From Ecotopia to Heterotopia: Alternative Pathways to Territorialising the Environment
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Introduction

In 1975, the American environmentalist and author Ernest Callenbach published a novel titled *Ecotopia: The Notebooks and Reports of William Weston*. Callenbach's ecological utopia involved the succession of the Pacific Northwest – Northern California, Oregon, and Washington – from the United States to become a self-sufficient bioregion. The new eco-state was founded on principles of human survival, quality of life, ecosystem protection, self-sufficiency, and a balanced relationship between humans and nature. Ecotopians rejected the dominant mantra of economic growth and progress that proliferated in the twentieth century and instead, placed the environment at the centre of governance, economy, and culture. In effect, the Ecotopian concept provided a route for developed economies to reinvent the human relationship with nature to be co-productive rather than extractive (Callenbach 1975, Karvonen 2011). Callenbach's novel rapidly became a touchstone for visionary environmental thought in the 1970s, alongside influential books such as Stewart Brand's *Whole Earth Catalog: Access to Tools,* Ernest Schumacher's *Small is Beautiful: Economics as if People Mattered*, and Amory Lovins's *Soft Energy Paths: Towards a Durable Peace. Ecotopia* provided a multitude of radical ideas to counter the environmental impacts due to the spread of capitalism and consumerism in the second half of the twentieth century.[1]

At the heart of the Ecotopian vision was a geographical container that harmonised human and non-human flows by drawing on bioregionalism, the dominant perspective of influential planning advocates in the late nineteenth and early twentieth centuries including Patrick Geddes, Lewis Mumford, and Benton MacKaye (McKennis 1999, Thayer 2003). It suggested that humans could work in harmony with nature rather than try to conquer it. Bioregionalists recognised an indelible connection between ecosystem flows and human settlement. As Dryzek (2000: 157) notes:

> Bioregionalism is not just a matter of redrawing political boundaries: it is also a matter of living in place. Redesigned political units should promote, and in turn be promoted by, awareness on the part of their human inhabitants of the biological surroundings that sustain them.

Four decades on from Callenbach's Ecotopian vision, the ethos of bioregionalism has been joined by a multitude of strategies to territorialise the environment. The region as a container for the 'environment' can still be found in debates about resource extraction (e.g., fracking, deforestation), renewable energy (solar, wind, hydro), and natural disasters (droughts, hurricanes) but it has been joined by other conceptions of territory that encompass more modest scales of neighbourhoods, districts, streets, and even individual sites. This proliferation of ideas about environmental territories can be attributed to the mainstreaming of ideas related to sustainable development and sustainability.

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[1]   For a contemporary perspective on the influence of Callenbach's book, see Timberg 2008.

The environment is no longer a radical or marginal concept confined to ecologically-minded activists but is embedded in mainstream agendas and is considered alongside economic development, quality of life, and social equity (see Gibb et al, this volume). And cognitively, there is a growing recognition that humans are not separate from nature but are part and parcel of it; the environment is not something that is 'out there' but comprises both inhabited and uninhabited places. This is particularly true in cities where nature is increasingly recognised as being co-constitutive of the urban condition (see Keil and Graham 1998, Gandy 2006, Karvonen 2015).

So how is the environment territorialised today? If bioregionalism is not the dominant way of conceptualising spaces of the environment, then what is? Who defines the spatial extents of these territories and for what reasons? Looking across the various discourses and debates about nature and society, environmental protection, sustainable development, climate change, and environmental justice, it is apparent that the territorialisation of the environment has mirrored the proliferation of environmental governance beyond the traditional activities of the state to include a variety of actors. Callenbach's idealised alignment of government jurisdiction and ecosystem flows has given way to a twenty-first century condition of multiple territories shaped by a wide range of agendas. This creates a messy picture of environmental governance but opens up environmental issues to a wider array of perspectives.

To understand the multiple ways that the environment is territorialised in the twenty-first century, I adopt a pathways approach to unpack some of the emerging territories of environment that are being envisioned, designed, and realised today. The pathways approach embraces a pluralist understanding of the world and is useful as a comparative tool for uncovering the motivations and logics that underpin the conceptualisation, construction, and maintenance of various territories. The multiple territories of the environment provide insights on different ways that human-nature relations are being reworked while also suggesting different desired futures and alternatives for governance. They embody what Michel Foucault refers to as 'heterotopias', those alternative or other spaces that reflect the diversity of the world.

In this chapter, I focus specifically on urban locales due to the multitude of ways that environmental territories are being realised in cities around the world. Cities are not the only place where environmental territories are being reconstituted and reimagined but they provide a vivid and prominent example of these processes. I begin by defining the pathways approach and how it is useful for interpreting and making sense of the multiple ways that the environment is territorialised today. I then describe four alternative pathways of environmental territorialisation that serve as a counter to the dominant understanding of the environment as being defined and managed by either ecological flows or by the geographical extent of governmental jurisdiction. I conclude by arguing that the various ways that the environment is being spatialised today has implicit normative assumptions about desirable futures and the governance of human/nature relations.

Making Sense of Multiple Environments
Today, the environment is conceptualised, interpreted, and framed in a multitude of ways. National, regional, and local governments continue to serve as the principal arbiters of resource extraction and environmental protection. However, they are increasingly being joined by a variety of organisations and actors promoting ideas and agendas about human-nature relations that can be confusing and at times contradictory. Alternatively, we can see this diversity of ideas and actions as a positive development. The environment is no longer a social movement or a moral crusade restricted to a vocal minority; instead, it is tied in with everything that we say and do because it is inextricably bound up in notions of economy, culture, and society.

Over the past two decades, a number of academics have adopted a pathways approach to address or manage the diversity of ideas about the environment, nature, sustainability, and sustainable development (see **Table 1**). Rejecting positivist tendencies towards a single definition of the world (Law 2004), these scholars are informed by post-colonial, feminist, and post-structural critiques of modernity and recognise that there is no single approach to understanding the relationship between humans and their surroundings. Instead, they embrace the multiple, discursive, and contested notions of the environment as a productive development. Hess (2007: 4) argues that pathways 'make it possible to avoid drawing premature boundaries when confronted with the fluidity of goals and repertoires of action'. And reflecting on urban sustainability agendas, Guy and Marvin (2001: 31) contend that pathways are helpful in 'the recognition that a wide diversity of sustainable urban futures are likely to coexist within a single city'.

Table 1 Examples of pathways scholarship on environment, nature, sustainability, and sustainable development

Topic	Author(s)
Urban development and planning	Haughton 1997, Guy and Marvin 1999, 2000, Finco and Nijkamp 2001, Pinderhughes 2004, 2008
Sustainable architecture	Guy and Farmer 2000, 2001, Farmer and Guy 2002, Guy and Moore 2005, 2007
Energy systems	Marvin et al 1999, Guy 2004, Rydin et al 2013
Food systems	Allen et al 2003
Transport systems	Evans et al 2001
Social movements	Gottlieb 2001, Hess 2007
Environmental politics/governance	Taylor 2000, Jamison 2001, Moore 2007, Leach et al 2010
Urban nature	Karvonen 2015
Sustainable consumption	Davies et al 2014

The notion of pathways rejects the predefined norms and universal assumptions that have historically underpinned theoretical and empirical work on the environment and instead recognises the environment as discursive, contested, and multiple. As Leach and colleagues (2010: 168) argue, 'a pathway approach aims to uncover diversity, broaden out the debate and open up possibilities for ways forward.' This suggests that the pathways approach is an analytic tool for identifying how the environment configures particular actors and trajectories of change. It is a heuristic device to organise the complexity of environmental visions and agendas. The pathways approach acknowledges that there are different perspectives and visions, and encourages us to contemplate why a particular vision of the environment was adopted and by whom. It shifts the emphasis away from the environment as a container (see Graham and Healey 1999) and more towards the processes that produce the environment, how interests are negotiated, how actions are formulated and undertaken, and how outcomes are assessed (Karvonen 2015).

The pathways approach does not provide 'the answer' or the 'proper solution' to questions about the environment. Instead, it serves as a framework for assessing, considering, comparing, and weighing different options and configurations. It encourages a comparative sensibility amongst different visions (Jamison 2001) rather than a judgment; it is not so much a model but rather an attitude or mode of inquiry. Furthermore, the pathways identified are not static or independent but instead, they

overlap, compete, and coalesce with other pathways. Leach and colleagues (2010: 168) conclude that 'a pathways approach thus offers a way to overcome the kinds of simplifications that have limited options and stultified debate about sustainable development.' Ultimately, the pathways approach is not about identifying the best or most effective route to improved futures but to recognise that there are many different ways that the future could be realised.

This embrace of multiplicity of spaces resonates with Foucault's notion of heterotopias (Foucault and Miskowiec 1986). The term 'heterotopias' refers to 'other places' and provides an antidote to commonplace interpretations of space (Dehaene and De Cauter 2008, Chatzidakis et al 2012). It provides a lens for studying alternative spaces that are often overlooked or neglected. Dehaene and De Cauter (2008: 4) argue that heterotopias serve as 'a strategy to reclaim places of otherness inside an economized public life.' In this way, heterotopias resonate with the work of Henri Lefebvre and Michel de Certeau in opening up contemporary notions of space to alternative voices and conceptions. The pathways approach described above is a useful way to reveal the heterotopic character of contemporary environmental territories. It suggests that there are multiple ways that the environment is conceived, spatialised, and governed by a wide range of actors and agendas.

In the following sections, I describe four alternative pathways of environmental territorialisation that are dominant today: design, empirical, innovation, and community. These pathways embody distinct conceptions of the environment, producing particular spatial configurations and social arrangements of the world. The identified pathways are not independent or exclusive but draw on overlapping stakeholders, resources, and conceptions. They serve as an interpretive lens to understand the multiple ways that the environment is territorialised in the twenty-first century and the varying consequences and implications.

The Design Pathway
One of the most feted environments in the first two decades of the twenty-first century is The High Line in New York City. The High Line, constructed in three phases between 2006 and 2014, is an urban park built on 2.33 kilometres of abandoned elevated rail line in southwest Manhattan. It includes a wide variety of plantings, numerous opportunities for walking and sitting, unique views of the city, and temporary and permanent art installations, all two stories above the busy streets below (Friends of the Highline 2008, 2015, Sternfeld 2009, David and Hammond 2011). Even before the project opened in June 2009, it captured the imagination of New York residents, tourists, policymakers, designers, and academics because of its imaginative approach to 'ecologising' an existing built up landscape.[2] The park challenges conventional dichotomies of natural/industrial, aesthetic/functional, and wild/tamed, and has rapidly emerged as an exemplar of the transformative power of urban greening.

The widespread popular and critical acclaim for The High Line since the first section opened in 2009 has spawned a plethora of new initiatives aimed at adopting this model of urban development in other cities around the globe. Similar projects have been proposed or developed on abandoned elevated train lines in Chicago, Philadelphia, Jersey City, St. Louis, Atlanta, Seattle, Morristown (Tennessee), Pittsburgh, Rotterdam, Manchester, and elsewhere. As a journalist notes, 'The High Line has become, like bagels and CompStat, another kind of New York export' (Taylor 2010: A1). At first glance, this is a welcome development because it suggests that the 'ecologizing' of cities is no longer a fringe activity of ecocentric, tree-hugging activists but a desirable goal for a wide swath of urban actors.

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2   On the notion of 'ecologising', see Latour 1998, 2004, Murdoch 2001, and Hinchliffe et al 2005.

However, the embrace of The High Line as a 'best practice' tends to perpetuate an instrumental approach to urban development. It assumes that successful projects can be replicated unproblematically in another locale without making a concerted effort to consider the different contexts (Farmer and Guy 2002, Bulkeley 2006). As Rybczynski (2011: WK9) notes, 'The High Line may be a landscaping project, but a good part of its success is due to its architectural setting' between 'interesting old and new buildings.' The unique physical context, rather than the innovative design, is central to the project's success. And in addition to the surrounding buildings, the High Line is a product of particular historical, political, and social contingencies. To attempt to recreate the project in another locale without considering the contested processes that went into its making is to reduce The High Line to a set of building blocks, individual pieces that are simply dropped into place. In other words, all abandoned elevated rail lines are not equal and some (perhaps many) should not automatically be envisioned as future parks or public spaces. As The High Line's chief designer, James Corner, readily admits, 'The High Line is not easily replicable in other cities' (quoted in Shevory 2011: B6).

Focusing less on The High Line as a *product* of the urban landscape and instead as a geographically constituted *process* of territorialisation, we can recognise a pathway that embodies a particular framing of the environment. The historical development of The High Line involved an intriguing synergy of community and economic forces that came together in the late 1990s to appropriate an abandoned urban space. The space of the railway is defined by previous business activity as well as its subsequent abandonment due to changes in resource flows and transportation infrastructure. This resonates with other projects that have relied on a compelling narrative of redemption and reform to repurpose an existing industrial site such as the Eden Project in southwest England (Smit 2011), Gasworks Park in Seattle (Olin 1988), and Zeche Zollverein in Essen, Germany (Dorstewitz 2014). The aim here is to reinvent industrial landscapes for a post-industrial age and in the process, challenge the boundaries between what is understood to be 'nature' and what is understood to be 'human'.

At the heart of The High Line's character is a design response that focuses on a particular piece of infrastructure. The environment is defined through imagination and creative repurposing of the built environment to reflect twenty-first century values. It is a micro approach, inventing environment in an interstitial space of a built-up city using clever and strategic design gestures (see Franck and Stevens 2007, Sim 2009, Karvonen and Yocom 2011). Seen in this way, we can start to connect up The High Line with other design responses that reconfigure underused spaces through the introduction of green roofs and walls, small plots of urban agriculture, pocket parks, and so on. These one-off interventions diverge significantly from Callenbach's bioregional vision of harmonising ecology and humans because they lack a totalising and holistic understanding of territory. Instead, the environment is produced through piecemeal and opportunistic interventions that serve as pinpricks of change, an 'urban acupuncture' approach that targets particular conditions (Sim 2009, Villagomez 2010, and Lerner 2014). The territory is thus comprised of a patchwork quilt of discrete interventions.

On the other hand, these projects share with Callenbach's Ecotopia an understanding of the indelible connections between humans and nature, between society and space, and forward a relational approach to environmental territorialisation. They are an indicator of the resurgence of landscape architecture as an influential design discipline in mediating the relationships between humans and nature (Steiner 2011) through contemporary notions of ecological urbanism (Mostafavi 2010), landscape urbanism (Waldheim 2006), and biophilic cities (Beatley 2010). The *design pathway* produces a particular environmental territory, one that is informed by creative intervention to rework human/nature relations.

The Empirical Pathway

A parallel pathway of environmental territories exists in the natural sciences through a wide range of laboratories and field sites. Contemporary examples of empiricising the environment abound with the rise of climate science and climatology research (see Webb, this volume). A precursor to this work is the Long Term Ecological Research (LTER) programme initiated by the US National Science Foundation. The programme began in 1980 with six projects in the US designated as field sites for monitoring and testing of different ecological conditions over an extended period of time. In subsequent years, the programme has expanded to include 26 projects across North America, the South Pacific, and Antarctica (see **Table 2**). The LTER projects range from a few thousand to several million hectares and cover multiple biomes. These sites function as field sites where experiments are conducted and data is collected and analysed to characterise the long-term dynamics of ecological systems. 'The central, organizing intellectual aim of the LTER program is to understand long-term patterns and processes of ecological systems at multiple spatial scales' (Hobbie 2003: 18). Unlike more traditional ecological field sites, the LTER project is also designed to assess human induced changes due to land use, resource extraction, and pollution (Redman et al 2004, LTER Network 2015). The majority of the sites are rural with small to moderate levels of human disturbance. However, in 1997, two cities were designated as LTER projects, Baltimore and Phoenix, providing closer links between the production of ecological knowledge and the built environment (Evans 2011, Steiner 2011).

Table 2 The National Science Foundation's Long-Term Ecological Research Projects (Source: LTER Network 2015)

Site	Location
Andrews Forest	Oregon
Arctic	Alaska
Baltimore	Maryland
Bonanza Creek	Alaska
California Current Ecosystem	California
Cedar Creek Ecosystem Science Reserve	Minnesota
Central Arizona - Phoenix	Arizona
Coweeta	Georgia
Florida Coastal Everglades	Florida
Georgia Coastal Ecosystems	Georgia
Harvard Forest	Maine
Hubbard Brook	New Hampshire
Jornada Basin	New Mexico
Kellogg Biological Station	Michigan
Konza Prairie	Kansas
Luquillo	Puerto Rico
McMurdo Dry Valleys	Antarctica
Moorea Coral Reef	Tahiti
Niwot Ridge	Colorado
North Temperate Lakes	Wisconsin
Palmer Antarctica	Antarctica
Plum Island Ecosystems	Maine
Santa Barbara Coastal	California
Sevilleta	New Mexico
Shortgrass Steppe	Colorado
Virginia Coast Reserve	Virginia

While the LTER projects have less cache with the general public than urban green design projects, they are celebrated by natural scientists because of the opportunities they afford to gather wide array

of real world data from field sites over extended periods of time. The LTER network facilitates the sharing of data, research methodologies, and comparison between different empirical findings. The sites also represent a significant commitment by the US government to 'big science' projects that go beyond space exploration and fundamental research in the natural sciences, engineering, and medicine. The LTER sites can be understood as heterotopias because they do not attempt to mimic the traditional laboratory or field site; they embrace place rather than attempt to obliterate it (Henke 2000, Henke and Gieryn 2008) by destabilising the cognitive boundary between lab and field (Kohler 2002, Evans 2011). This is particularly evident in the urban LTER sites in Baltimore and Phoenix where the intermingling of humans and nature is highly visible. Experiments are more difficult to control due to influence by 'outside' forces but the embrace of the messiness and unpredictability of the real world provides unique insights on how ecological systems work in the real world. As Evans (2011: 232) summarises, 'place is critical as the visible arbiter of truth.'

The LTER sites are closely related to the proliferation of 'urban laboratories' and 'living laboratories' in recent years to stage environmental interventions (Evans 2011, Evans and Karvonen 2011, 2014, Bulkeley and Castán Broto 2012, Castán Broto and Bulkeley 2013, Nevens et al 2013, Karvonen et al. 2014). There is an understanding that climate change and other wicked problems require disruptive strategies to promote radical change. Laboratories and field sites involve the creation of specific territories where innovative experiments can be conducted on energy, food, water, transport, and other resource flows. These spaces resonate with the design pathway described in the previous section because of their bespoke creation. However, they have a distinct emphasis on empirical data collection that can then be used to influence evidence-based policies about environmental protection, economic development, and social learning (Evans and Karvonen 2011).

Like Callenbach's Ecotopia, the territory of the environment is defined by ecological flows. However, ecological flows are not understood as a means to define a new locus of governance but to feed into scientific knowledge production. The environment is defined through the activities undertaken to perform experiments to bolster the scientific knowledge base and to be applied to established circuits of policymaking. This represents an *empirical pathway* where data gathering and analysis activities are used to understand human-nature relationships more comprehensively. The empirical pathway recognises that we live in the age of the 'anthropocene' where human actions are dominant and cannot be separated from scientific knowledge production. At the same time, the non-human aspect of these territories is the primary determinant for establishing these environments, similar to Callenbach's bioregional vision. The focus of these environmental territories is to characterise ecosystem processes to understand how they change over time while taking into account the influence of humans.

The Innovation Pathway
Another alternative pathway of environmental territorialisation leverages cutting-edge technologies to realise resource efficient cities. A prominent example of this approach is Masdar City in the United Arab Emirates. Located 17 kilometres outside of Abu Dhabi, Masdar City was launched in 2006 as an ambitious project that is simultaneously an experimental setup, a holistically designed city, and a model for a new mode of twenty-first century urban economic development. Masdar City comprises six square kilometres of a new city that will have zero waste and zero carbon emissions through the application of a suite of technologies and design strategies. Green architecture and urban design features are woven into the mixed-use development with innovative infrastructure networks to realise a futuristic and holistic twenty-first century city (Cugurullo 2013a, 2013b, Rapoport 2014).

At Masdar City, technological innovation is understood as the key to realising improved urban futures. This resonates with the scientific and experimental approach of urban laboratories and living

laboratories described in the previous section. However, the testing and gathering of data from the technologies is not an end in itself, as in the em,pirical pathway, but rather as a means to realise economic gains by selling the proven technologies to the world. Innovation is at the heart of economic development and there is a significant market opportunity in developing and selling environmentally friendly technologies. As Cugurullo (2013b: 13) summarises, 'the core of the Masdar City project is made of production and diffusion of green technology.' Adhering to an ecological modernisation ethos, there is an understanding that economic development and environmental protection are complementary rather than contradictory (Hajer 1995, Dryzek 2005). Rapoport (2014: 141-2) argues that 'such projects seek to work within, rather than challenge, growth-oriented models of urban development.' This is in direct opposition to Callenbach's Ecotopian vision because it embraces rather than rejects economic growth.

Masdar is one of many high-profile eco cities around the world that are attempting to reinvent cities through technological development. Dongtan, Tianjin, Chongming, and Caofeidian International Eco-City are examples of hundreds of eco city projects that have been launched in the past decade to promote a technocentric form of urban development (Joss 2009, 2011, Chang and Sheppard 2013, Caprotti 2014, de Jong et al 2015). A related agenda can be found in smaller-scale eco districts such as Hammarby Sjöstad in Stockholm, Sweden and Quartier Vauban in Freiburg, Germany (Iverot and Brandt 2011, Kasioumi 2011), as well as the emerging smart cities agenda exemplified by projects such as the Amsterdam Smart City, Kalundborg Smart City (Denmark), and the IBM Operations Centre in Rio de Janeiro (Luque et al 2014, Vanolo 2014, Viitanen and Kingston 2014). These projects vary in their emphasis on design and empirics but share a common agenda of applying the latest technologies to optimise environmental performance.

The environment here is shaped by capital accumulation strategies rather than the creation of distinctive spaces (as in the design pathway) or through the production of ecological knowledge (as in the empirical pathway). Scale is a salient feature of these projects because it serves to demonstrate the efficacy of the technology being deployed, whether it be renewable energy technologies, sensors for detecting air pollution, driverless vehicles, or otherwise, in an actual place. Moreover, these projects tend to be outward facing and showy; they are showrooms that materialise innovation and are designed and built 'to advertise their "eco-ness"' (Rapoport 2014: 138). By serving as real-world, at-scale, and highly visible projects, the aim is to replicate these activities in other locales and create a global network of ecological modernisation underpinned by the fruits of corporate research and development. The territories inscribed by eco cities, eco districts, and smart cities are not valued for the places they create but for the ideas that can be transferred elsewhere. Advocates of eco cities, eco districts, and smart cities are focused on diffusing a singular blueprint of sustainable urban development. The territory produced in the *innovation pathway* is driven by an enterprising developer who is leveraging the global circuits of capitalism.

The Community Pathway
A fourth alternative pathway of environmental territorialisation is centred on social transformation rather than technological innovation. A well-known example of this is the Transition Towns model initiated in the UK by environmental and community activist Rob Hopkins. Hopkins spearheaded the first transition town in 2005 in the village town of Totnes in Southwest England by creating a suite of bespoke, locally-based programmes around green building, community energy provision, local food production, and self-sufficient economic development to address issues of peak oil and climate change (Hopkins 2008, 2011). The underpinning logic of Transition Towns is permaculture, which has roots in bioregionalism and back-to-the-land movements of 1970s (Pursell 1993, Smith 2005, 2011a, 2011b). The ideas introduced by Hopkins in Transition Town Totnes have rapidly spread around the

globe and today, the Transition Network website lists some 477 initiatives that are connected to the transition movement as well as 16 national hubs (mostly in Europe) (Transition Network 2014).

Transition Towns serve as an example of 'grassroots innovation' that aims to realise alternatives futures through place-based social transformation (Smith 2011a, Seyfang and Haxeltine 2012, Seyfang and Longhurst 2013, Feola and Nunes 2014). Building upon a history of alternative social movements stretching back to the Levellers and the Luddites, community-based social movements are gaining increasing public recognition as an antidote to the dominant agendas of globalisation and neoliberal capitalism (Pickerill and Maxey 2009, Pickerill 2011, Chatterton 2013, 2015, Rapoport 2014, Diggers and Dreamers 2015). They build upon radical configurations of green living strategies that first emerged in the 1970s – communal living, co-housing, eco villages, intentional communities, and low-impact lifestyles – and have gradually moved into the mainstream consciousness. While (2014: XX) summarises this agenda as 'transformative green restructuring around low-growth, alternative growth and localisation strategies.'

The community pathway takes on the tenor of a social movement with a strong localist agenda based on self-sufficiency and place-based identity (Walker 2011). The territory of environment lies somewhere between the individual/family and the state and is an attempt to find the sweet spot between individual values and state responsibility (Shutkin 2000, Aiken 2012). It is a return to more self-sufficient, contained, and locally empowered society that has control over its environmental resources (North 2010, While 2014). There is a shared frustration with the slow and inadequate responses to date for environmental problems (Bulkeley and Newell 2010). Rather than relying on an expert designer, a diligent scientist, or a creative urban developer, the community pathway leverages 'a collective, progressive mobilising force' (Aiken 2014: 4).

In many ways, the *community pathway* serves as a contemporary vision of Callenbach's ecotopian vision. It provides a route for making environmentalism more than a slogan or political campaign and more a way of life. However, the territories defined by social transformation diverge from Ecotopia in important ways. Rather than embrace a bioregional understanding of the environment that aligns government jurisdiction with ecological flows, this pathway targets the shared values and ambitions of a particular group of people in a particular place. The result is a 'place-bound' territory (see Moore and Karvonen 2008) where the scale can range from a handful of houses to a block, a neighbourhood, a village, or an entire city. The embrace of local identity is strikingly different from the innovation pathway because of its celebration of context and the people who comprise it. The territory creates a common goal for a particular set of actors and a network of sharing and learning, similar to the empirical pathway. But the territory here serves as a platform for action to realise an alternate future; it is a site where ideas and values can be enacted (Cannavò 2007, Aiken 2014). And unlike the other pathways, the community pathway is unequivocally antagonistic towards capitalism and globalisation. There is an explicit desire to fundamentally rearrange the current configurations of human-nature relations by leveraging the notion of community. The result is a territory that is localised and specific to a particular human population.

Alternative Pathways of Environmental Territorialisation
Territories of the environment continue to be dominated by state-led environmental regulations and management located within jurisdictional containers that define local, national, and pan-national boundaries. Jones and MacLeod (2004: 437) attribute this to the realpolitik of *doing* regulation and administration that relies on 'a pre-existing or aspirant spatial scale or territorially articulated space of dependence through which to conduct their actually existing politics of engagement.' However, the pathways identified in the previous sections offer multiple alternative framings of the environment that reveal different motivations and activities of a wide range of stakeholders that go beyond

conventional political jurisdictions (city, region, nation, world). The pathways approach developed by a wide range of environmental scholars over the past few decades serves as a useful heuristic tool for making sense of these multiple territories. They reveal different understandings of how the world is understood, different modes of knowledge creation and circulation, and different agendas for action. Ultimately, the alternative pathways reveal a range of different relationships between humans, technology, and nature to reflect a heterotopian worldview.

The alternative pathways identified in this chapter are summarised in **Table 3.** The design pathway is informed by the tenets of landscape architecture, urban ecology, and sustainable urban design. The aim is to reveal human/nature interactions through creative interventions. The empirical pathway takes its cue from ecology and resilience with an overarching agenda of scientific discovery and robust data gathering. The territory of environment is produced through monitoring activities by natural scientists that can then inform the scientific knowledge base and environmental policymaking. The innovation pathway focuses on technological development as a means to reduce environmental impacts while simultaneously bolstering neo-liberal political agendas. Here, it is the entrepreneurial developer who enacts territories to tap into the global flows of finance. And finally, the community pathway is inspired by identity-based politics and localism. Local activists define the environmental territory through the development of social bonds and the realisation of self-sufficiency through a suite of place-based activities.

Table 3 A comparison of alternative pathways of environmental territorialisation

	Design	**Empirical**	**Innovation**	**Community**
Examples	The High Line, green roofs and walls, pocket parks	Long Term Ecological Research Programme, urban laboratories and living laboratories	Eco cities, eco districts, smart cities	Transition Towns, eco villages, intentional communities
Theoretical frameworks	Landscape urbanism, urban ecology	Ecological science, Socio-ecological systems, resilience	Technological change, ecological modernisation	Ecological democracy, civic environmentalism, social movements
Principle objective	Bespoke expression through creative intervention	Scientific discovery through data collection	Economic development through technological innovation	Self-governance through social transformation
Key actor	Opportunistic designer	Progressive scientist	Enterprising developer	Constructive activist

It is important to emphasise that these pathways should not be considered as exclusive or discrete; this is not a menu of choices to consider and select (either individually or collectively). Instead, they overlap and intermingle, producing a messy picture of environmental territories. For example, designers can be found working on urban laboratories, eco cities, and Transition Town programmes. Likewise, capitalism is not the sole domain of the innovation pathway but influences the others in significant ways. And the four pathways identified here are not the only ones. Protest activities around fracking, planning visions for mega-regions of renewable energy provision, natural disasters such as hurricanes and flooding, and innovations in regulatory frameworks all represent other

distinct ways that the environment is being territorialised. However, the pathways outlined here provide insights on four ways that the environment is being reconfigured in urban contexts.

The identified pathways reveal the alternative territories that are defined by different actors and agendas. Whereas the design and community pathways place a priority on particular locales, the empirical and innovation pathways see place more generically as a means to collect ecological data and to demonstrate the efficacy of cutting-edge technologies. In all cases, the territories are not bounded but rather bridge local and global circuits of knowledge through professional networking, flows of capital, grassroots networking, and so on. Even the most isolationist pathway – community – has connections and knowledge flows that extend beyond its physical boundaries. This suggests that territories should be interpreted not as containers or fixed locations but 'as bundles of interconnected relationships' (Whitehead 2007: 6). Each of the identified pathways attempts to bundle the relations in different ways with varying outcomes. Territories then emerge as relational achievements of the agendas and activities of the involved stakeholders (Karvonen 2011). The pathways identified are useful for revealing how these relations are configured, by whom, and for what ends. There is less of an emphasis on the scale of territorialisation (local, regional, national, or global) and more on the ways that the relations that comprise these territories are defined and sustained over time.

Furthermore, the emphasis on the relational configuration of pathways suggests different visions of environmental governance. Each of the pathways extends or challenges the existing role of the state as the primary arbiter of socio-environmental regulation and represents a form of 'eco-state restructuring' (While 2014, Gibb et al this volume). Whereas the empirical and innovation pathways rely on existing modes of governance, the design and community pathways have the potential to recast the governance of the environment in novel ways. The design pathway suggests the need for creativity in place-based interventions to reconfigure the twentieth century fixation on separating nature from humans. The empirical pathway sees data collection as the most important way of understanding the relations between humans and their surroundings. The findings can be fed into policies, reinforcing existing control by the state over environmental flows. In the innovation pathway, the emphasis on profit-driven, low-carbon technological development reinforces global capitalism and the longstanding notion of technology-driven economic growth. And the community pathway enacts an anti-capitalist protest politics and recentres the emphasis of human-nature relations on everyday, familiar surroundings. Governance here is a local affair as in notions of ecological democracy and civic environmentalism. It is important to recognise that each pathway includes particular assumptions about politics, whether the pathway proponents acknowledge this or not.

Overall, the proliferation of alternative environmental territories provides multiple opportunities for deliberation and debate about the contemporary and future relationships between humans, nature, and technology. By revealing the heterotopic character of these territories, the pathways approach encourages a critical engagement with the multitude of actions and agendas that are coalescing and intertwining to realise widespread transitions towards low-carbon, resilient, and (hopefully) more desirable futures. It is unlikely that any of the identified pathways will be sufficient on their own to address the significant challenges ahead with respect to climate change, inequality, eroding infrastructure networks, and so on. Instead, these pathways suggest a multipronged approach to human-nature relations with a range of implications and outcomes. By subjecting these activities to critical inquiry and engagement, we can better understand how they interact and how they produce alternative future conditions.

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