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TURNING UP THE HEAT

URBAN POLITICAL ECOLOGY FOR A CLIMATE EMERGENCY

Urban political ecology versus ecological urbanism

Matthew Gandy

For the city of the future, the concept of the balanced, stable and diverse city ecosystem needs to be recognized as a goal and planned in both strategic and detailed policies.

(Laurie 1979: xviii)

This interesting call from the landscape designer Ian Laurie is contained in his introduction to a pathbreaking essay collection emerging from a symposium held at the University of Manchester in 1974 that served in many ways as a European counterpart to an earlier conference on the theme of urban nature held in Washington, DC in 1968. Many of the contributors to the Manchester symposium were connected to the nascent scientific sphere of urban ecology and also with established disciplinary domains such as botany, zoology, and landscape architecture. Underpinning the thinking of Laurie and his contemporaries was an interest in how ecological ideas might enhance the liveability and long-term viability of cities. An emphasis on the centrality of nature and ecological processes to the design of better cities has a long history, predating the emergence of ecology itself as a sub-field of the biological sciences, and encompassing various attempts to modify or refashion the human environment through the inclusion of parks, gardens, and elaborate infrastructure systems.

The recent interest in 'ecological urbanism' marks the expanding scope of ecological ideas in architecture, urban planning, and landscape design but also holds significant continuities with these earlier interventions. The idea of nature serving as some kind of blueprint for addressing environmental problems has become an increasingly prominent element in urban sustainability discourse. In many ways Laurie's essay collection highlights an enduring tension in the field of urban ecology and landscape design: on the one hand, many contributors look to patterns and models derived from nature as a way of conceptualising urban form, yet on the other hand, it is clear that much of the reflection from these authors is largely curiosity-driven,

and simply rooted in the cultural and scientific fascination of the subject matter. It is arguably in Laurie's own essay on 'urban commons' that this disjuncture becomes most strikingly apparent: here we encounter the contested histories of urban land use that 'has been kept open by and for the people' in the face of multiple threats (Laurie, 1979: 231). An ecological sensibility, and the possibility of creating what Laurie terms 'nature parks' in urban areas, is clearly rooted in specific cultures of nature derived in part from the ecological sciences but is also connected with facets of urban history and attempts to protect vernacular spaces of nature from erasure. In this chapter I want to reflect further on the role, status, and meaning of ecology in urban environmental discourse. In particular I will draw a contrast between an emerging coalescence of scientifically inflected approaches to landscape design under the umbrella term 'ecological urbanism' and the alternative field of 'urban political ecology' that marks an ongoing critical reformulation of relational and structuralist accounts of nature-society relations under capitalist urbanisation. If the former perspective aims to both naturalise and ecologise the urban process, the latter brings the question of nature back within the realm of historical agency and the political parameters of human intentionality.

The origins of urban ecology

The term 'ecology' is now almost ubiquitous in urban environmental discourse, especially in the post-Rio context, with different elements of ecological thinking woven into a wide range of public policy concerns ranging from the protection of biodiversity to the shaping of zero carbon cities. The conceptualisation of urban space as an interdependent set of socio-ecological relationships has now permeated a broad spectrum of professional and scientific domains. Yet the idea of ecology holds a series of different connotations in an urban context: the functionalist reading of ecosystem dynamics has permeated organicist conceptions of urban space at a variety of spatial scales; the epistemological contours of systems-based urban ecology have driven various attempts to produce overarching analytical frameworks for both social and environmental processes; the influence of conservation biology within land-use planning and other fields marks the rise of specific concerns with urban biodiversity; the articulation of critical readings of ecology has opened up new insights into relations between politics and science, that has contributed to the emergence of urban political ecology; and most recently, an emerging interest in posthumanism and the 'multispecies city'. The advent of 'ecological urbanism,' as a design-led intellectual

agenda exemplifies the steady diffusion of an 'ecological sensibility' through a succession of professional fields engaged with the shaping of human environments. As the geographer James Evans (2019) emphasises, the rising significance of urban ecology marks the transformation of a previously marginal scientific field into a vibrant focus of debate spanning several interrelated spheres of concern such as biodiversity, infrastructure, resilience, and sustainability. But what is implied by the growing significance of ecology in urban policy and politics? Where did a distinctively ecological conception of urban space originate?

The origins of the modern term 'ecology' lie within the work of the German zoologist Ernst Haeckel, who first used the word in 1866 to refer to environmental influences on the development of individual organisms, yet Haeckel's interest in the interaction between organisms and their environment certainly has earlier roots, especially in the pattern-oriented botanical studies of Alexander von Humboldt and the transformation of natural history into what would become the natural sciences (see Dettelbach, 1996; Krausse, 1987). Humboldt's interest in 'plant sociology', later elaborated by the Swiss botanist Josias Braun-Blanquet and others, provides an intellectual lineage between cartographic techniques such as isometric mapping and the eventual emergence of urban ecology as a distinctive sub-field within both the biological and social sciences. There was always a tension between the emergence of ecology as a field science, in the service of colonial acquisition of territory and resources, and a more curiosity-driven impetus towards the study of relations between organisms in any setting, including urban and industrial areas. At a global scale, for example, the historian Daniela Bleichmar shows how the economic and taxonomic dimensions to imperial botany evolved in tandem, with the European cataloguing of specimens following in the wake of violence and destruction elsewhere (see, for example, Bleichmar, 2018). During the twentieth century the scope of ecology within the biological sciences expanded to acquire a more clearly defined spatial connotation through related terms such as the ecosystem, ecotope, and ecological zone. Under the influence of Frederic Clements, Arthur Tansley, and others, the focus of ecology gradually moved towards various forms of 'human ecology' that have been in consistent tension with alternative vantage points concerned with the functional dynamics of 'natural ecosystems'. Indeed, the recent interventions of the geographer Erle Ellis, in the context of the Anthropocene debate, stem precisely from this sense that the ecological sciences need a radical reorientation towards human modified landscapes (see Ellis et al., 2013).

The use of ecology as an analytical tool for understanding capitalist urbanisation was extended significantly through the work of the Chicago School of urban sociology before its gradual demise from the late 1930s

onwards (see Gaziano, 1996). Ideas drawn from vegetation dynamics, and in particular the emphasis on processes of plant invasion and succession, were used to develop a neo-Darwinian model of urban change driven by the competitive outcomes of individual decision-making. It is fair to say, however, that this body of work had little in common with the emerging practice of ecology as a scientific sub-field and also made little contribution to the study of socio-ecological dimensions to urban space. The concept of ecology utilised by the Chicago School rested on a dualistic distinction between society and nature within which models of 'nature' and the presence of 'natural areas' originated outside the urban process as part of a naturalistic framework of analysis (see Wolch et al., 2002). By the 1960s and 1970s the emergence of terms such as 'ecological studies', though related to the Chicago School, marked a more elaborate engagement with quantifiable variables that could be correlated across urban space (see Berry and Kasarda, 1977). Interest in measurement and quantification provided a segue into systems-based models of urban ecology including influential recent contributions such as the Baltimore Ecosystem Study and other metropolitan research programmes. The cartographic impetus behind the modification of ecological approaches within spatial science began to edge closer towards incipient trends within urban ecology as a scientific field, focused on the spatial and ecological dynamics of non-human nature in cities. The growing interest in population dynamics rather than crudely atomistic interpretations of human behaviour also connected with an emerging focus on human ecology, self-regulatory homeostatic systems, and attempts to develop more sophisticated models for the analysis of urban environmental change.

Emerging in parallel with the more abstract concept of ecology, the emphasis on 'urban field science' and the observational paradigms of natural history began to flourish from the nineteenth century onwards. Interest in the distinctive characteristics of urban flora and fauna laid the basis for an ongoing fascination with cities as 'open laboratories' for the study of unusual socio-ecological assemblages and also intimations of a future nature. New insights into urban botany, for example, clearly differed from the emphasis of 'plant sociology' on naturally occurring ecological assemblages that corresponded to either a lack of human influence or to a narrow range of non-metropolitan landscapes. Some botanists, such as Paul Jovet, devoted their research to the ecological characteristics of modern cities while others, such as Paul Duvigneaud, switched emphasis towards urban environments. Duvigneaud, for example, applied insights derived from the study of biomass production in tropical rainforests to the city of Brussels in the 1970s (see Duvigneaud, 1974). Of particular interest in a policy context is Duvigneaud's promotion of a regional ecological imaginary as a means to articulate an environmental rationale for the enhanced status of the Brussels

metropolitan agglomeration within the Belgian state (see Danneels, 2021). A contrasting example is provided by the botanist Herbert Sukopp and his colleagues who worked in post-war Berlin, challenging the limitations of plant sociology by exploring the full complexity of urban nature, including the presence of so-called 'weeds' and non-native species. Rather than a focus on biomass, the emphasis of Sukopp and other Berlin-based botanists was on urban biodiversity and the many interesting species that flourished in unusual urban biotopes produced by wartime destruction and geopolitical separation (see Sukopp, 1990). Instead of a regional orientation à la Duvigneaud, the emphasis of Sukopp was on the protection of specific sites of scientific interest as part of the shifting politics of land-use planning away from narrowly technocratic goals such as highway construction or urban renewal. The brief impact of what Jens Lachmund (2013) has referred to as a 'biotope-protection regime' in West Berlin, building on the conceptual insights of Arturo Escobar, marks a unique conjunction between urban ecology, as a methodologically distinctive branch of the biological sciences, and a wider grassroots challenge towards technocratic or narrowly utilitarian forms of urban policymaking. The interface between ecology and urban politics is different in these two examples: for Duvigneaud we could say that the question rested on an enhanced role for science in the management of urban space, not unlike contemporary interest in resilience discourse, whereas for Sukopp the emphasis is only obliquely utilitarian, and is oriented more towards discourses of ecological endangerment and site vulnerability. Or as Jens Lachmund (2020: 27) suggests, 'Duvigneaud was much more assertive than Sukopp in linking his ecology to a broader moral and political vision'. In both cases, however, we contend with an essentially expert-led vision for alternative conceptualisations of urban nature, except that Duvigneaud is oriented towards the generic and quantifiable parameters of a putative urban ecosystem while Sukopp is focused on the relational ecologies of specific organisms (and especially plants).

Despite the direct engagement of Duvigneaud, Sukopp, and other ecologists with aspects of policymaking in the urban arena there were a number of methodological and political uncertainties surrounding the interface between science and politics. The ecological models never strayed far from a largely positivist (or at least empiricist) conception of socio-ecological relations within which the political context for environmental degradation and the role of human agency in the production of space remained ill-defined. The emphasis on metabolic or systems-based conceptions of the urban environmental field has if anything become more dominant since the 1970s and 1980s. A pluralist conception of urban political discourse as a melee of competing 'stakeholders' now predominates much of the policy-oriented or practice-based literature. The earlier fascination with the measurement of

biomass or flows has been radically extended as part of a quantitative ecological paradigm that aligns with a range of comparative indices to track the progress of individual municipalities towards a post-carbon future.

The rise of urban political ecology

An alternative intellectual lineage to the dominance of systems-based conceptualisations of urban ecology is to be found in the body of work widely referred to as 'urban political ecology' that began to take shape during the 1990s. Although urban political ecology shares significant conceptual roots with the emergence of neo-Marxian approaches to political ecology in the Global South there are other important elements including Frankfurt School-inspired critiques of bourgeois environmentalism and radical strands of urban history (see, for example, Gandy, 2022; Görg, 2011; Trepl, 1996). Early contributions to urban political ecology stressed the co-evolutionary dynamics of capital circulation and the production of the built environment. In the influential essay collection *In the nature of cities: Urban political ecology and the politics of urban metabolism*, published in 2006, for example, the editors Nik Heynen, Maria Kaika, and Erik Swyngedouw set out a 'manifesto' for urban political ecology comprising several key elements: an emphasis on the co-evolutionary dimensions to social and environmental change; a relational conception of nature that drew in particular from the critique of nature-culture dualisms; an expanded conception of urban metabolism and the circulatory dynamics of urban space, that contrasted with organicist or systems-based formulations; an engagement with the intersections between power and social difference within the urban arena, including connections with the nascent field of environmental justice; an expanded critique of technocratic policy discourse; and an emphasis on the democratisation of environmental policymaking (see Heynen et al., 2006). Yet what is striking about this definition of the field, published more than 15 years ago, is that the science of ecology itself plays a relatively minor role (see Gandy, 2022). The interdisciplinary impetus of urban political ecology from this earlier wave of work did not come from the biophysical sciences, apart from important exceptions in fields such as urban epidemiology. In particular S. Harris Ali and Roger Keil (2008: 10) stressed the 'dialectical interaction' of globalisation and urbanisation in the wake of the SARS outbreak of 2003, and raised a series of prescient observations about new and emerging diseases, including zoonotic dangers from the extractive frontiers of global capital. Roger Keil, for example, drawing on his public health research, developed the notion of post-Westphalian or 'transnational urbanism' in relation to 'a new global urban political ecology' (Keil, 2011: 720).

Another interesting contribution to the urban political ecology literature at this time is the careful delineation of the 'turfgrass subject' by Paul Robbins and Julie Sharp as a situated investigation into lawns, consumption, and non-sustainable urbanism. Their study of the political economy of the lawn chemical industry segues into a reflection on the agency of lawns influenced in part by actor-network theory and wider reflections on the 'active role of natural objects in capitalized ecosystems' (Robbins and Sharp, 2006: 123). The work of Robbins and Sharp prefigures elements of the neo-vitalist challenge to human subjectivities but holds onto the social and historical specificities of power.

Unity and dissonance in urban ecological discourse

Since the contours of urban political ecology first became apparent in the 1990s the wider field of urban ecology has developed significantly, including an increasing role for ethology, evolutionary biology, and ever more ambitious attempts to articulate some form of epistemological unity across the social and biophysical sciences. The term ecology has multiplied in terms of its rhetorical and analytical associations. The combined challenges of climate change and the sixth mass extinction have heralded a radical extension of ecological discourse within the urban arena as specific targets for biodiversity, carbon emissions, and other goals have become woven into legislative and political objectives for policy and design.

The recent emergence of 'ecological urbanism' within landscape design discourse is indicative of an expanded discursive field for contemporary ecology. By way of intellectual bricolage, for example, the architectural theorist and former Dean of Harvard's Graduate School of Design, Mohsen Mostafavi, presents a case for ecological urbanism as an expanded design programme based on new levels of flexibility and responsiveness. At a conceptual level Mostafavi presents ecological urbanism as a natural outgrowth of the 'ecosophic problematic' of Félix Guattari and his elaboration of Gregory Bateson's critique of neo-Darwinian thinking. There is a radical interdisciplinarity in play that is marked by an emphasis on 'the articulation of the interface, the liminal space, between the urban and the political' (Mostafavi, 2010: 48). The conceptual agenda for ecological urbanism shares significant conceptual and institutional continuities with the earlier emergence of 'landscape urbanism' as a synthesis between landscape and urban design (see Mostafavi, 2010; Steiner, 2011). Other significant influences include the 'landscape ecology' programme initiated by Richard T.T. Forman with his emphasis on 'patch dynamics' and the Baltimore Ecosystem

Study, which is strongly rooted in earlier systems-based approaches to urban ecology (see Grove et al., 2015). For the urban designer Anne Whiston Spirn (2014: 557), who aligns 'ecological urbanism' with her own previous work, this emerging paradigm 'weds the theory and practice of urban design and planning, as a means of adaptation, with the insights of ecology and other environmental disciplines'. Spirn (2014: 557) emphasises that the adoption of this framework is 'critical to the future of the city' in order to tackle the twin challenges of climate change and environmental justice. Yet Spirn's avowedly Eurocentric framing of the field – connecting with Vitruvius, Alberti, and Olmsted among others – belies an uncertainty about the political parameters of capitalist urbanisation. As a result, we are confronted with a naturalisation of the urban process that requires the adaptation of 'urban form to natural process' rather than an emphasis on structural change in human societies (Spirn, 2014: 569). In defining the city as an ecosystem there is a radical disjuncture between urban space and human history. By supplanting politics by design the urban arena is reduced to a series of intersecting flows, cycles, and material elements. The programmatic aims of ecological urbanism are clearly geared towards the alignment of design, and landscape design in particular, with the emerging emphasis on resilience discourse under the 'adaptive Anthropocene'.

Ecological urbanism presents an interdisciplinary agenda for future cities that is marked by a degree of epistemological convergence between fields such as ecology, economics, engineering, social psychology, and other forms of knowledge that lie broadly outside the domain of critical theory. In keeping with the wider insistence on the need for a form of radical interdisciplinarity exemplified by the entomologist E.O. Wilson's use of the term 'consilience' there is a palpable sense of impatience with forms of nuance or complexity that might challenge 'self-evident' dimensions to urban environmental discourse. This is, above all, a client-oriented ecological discourse that is more revealing about the institutional context for landscape design than it is about the environmental phenomena under investigation.

The emphasis on urban resilience has emerged out of attempts to effectively depoliticise capitalist urbanisation. The question of design has become a focal point for reframing political questions as a series of technical challenges. The difficulty, however, is that despite yearly conferences held under the United Nations Framework Convention on Climate Change, including Kyoto in 1997, Copenhagen in 2009, and Paris in 2016, the pace of environmental degradation has markedly worsened. The emerging emphasis on the adaptive Anthropocene merely resituates the global environmental crisis as a matter for enhanced forms of human ingenuity, the need for 'smart' changes in land use, or the construction of vast geo-engineering projects.

Conclusions

There is a growing sense of anticipation that cities will make a major contribution to achieving global environmental policy goals. In particular, there is an expectation that international networks of cities, spearheaded by charismatic mayors, might take on nation-states, the fossil fuel industry, and successfully transform patterns of consumption and everyday life. Yet this network-based conceptualisation of urban environmental discourse, which emphasises forms of policy innovation, tends to overlook the historical dynamics of urban political mobilisation. The sharing of 'best practice' in the field of design, for example, is a very different kind of policy legacy to that offered by urban social movements, campaigns for environmental justice, and other forms of grassroots intervention.

The COVID-19 public health crisis has again exposed the tensions between a design-oriented urban discourse and the political parameters of structural health inequalities and corporeal vulnerabilities. Speculation over the possible characteristics of the 'post-COVID city' has highlighted themes such as walkability, homeworking, and the enhancement of green spaces but there has been much less emphasis on the networked dimensions to urbanisation that connect with capitalist agriculture or extractive frontiers where zoonotic 'spillover events' may occur. The 'COVID mirage' of tranquil cities under lockdown has instilled a renewed confidence in the possibilities for ecological design. Similarly, reduced levels of international travel have contributed to a temporary dip in global fossil fuel emissions. At the same time, however, the COVID-19 pandemic has swept through community after community, especially in the Global South, exposing pre-existing patterns of poverty and ill health. The fetishisation of the 'ecological city' and its cultural modalities of aesthetics and design works against an understanding of global health threats.

The tension between varieties of ecological urbanism and the ongoing development of urban political ecology is illuminating. A recourse to design as the focal point for urban policymaking cannot advance beyond various forms of behavioural, organisational, or technological change that effectively obscure the underlying dynamics of environmental degradation. Nineteenth-century concerns with 'urban beautification' and the ameliorative effects of contact with nature are alive and well. The figure of the expert – whether scientist or designer – remains pre-eminent in a wider choreography of ecologically framed spatial interventions. What urban political ecology offers in contrast is a focus on the power relations and historical contingencies that underpin the dynamics of capitalist urbanisation. The use of ecology as a cultural resource for political mobilisation is problematised rather than valorised.

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