edge of a newly redeveloped part of east London, mosses are evident as pioneer and persistent organisms, able to exist in the hard margins of urban space. This quality that we observe while walking in the center of London could also be attributed to the once-transitional and ancient characteristics of this organism. Evidence from fossilized bryophytes suggests these may have been the first plants to make the transition from water to land approximately 350 million years ago, shifting from algae to bryophytes via freshwater pools, since liverworts and mosses typically inhabit the fluctuating littoral margins of freshwater bodies (pages 40–41). While they are dependent upon moisture for reproduction, a reminder of their watery origins, they are also tolerant of dehydration and in some cases complete desiccation. Because they are able to withstand long periods of time without water, losing moisture rapidly and suspending photosynthesis when no water is present, they are highly adaptable, yet slow growing. They may suspend their metabolisms, for instance in the summer, and begin reproduction in autumn and winter when moisture is more abundant.

Urban mosses may disappear from view, receding into lines within concrete and brickwork in summer, only to return as a sodden green surface when the rains resume. On this day of the walking event, the recent rains have turned the mosses green. These traces of green that we identify are temporary fluctuations soon to return to a dried and brown state of dormancy. Mosses articulate alternative temporalities within urban spaces, which span from daily and seasonal variability, to the condensed earth histories of this vegetation migrating from aquatic to terrestrial inhabitations.

In these moments of detecting mosses in the urban margins, the wavering qualities of vegetation also become evident as blurring the boundaries of organism, community, and environment (Head and Atchison 2009, page 237; Hitchings and Jones 2004, page 5). Moss is less legible as an individual organism, but instead grows in dense clumps made up of multiple entities. These communities are able to form or be sustained through time because of the distinct opportunities, minerals, resources, clearings, or moisture that fluctuate within their environmental surroundings (Kimmerer, 2003).

The entangled and urbanized forms of more-than-human life might then be seen as ‘collaborators’ (Matsutake Worlds Research Group, 2009) in making urban ecologies—and in informing urban research and practice. Yet the collaborative relations made possible from this moss-eye view, something the walk participants encounter but most urban dwellers likely pass by, are not within an order of immediate recognition or relevance, but rather are captured through the transitions undertaken by this species within more extensive temporalities and

alternative material exchanges, from migrations made millions of years ago to nutrient processing within microscopic and unfamiliar corporealities.

Moss-eye view and the 'green' city

Moving from Elders Gardens with its common but migrating and ancient mosses, we walk from this eastern edge of the City of London through Spitalfields Market, past Petticoat Lane toward Cutlers Gardens at Devonshire Square. This edge of the city is a relatively nonmossy space, in part due to the limited number of open spaces, whether public or private, and in part due to the highly managed and private ownership over many of the few open spaces, which are typically populated with monocultural arrangements of plant life. At Cutlers Gardens we catch our first glance of a liverwort (figure 2)—a member of the bryophyte family—proliferating in the soil edge between the storm drain and the concrete pavement.

The practice for viewing bryophytes can at times be a somewhat incisive matter, as the bryologist wields his pocketknife and surgically removes a small sample of liverwort from the storm drain. With hand lenses of 10× and 20× magnification, we learn the process of holding the lens against our faces while bringing closer the specimen to be examined. From this fine-grained if nearly myopic angle of vision, the waxy water-loving organism becomes a life-sized lily pad under closer scrutiny, a speckled landscape of pores and folds-within-folds of leaf-like bases and cup-shaped receptacles. *Marchantia polymorpha* subsp. *ruderalis*, this common liverwort is often regarded as a weed, as it typically grows in disturbed sites and in gardens (Atherton et al, 2010).

The identification of bryophytes frequently requires this closer viewing in order to bring their distinct features into focus. The city also shifts in its angle of encounter from this magnified perspective. In this moment of walking through the city at lunchtime, when the procurement of sandwiches and cigarettes and coffee generates a set of addled and frantic routines, the liverwort viewed at close range opens up other temporalities that unfold beyond the typical sets of urban practices that take place in urban greens at lunchtime. As this common liverwort is a descendant of the earliest plants to make the transition from water to land, over 350 million years of plant life condense in this minor zone of activity. Here, in its inhabitation of the storm drains, this congregation of liverworts springs up as



Figure 2. Liverwort.

dense green–purple mats of thalli and ‘splash cups’ that anchor and absorb water at the littoral margins and transition zones between urban runoff and underground sewerage. Its reproductive gemmae may disperse through the force of rain here into the storm sewers, where any number of bryophyte spores may travel through these watery passageways for dispersal and reproduction, since bryophytes depend largely upon water to reproduce. The temporalities and pathways of the City of London are differently articulated through the liverworts’ inhabitations, as this organism transposes its habits to these urban architectures as ‘analogous’ ecologies of once-ancient circumstance (Lundholm and Richardson, 2010).

Infra-urban practices

In this moss-eye view of walking and encountering urban space under the radar, the imperfect overlapping of these multispecies sensory worlds comes into focus, so that urban ecologies sensed from below also open up different possibilities for thinking and experiencing urban life. This moss-eye view investigation is informed in some ways by the architectural perspectives that are standard fare in drawing classes: the bird’s-eye view from above, or the worm’s-eye view from below, each figuratively offering a different view on space. While these perspectives may seem to suggest simply contrasting vantage points, in other writings the politics of viewing from above and below are seen to open up possibilities for alternative spatial practices. The often-discussed writings of Michel de Certeau focus on these possibilities, where he counterposes the aerial view of New York City from the World Trade Center, and contrasts this with the articulated experience of walking in the city from below—the latter a space of political possibility (1984 [1980], pages 91–93).

Yet seeing from below, as the fly-eye view reminds, is not just or necessarily a matter of scale, but also of kind (Deleuze and Guattari, 1987 [1980]; Woodward et al, 2010). Viewing from below, with this particular set of organisms, we then turn to the ways in which new urban associations make possible alternative urban practices of viewing together with overlooked nonhumans. This is not a way of saying mosses have eyes, but rather that they are expressive of and responsive to their urban circumstances (cf Whitehead, 1966 [1938]). The urban locatedness of these encounters describes a key aspect of mosses’ formation, since our way of glancing and studying mosses attends to and approaches the fine-grained vegetation that lines the joins and depressions within hard surfaces. We use lenses to crouch down and bring our view of London within the magnified view of mosses and liverworts. Viewing here is a composite practice, taking place across bodies, spaces, and technologies. No longer a matter of viewing from high or low, instead in the process of viewing mosses new practices of receptive and situated vision emerge. The practices of viewing here are embodied and emplaced (Ellis, 2011; Haraway, 2007; Hayward, 2010), but also incomplete and speculative, opening onto the perceptive capabilities of other urban organisms.

From corporation to incorporation

As we pass through Cutlers Gardens, I note that Devonshire Square is the site of various ‘green’ or sustainability initiatives, including the placement of a stuffed polar bear in the main lobby as a way to remind office workers of the relationship of their environmental practices to the imminent if distant destruction of habitats and species. Here, the viewing of a relatively abstract if completely inert charismatic megafauna stands in for the environmental practices and more-than-humans to which we are meant to have a sense of accountability. And yet nearer at hand are any number of less charismatic organisms that already populate our cities. We live alongside a whole host of other forms of urban life, and we rely on more extended networks of urban ecologies that influence the spatial processes of the City of London—and the Arctic. The polar bear might be seen here as a detached entity, a symbol of environmental degradation and abstract obligation. Would a renewed attention and receptiveness to the

multiple incorporations of urban life all around us provoke other types of environmental relationships through our encounters with more-than-human urban dwellers?

The TINAG 2010 urbanism event held on the eastern edge of the City of London had as its theme the 'corporation', focusing especially on those spaces that might be seen as central to the financial crisis of 2008-onwards. As a way of working through the complex definitions of the corporation, the "Moss-eye view" walk explores expanded approaches to incorporation in relation to the financial and historic center of London. If corporations are entities that are formed through processes of incorporation, then what other corporations might emerge through different engagements and participants brought into urban incorporations? Karen Bakker has suggested that the "nature" that analyses of "neoliberal" economies take into account is often informed by distinct categorizations of more-than-humans that render them profitable. In this respect, an analysis of the role of the corporation in the city is already an analysis of human and more-than-human modes of incorporation—and a designation of which "co-constitutive" participants in urban life are seen to be most relevant to these economies (Bakker, 2010, page 717; Braun, 2008, page 668).

A multispecies view of moss, however, does not immediately reveal the ways in which these organisms may be 'coconstitutive', since bryophytes do not obviously provide humans with obvious material or resources through which coconstitution may be articulated. The hazy verdure and perpetual green that is present but often overlooked in peripheral urban space is typically composed of mosses and assorted weeds. Bryophytes are not of apparent relevance, but they are part of the processes whereby other urban incorporations become possible. Carpeting cities as well as exurban landscapes, moss accumulates and exchanges materials for ongoing urban transformations, since invertebrates inhabit moss and birds make nests with it; other plants take root within the substrates, water, and nutrients that mosses gather (Porley and Hodgetts, 2005, page 30). The most prevalent flora in the UK is without apparent relevance to its economies—and may not even neatly fit within an ecosystem services agenda (Yusoff, 2011). But other exchanges, economies, and incorporations emerge through these urban ecologies that exceed the 'nature' that might usually be visible within the corporation of London.

Because the interlinking processes of ecologies and economies are so critical to the ways in which urban natures are understood, new insights into cities may emerge through an attention to urban economies and ecologies as they intersect. Braidotti expresses an interest in "non-profit" ecological communities and subjects, which she suggests allows for more "sustainable processes of transformation" (2006, page 110). If corporations might be understood as transformative bodies that undertake processes of incorporation, how might alternative approaches to incorporation point to new processes of urban formation? Becoming is a political and ethical focus in this sense, since the processes whereby urban natures emerge are connected with vested interests in mobilizing distinct types of natures. The making of urban subjects occurs through these neoliberal economies: what if we were to take into 'account' more-than-human subjects that are outside the usual for-profit economies, but instead are located in more 'nonprofit' relations: what other subject formations and ecological communities might emerge, and what forms of sitework would make this type of becoming urban possible?

An example of how natures are made relevant through neoliberal discourses can be found with green cities projects. London is frequently referred to as one of the 'greenest' cities in Europe, yet the green qualities of cities are also imagined and mobilized where green becomes synonymous with forms of sustainability that may undergird new development projects, while also remaking the processes, services, and layout of urban life (Wolch, 2007). Within these identifiable versions of 'green' there are also multiple other green organisms, however,

that are not seen as properly constitutive of the green city. Mosses (and other bryophytes) make evident other green cities that can be found within London, and how they might emerge through alternative human and more-than-human encounters

While green and sustainable cities are often deployed as flat concepts that serve to repackage familiar urban development processes, a more textured or moss-eye view of what constitutes a green city can bring to attention the distinct inhabitations of nonhumans, as well as the complex communities in which they are embedded. The green of moss brings into play processes of photosynthesis and water availability, and may signal lower levels of pollution or distinct types of substrate. In this way, sustainability might be understood through what Braidotti calls a “regrounding” of subjects that articulates renewed senses of interconnection, incorporation, and ecological belonging (2006, page 137). A green city may be an abstract concept, but a city inhabited from a moss-eye view demonstrates these interconnections and incorporations in detail. This other form of ‘nonprofit’ sustainability might also provide new understandings of the generative qualities of urban incorporations. The multiple urbanisms that emerge from these more-than-human inhabitations and incorporations are not just maps of fixed relations. They are also sites of creative transformations—and indications of new ways of becoming urban (Braidotti, 2006; Braun, 2008, page 670).

As a way to explore these generative forms of urbanism, the moss walk then articulates one of a number of unofficial and nonprofit green cities that might crop up in distinction to these more overarching ecodevelopment initiatives. Much of the finer-grain green of London is not just composed of fescues and plane trees and ivy, but also ragwort, thistles, and mosses. Mosses are a signature species in the United Kingdom, prevalent if typically overlooked organisms, which are not mobilized (within the green city or otherwise) as resources or food or even organisms to protect within biodiversity policies. Could there be a ‘green city’ of technocratic imaginings, and other ‘green cities’ of overlooked life forms? Cities may already be *green*, but not necessarily in a way that facilitates further urban development.

Biodiverse cities

From Cutlers Gardens we make our way across the busy thoroughfare of Bishopsgate. The automotive exhaust that settles into this urban canyon is a reminder that up until the 1960s, more-than-human varieties of urban life were relatively limited in central London, largely due to air pollution in the form of sulfur dioxide from burning brown coal. In the 1945 *London Natural History* guide, the author RSR Fitter comments on the relative dearth of flora and fauna to be found in London: one might encounter the cockroach and the pigeon, the blackbird and the raven, the sparrow and assorted weeds, but these figures of urban wildlife were often the hardiest and most tolerant species, able to tough it out in extreme urban environments.

The City of London *Biodiversity Action Plan* and *Habitat Action Plan* focus now on preserving habitats and species that are unique either for their return to the city, or for their threatened status (no date).⁽²⁾ These include the black redstart, the peregrine falcon, and the house sparrow, for which the City government seeks to create improved habitat in the Square Mile. Here is one approach to biodiversity, where significant organisms are identified and ideal habitats proposed for their ongoing urban habitations. Still other forms of urban inhabitation might be seen to take place through the emergence of urban “biological communities” that are distinct from “the staple of conservation biology” (Hinchliffe and Whatmore, 2006, page 123). Cities become important sites for studying urban ecologies where not just rare or

⁽²⁾ When this walk was initially held, the 2002 City of London Biodiversity Action Plan emphasized key species. The previous versions of the BAP and HAP have been replaced online by 2010–15 plans. The current biodiversity plans now emphasize habitat in addition to ‘flagship’ species.

singular species might be designated for protection, but also where specific urban ecologies become evident through their singular and situated processes and incorporations.

At this moment when many species are under stress and reaching extinction, mosses are at a high point in their diversity. While their range is shifting, potentially due to climate change, mosses are proliferating and number at least 25 000 species worldwide (Porley and Hodgetts, 2005, pages 11, 98–103). Part of the reason for mosses' flourishing is their ability to withstand extreme and inhospitable landscapes. Not only do many species of moss inhabit potentially unaccommodating urban environments, they are able to grow on the edges of geothermic pools, in icy Arctic landscapes, in sites with metal and salt contamination, and directly on rock surfaces from maritime to alpine zones (page 31). Bryophytes play an important role in substrate stabilization, trapping sediments and water, and nutrient cycling. They form a "biotic crust", which aids in the "establishment of vascular plant vegetation" (page 3). Mosses make nutrients available that allow other plants to take root, so that the becoming urban of other vegetation depends in part upon the work of mosses, which colonize the thin and hard margins of urban spaces.

Within the context of green cities and biodiversity, less desirable species are often weeded out or extirpated. Moss is typically a managed form of vegetation, and there are moss-removal programs, whether by mechanical or chemical means, to rid spaces of what is seen to be an invasive or undesirable organism. When considering for which species viable habitat exists or is made, there is a question about the way in which life is managed in the city. What does it mean to green the city, to invite life into the city and manage it? How do these environmental agents occupy the city—across ecologies and edge habitats—regardless of or in relation to the plans laid for them? In many ways, moss is a wayward organism, which does not occupy an idealized form of managed life even within the biodiverse city, but is another form of green life that we are provoked to take account of when we encounter the city from this moss-eye view. Here is a group of organisms not singled out for protection, but which make numerous material connections in cities.

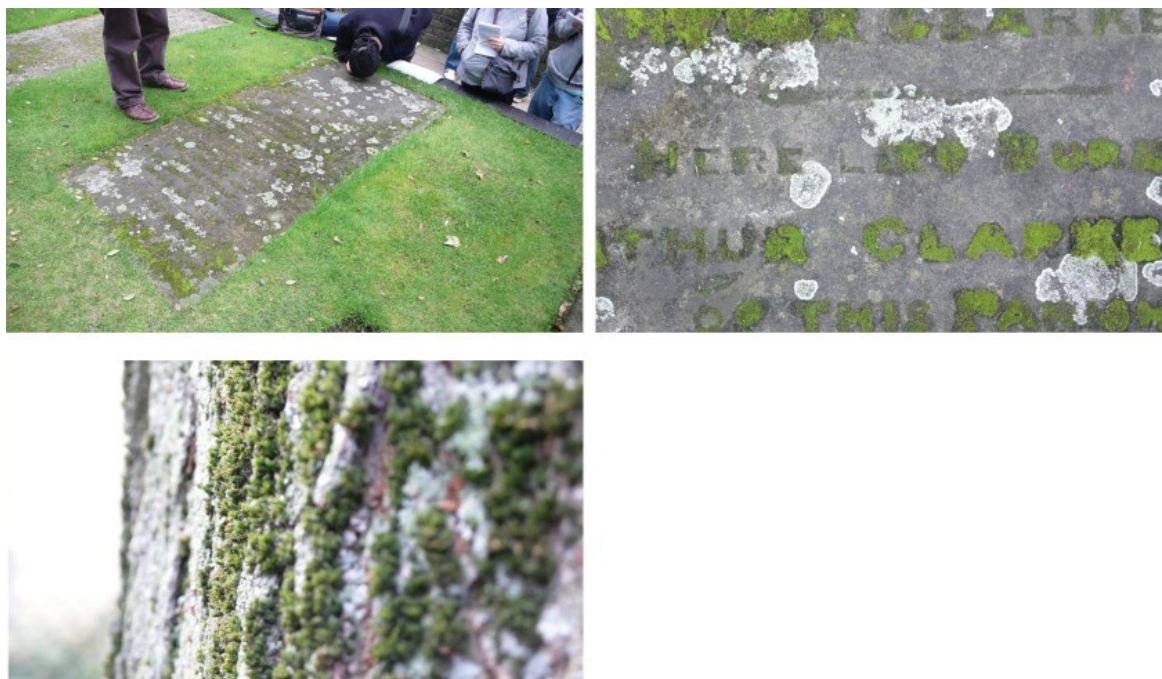


Figure 3. St Botolph.

Bio-indicating cities

Moving across Bishopsgate and Liverpool Street to St Botolph without Bishopsgate (figure 3), we approach the nearby entrance of the church hall at Bishopsgate. We study the 18th-century gravesite for Arthur James Clarke, which bears a depressed inscription carved into a porous granite slab. This horizontal marker has collected moisture in its depressions, making the perfect home for mosses. Here, *Tortula muralis* has carefully followed the line of letters, transforming a gray memorial into a furry green alphabet of partial legibility, and reminding us of the fluctuating green lines at Elders Gardens at the start of our walk. In this vegetative language we are also reminded of the role that mosses play as tracers of another sort, since they act as bio-indicators of environments. Sharing this quality with lichens, which are typically even more sensitive to air pollution, mosses sense and store the effects of air and water pollution, nutrient availability, acidification, and other site processes.

From the green letters of this gravesite, we then spot a tree covered with mosses, a sign of mosses that have returned to the city with the abeyance of some types of air pollution. The mosses here, higher up in the crook of the tree, appear to be *Orthotrichum affine*, or Wood Bristle-moss, a common moss that underwent local extinction as an epiphyte (or a plant that grows on another plant) due to air pollution, and is recolonizing trees again in central London. Since this moss, similar to all mosses, does not have a root structure but rather grows through hair-thin rhizoids, it obtains its nutrients not primarily from the tree but from water and air gathered across its surface area. For this reason, the Wood Bristle-moss absorbs a high number of substances that may be present in the air or water, from carbon dioxide to heavy metals.

Operating at the “land–air interface” and contributing to water and nutrient cycling, this moss is an organism that responds rapidly to environmental changes (Porley and Hodgetts, 2005, page 23). While mosses are highly adaptive to and expressive of the contexts in which they grow, such mosses are often intolerant of the more extreme aspects of urban environments. The presence and health of mosses, and in particular their growth on trees, can indicate lesser degrees of certain types of air pollution, as the leaves of mosses are thin and vulnerable to contact with pollutants (Duckett and Pressel, 2009; Kimmerer, 2003, pages 97–99). The disappearance of mosses from urban centers has previously been correlated with the rise of industrialization, or with increasing levels of air pollution not just due to industry but also to automobile traffic. Located near the central and busy Liverpool Station, this Wood Bristle-moss processes the exhaust of cabs and buses, and captures particulate matter and nitrogen oxides. The atmospheric deposition of many substances can even be monitored through the moss, which retains traces of these elements. In some cities in Europe mosses are suspended in cloth bags over freeway overpasses and later harvested in order to undertake mineral analysis and map air pollution levels at these sites (Norris, 2003, page 6).

Urban environmental health can then be registered through moss. This Wood Bristle-moss demonstrates the particular relationship moss has to sites and time, since it is an accumulator, collector and exchanger of minerals and pollutants in sites that may vary according to the ongoing processes of cities. Moss incorporates the material effects of urban ecologies, across time and space, so that the becoming urban of London settles into a much different register through the more extended time of vegetation, which stores, processes and makes available distinct forms of energy (Grosz, 2004, pages 217–220).

Anticipatory organisms

Moving from the moss-draped tree that is evidence of certain types of air pollution that appear to have abated from the sulfurous years prior to the 1956 Clean Air Act, we walk down Old Broad Street, to Threadneedle Street, crossing Princes Street past the Bank of England. From here it is possible to consider this other, temporal and potentially allegorical

dimension of moss, an organism that collects and sediments past events but also anticipates future resources, as well as decay and sedimentation. In this respect, moss appears to be an anticipatory organism, ready to coat and carpet the debris of human industry. In fact, an image of the Bank of England in ruins seems to have been a formative part of its architectural construction, when the former Bank of England designed by John Soane was developed with accompanying drawings by Joseph Gandy that make the Bank of England resemble a vegetated Pompeii, a ruined site in the center of the city. The appearance of vegetation overgrowing architectures stimulates and provokes imaginings of the city in ruins. Indeed, multiple forms of vegetation flourished in the bombsites of postwar London. Moss in particular has a relationship to ruins, covering them and indicating slow time in places that have become still and overgrown, inscribing the accumulation of time in place. This is a different type of green city, a city of remnants and remainders, of wildlife and unmanaged green.

Passing the Bank of China adjacent to the Bank of England, we return to a consideration of the corporation and forms of lively incorporation in the city. Corporations are not just discrete entities, organizations, sites, buildings, brands, products, or services, but are also a set of interdependent spatial relations that may become explicitly evident or available for study in these concentrated urban districts. Of course, the economic power relations of the City of London are congealed into urban form—they have their materiality—but the solid edifices of corporations also have their relational fissures, gaps, and connective sinews that are intertwined with these architectures. In contrast to those allegorical friezes that adorn the pediments of grand City buildings, whether gargoyles or lions or ladies of Justice, the “Moss-eye view” walk nominates an unofficial allegorical figure that can be found throughout those less prominent but by no means less extensive cracks, gaps, and margins that run through the City. Moss carves its way, in an uninvited fashion, into the City’s stone, brick and concrete, suggesting that it too is a lively and provocative organism that embodies tales of the City.

Making our way through the central court of Guildhall, we find green algae as well as *Tortula muralis* running along base of the St Lawrence Jewry. Past the lily pond that in summer hosts abundant numbers of dragonflies, we pass the Goldsmiths Hall Gardens, a depressed garden below street level, which was created by bombing in 1941. We have gained special access to yet another prior bombsite, the Plaisterers’ Hall garden on Noble Street, where the bombing has revealed the remains of a Roman Wall segment, which is layered with mossy specimens. Here are *Fissidens bryoides*, *Grimmia pulvinata*, *Bryum argenteum*, *Bryum capillare*, and many others, an undisturbed haven for mosses to collect and spread on the Roman and Victorian ruins of London.

From this site we pass through the Barbers Physic Garden, a site of which John Gerard was master in 1607. Here, we consider Gerard’s various uses for moss proposed in his *Herbal*, as he was particularly attuned to the tendency of moss to grow on bones and at charnel houses, and so proposed that this type of moss might be “a singular remedy against the falling evil” (1597). A powdered version of moss taken in wine might restore one to health, a fabled and restorative form of incorporation that is also part of these encounters with moss. At the back edge of the Barbican, also part of a bombsite, we continue walking along the London Wall to Moor Lane, finding instances of managed decay and unmanaged neglect as derelict buildings seem to be the structures most welcoming of moss. From Moor Lane we arrive at our final destination, Bunhill Fields Burial Grounds, a site that is bound up with these notions of incorporation and anticipated decay.

Sitework and urban exchanges

In these tracings of the sitework of mosses, our final stop leads us to Bunhill (figure 4), or bone-hill, a former dissenters’ burial ground. The site, which is 4 acres in size, contains approximately 123 000 interments—many of which are the remains of plague sufferers, but



Figure 4. Bunhill.

some include dissenters or nonconformists from Daniel Defoe to William Blake and Paul Bunyan, another proverbial walker of *The Pilgrim's Progress* fame (2003 [1678]). The last burial (and relocation) in this site ended in 1853, and now each gravestone is a compressed ecosystem of moss and porous stone, gathering moisture and settling into the earth.

The distinctive relationship between moss and waste sites is evident here in high relief, since burial sites are important refugia for bryophytes (Porley and Hodgetts, 2005, page 116). Growing at Bunhill are many members of the 'wall community' of mosses, including the distinctive mounds of *Grimmia pulvinata*, Grey-cushioned *Grimmia* or 'Hedgehog Moss'. This moss is calciolus, and grows on substrates rich in calcium. Not only do mosses store the effects of environments, providing historic and contemporary readings of the material composition of sites, they also grow in relation to particular habitats and conditions that are most favorable. This *Grimmia*, as with many mosses, can be identified in part through its growing in particular locations. Some mosses grow particularly on trees, soil, or calcareous surfaces such as these *Grimmia* and wall mosses, which gather water and nutrients mainly from rain and runoff and not from soil. While the sedimentary limestone tombstones are ideal spots for this *Grimmia* to grow, one can imagine there are other transformations from bone to moss that might unfold here.

In this walk, mosses come into view as exchangers of urban materials, energies, temporalities, and imaginaries. From bio-indication of pollution, to stabilizing substrate and making nutrients available for other vegetative organisms, while also opening up other temporalities of becoming urban, moss and bryophytes are involved in dense material exchanges that take place across time and in relation to environmental change that is both localized and more widespread. Yet this is not a plea to recognize the *usefulness* of mosses as an organism or resource or service, as much as an attempt to draw out other (nonprofit) urban exchanges that are taking place within more-than-human urban ecologies. From a moss-eye view, these other exchanges and openings emerge across more-than-human and human spaces, which are distinct from the more restricted economies of the city.

In the apparently singular space of financial industries concentrated within the Square Mile, the "Moss-eye view" walking event explores distinct forms of sitework that are not typically foregrounded in the usual economies of the City of London. Through the distinct

inhabitations of moss observed during this walk, expanded ways of becoming urban become evident from the moss-eye view. It may be that micrological yet processual encounters with embodied entities such as moss within the managed space of the Square Mile may help us to think about urban ecological communities differently—through shared *incorporations*. These incorporations and this sitework are ongoing, since, as Bruce Braun suggests, “There is an intimate geography of urban bodies and the exchange of properties between bodies— humans and animals alike—that has not yet been written” (2005, page 647).

This practice-based research specifically deployed urban walking as a form of sitework and site-writing in order to articulate new urban ecologies by encountering multispecies processes at close range. From spatial theorists to environmentalists, natural historians and creative practitioners, walking has been a way to explore places and to generate multiple inhabitations in and observations of those places (Benjamin, 1999; Careri, 2001; Rendell, 2006; Solnit, 2000). While much walking research focuses on the perambulations of solitary walkers, often with the intention of exploring phenomenological issues related to embodiment and self-landscape relations (Edensor, 2000; Wylie, 2005), other walking literature specifically emphasizes its role as a method steeped in ‘sociability’ (Ingold and Vergunst, 2008; Lee and Ingold, 2006) and politics (Cresswell, 2010; Pinder, 2011; Shehadeh, 2008 [2007]). In these accounts, walking is an event that articulates distinct forms of collective experience— and how by walking together, collectives may be incorporated, contested, and practiced in relationship to places, whether through protest marches or daily commutes.

Walking is a long-standing environmental practice, where to be engaged with place is to walk through places. For Thoreau walking does not just facilitate the movement between places, but involves a transformation in the way we occupy places (2008 [1862]). These journeys are the basis through which it is possible to form relationships to environments and more-than-humans. While walking could be seen to “articulate”, as de Certeau suggests, urban practices and the possibilities for alternative everyday spatial practices (1984 [1980], page 94), because it is a highly textured urban practice it is not merely enacted at a discursive level—it is also embodied and incorporated through social, material, political, and collective encounters. Walking is a practical method that connects up places and experiences, but also permits for wandering, digression, and resonance—the point is that walking is a form of sitework where sites emerge through the relations that walking sets in motion (Ingold, 2010). Embedded in this discussion of more-than-human inhabitations in the city is the possibility of walking as a form of collective and transformative sitework. Walking activates an embodied and yet also collective relationship to places, which allows for the introduction of distinct ways of sensing and thinking places that might otherwise be entrenched within everyday urbanisms. Such a situational understanding of walking as sitework suggests that this is a method that is characterized by its singularity. It is a “practical” ontology, in which, as Braun suggests, by expanding on the work of Nick Bingham, “assemblages have no pre-given form, but emerge as the result of what people and things do” (2008, page 670; Bingham, 2006). Through practices, distinct and embodied worlds emerge that are entangled within what these practices make possible and available. This paper has discussed the walking event not as an illustrative case study, but rather as a practice for encountering and enacting urban incorporations.

Sitework is a form of becoming that is not just about bodies laboring, or materializing, but also about new coproductions of sites and (ecological) subjects. In this respect, the urban communities that emerge through this moss-eye view extend and challenge the familiar urban natures literature by asking how radically different urban inhabitations might yield new perspectives on urban processes and community—even when those processes and collective exchanges may take place below the radar of the usual spaces of urban–human

encounters. “Moss-eye view” then attempts to make a contribution to these as-of-yet largely unwritten urban exchanges, and in the process seeks to make possible other forms of sitework and urban incorporations.

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References

- Atherton I, Bosanquet S, Lawley M, 2010 *Mosses and Liverworts of Britain and Ireland: A Field Guide* (British Bryological Society, London)
- Bakker K, 2010, “The limits of ‘neoliberal natures’: debating green neoliberalism” *Progress in Human Geography* **34** 715–735
- Benjamin W, 1999 *The Arcades Project* translated by H Eiland, K McLaughlin (Belknap Press, Cambridge, MA)
- Bingham N, 2006, “Bees, butterflies, and bacteria: biotechnology and the politics of nonhuman friendship” *Environment and Planning A* **38** 483–498
- Braidotti R 2006 *Transpositions: On Nomadic Ethics* (Polity Press, Cambridge)
- Braun B, 2005, “Environmental issues: writing a more-than-human urban geography” *Progress in Human Geography* **29** 635–650
- Braun B, 2008, “Environmental issues: inventive life” *Progress in Human Geography* **32** 667–679
- Bunyan J, 2003 *The Pilgrim’s Progress* (Oxford University Press, Oxford); first published in 1678
- Careri F, 2001 *Walkscapes: Walking as an Aesthetic Practice* (Gustavo Gili, Barcelona)
- Castree N, 2003, “Environmental issues: relational ontologies and hybrid politics” *Progress in Human Geography* **27** 203–211
- City of London, no date, “Biodiversity in the city”, <http://www.cityoflondon.gov.uk/things-to-do/green-spaces/city-gardens/wildlife-and-nature/Pages/Biodiversity-in-the-City.aspx>
- Clark N, 2000, “Botanizing on the asphalt? The complex life of urban bodies” *Body and Society* **6**(3–4) 12–33
- Clark N, 2011 *Inhuman Nature: Sociable Life on a Dynamic Planet* (Sage, London)
- Clean Air Act, 1956 4 & 5 Eliz. 2 chapter 52 (HMSO, London)
- Crary J, Kwinter S (Eds), 1992 *Incorporations: Zone 6* (MIT Press, Cambridge, MA)
- Cresswell T, 2010, “Toward a politics of mobility” *Environment and Planning D: Society and Space* **28** 17–31
- de Certeau M, 1984, “Walking in the city”, in *The Practice of Everyday Life*, translated by S Rendall (University of California Press, Berkeley, CA), pp 91–110; first published in 1980
- Deleuze G, Guattari F, 1987 *A Thousand Plateaus: Capitalism and Schizophrenia* translated by Brian Massumi (University of Minnesota Press, Minneapolis, MN); first published in 1980
- Douglas I, Goode D, Houck M, Wang R (Eds), 2010 *The Routledge Handbook of Urban Ecology* (Routledge, London)
- Duckett J G, Pressel S, 2009, “London’s changing bryophyte flora” *Field Bryology* **98** 30–46
- Edensor T, 2000, “Walking in the British countryside: reflexivity, embodied practices and ways to escape” *Body and Society* **6**(3–4) 81–106
- Ellis R, 2011, “Jizz and the joy of pattern recognition: virtuosity, discipline and the agency of insight in UK naturalists’ arts of seeing” *Social Studies of Science* **41** 769–790
- Ellis R, Waterton C, 2005, “Caught between the cartographic and the ethnographic imagination: the whereabouts of amateurs, professionals, and nature in knowing biodiversity” *Environment and Planning D: Society and Space* **23** 673–693
- Fitter R S R, 1945 *London’s Natural History* (Collins, London)

-
- Gabrys J, 2009, "Sink: the dirt of systems" *Environment and Planning D: Society and Space* **27**(4) 666–681
- Gabrys J, Yusoff K, 2012, "Arts, sciences and climate change: practices and politics at the threshold" *Science as Culture* **21**(1) 1–24
- Gandy M, 2002 *Concrete and Clay: Reworking Nature in New York City* (MIT Press, Cambridge, MA)
- Gerard J, 1597 *The Herball, or Generall Historie of Plants* (John Norton, London)
- Grosz E, 2004 *The Nick of Time: Politics, Evolution, and the Untimely* (Duke University Press, Durham, NC)
- Haraway D, 2007 *When Species Meet* (University of Minnesota Press, Minneapolis, MN)
- Hayward E, 2010, "Fingeryeyes: impressions of cup corals" *Cultural Anthropology* **25** 577–599
- Head L, Atchison J, 2009, "Cultural ecology: emerging human-plant geographies" *Progress in Human Geography* **33** 236–245
- Heynen N, Kaika M, Swyngedouw E (Eds), 2006 *In the Nature of Cities—Urban Political Ecology and the Politics of Urban Metabolism* (Routledge, London)
- Hinchliffe S, Whatmore S, 2006, "Living cities: towards a politics of conviviality" *Science as Culture* **15**(2) 123–138
- Hinchliffe S, Kearnes M, Degan M, Whatmore S, 2005, "Urban wild things: a cosmopolitical experiment" *Environment and Planning D: Society and Space* **23** 643–658
- Hird M, 2009, "Meeting with the microcosmos" *Environment and Planning D: Society and Space* **28** 36–39
- Hitchings R, Jones V, 2004, "Living with plants and the exploration of botanical encounter within human geographic research practice" *Ethics, Place and Environment* **7**(1–2) 3–18
- Ingold T, 2010, "Footprints through the weather-world: walking, breathing, knowing" *Journal of the Royal Anthropological Institute* **16**(1) S121–S139
- Ingold T, Vergunst J L, 2008, "Introduction", in *Ways of Walking: Ethnography and Practice on Foot* Eds J L Vergunst, T Ingold (Ashgate, Aldershot, Hants), pp 1–19
- Kaika M, 2005 *City of Flows: Modernity, Nature, and the City* (Routledge, New York)
- Kimmerer R W, 2003 *Gathering Moss: A Natural and Cultural History of Mosses* (Oregon State University Press, Corvallis, OR)
- Kirksey E, Helmreich S, 2010, "Multispecies ethnography" *Cultural Anthropology* **25** 545–576
- Lee J, Ingold T, 2006, "Fieldwork on foot: perceiving, routing, socializing", in *Locating the Field. Space, Place and Context in Anthropology* Eds S Coleman, P Collins (Berg, Oxford) pp 67–86
- Lundholm J T, Richardson P J, 2010, "Habitat analogues for reconciliation ecology in urban and industrial environments," *Journal of Applied Ecology* **47** 966–975
- Mabey R, 1973 *The Unofficial Countryside* (Collins, London)
- Matsutake Worlds Research Group, 2009, "A new form of collaboration in cultural anthropology: Matsutake worlds" *American Ethnologist* **36** 380–403
- Norris D, 2003, "A conversation about mosses, liverworts, and hornworts" *Fremontia* **31**(3) 5–11
- Pinder D, 2011, "Errant paths: the poetics and politics of walking" *Environment and Planning D* **29** 672–692
- Porley R, Hodgetts N, 2005 *Mosses and Liverworts* (Collins, London)
- Rendell J, 2006, "Walking", in *Art and Architecture: A Place Between* (I B Tauris, London), pp 181–190
- Shehadeh R, 2008 *Palestinian Walks: Notes on a Vanishing Landscape* (Profile Books, London); first published in 2007
- Sinclair I, 2003 *London Orbital: A Walk around the M25* (Penguin, London); first published in 2002
- Smith N, 1984 *Uneven Development: Nature, Capital, and the Production of Space* (Blackwell, Oxford)
- Solnit R, 2000 *Wanderlust: A History of Walking* (Penguin, London)
- Stengers I, 2005, "The cosmopolitical proposal", in *Making Things Public: Atmospheres of Democracy* Eds B Latour, P Weibel (MIT Press, Cambridge, MA) pp 994–1003
- Stengers I, 2010, "Including nonhumans in political theory: opening Pandora's box?", in *Political Matter: Technoscience, Democracy, and Public Life* Eds B Braun, S Whatmore (University of Minnesota Press, Minneapolis, MN) chapter 1

-
- Swyngedouw E, 2006, "Circulations and metabolisms: (hybrid) natures and (cyborg) cities" *Science as Culture* **15**(2) 105–121
- This Is Not A Gateway (TINAG), 2010, Festival program, available at <http://thisisnotagateway.squarespace.com/2010-programme/>
- Thoreau H D, 2008, "Walking", in *Walden, Civil Disobedience and Other Writings* Ed. W Rossi (W W Norton, London) pp 260–287; first published in 1862
- Tsing A, for the Matsutake Worlds Research Group, 2011 "Arts of inclusion, or, how to love a mushroom" *Australian Humanities Review* **50** 5–21
- Whitehead A N, 1966 *Modes of Thought* (The Free Press, New York); first published in 1938
- Wolch J, 2002, "Anima urbis" *Progress in Human Geography* **26** 721–742
- Wolch J, 2007, "Green urban worlds" *Annals of the Association of American Geographers* **97** 373–384
- Woodward K, Jones III J P, Marston S A, 2010, "Of eagles and flies: orientations toward the site" *Area* **42** 271–280
- Wylie J, 2005, "A single day's walking: narrating self and landscape on the south west coast path" *Transactions of the Institute of British Geographers, New Series* **30** 234–247
- Yusoff K, 2011, "The valuation of nature" *Radical Philosophy* **170** 2–8