

Urban Nature

Matthew Gandy

INTRODUCTION

The words 'urban' and 'nature' both require some qualification. The word 'urban', derived from the Latin *urbs* meaning 'city', or simply the city of Rome, first enters the English language in the seventeenth century. Although the term 'urban' is conventionally defined as something pertaining to the city, it has over time been increasingly used as a synonym for the experience of modernity more broadly. In particular, the distinction between 'urban' and 'rural' has often served as an analytical starting point for wider reflections on the development of modern societies. The usage of the word 'nature' is even more complex, as Raymond Williams (1983) shows, but in the context of this chapter the idea of nature will extend principally to facets of the natural world, including the human body, as well as cultural representations of nature and landscape. To refer to 'urban nature', then, captures some of these

tensions and uncertainties since it may simply refer to the material characteristics of urban space as well as indicate further cultural and ideological elements, including the widely assumed yet problematic presence of a universal human subject. Although this chapter focuses mainly on the European and North American experience, I have drawn on other examples where appropriate to indicate the relational dimensions to urban experience that can unsettle existing historiographies.

Interest in urban nature within what we might loosely define as 'historical geography' has been a relatively recent development. The longstanding focus on landscape change, exemplified by figures such as Clifford Darby, Carl Sauer, and Paul Vidal de la Blache, made only tangential connections to the socio-ecological configurations of urbanization. By the 1980s, however, we can begin to detect a shift in emphasis towards more dynamic, theoretically informed, and historically sensitive conceptions of relations

between nature and culture. Emerging strands of work within cultural and historical geography from the late 1980s onwards that attempt to reframe urban nature as a corporeal and iconographic facet to modernity include studies of urban epidemiology (Kearns 1991) and critical reconfigurations of representational practice (Cosgrove 1988). From the mid-1990s onwards the ‘historical geographical lens’ in relation to the urbanization of nature becomes further enriched through a series of developments, such as the bringing of animals into the analytical frame (for example, Philo 1995), and the extension of the research imagination to relatively neglected domains of the urban environment, such as zoos (for example, Anderson 1995). These developments have not, of course, emerged in isolation, and mark a wider set of currents both within and between the fields of cultural, urban, and environmental history, as the ‘matter of nature’ – to use Margaret Fitzsimmons’ (1989) enduring formulation – has been repeatedly recast as a dynamic focus for historically inflected modes of scholarship on the urbanization of nature (Melosi 1993).

What might be an appropriate starting point for delineating the emergence of urban nature as a distinctive kind of cultural and material formation? Archaeological evidence points to elaborate interactions between nature and culture in early cities ranging from garden design to complex water distribution systems, as well as wider transformations wrought by agricultural change, the need for timber, and other developments. Early Chinese cities, for example, were marked by a ‘cleared outer zone’ between farmland and the ‘wilderness’ beyond: these garrison-like urban–agrarian complexes lived under perpetual fear of food shortages and sought to protect themselves with moats and other fortifications from both people and animals. The size of these cities was ultimately constrained by the ‘decisional distance’ they could impose on their hinterlands in a geopolitical dynamic that prefigures the expanded ecological reach of modern cities (Elvin 2004, 94, 103).

The significance of the *longue durée*, as articulated by the diverse body of work associated with the French Annales school of history, cautions against a certain ‘presentism’ in relation to contemporary urban discourse. Yet the longer the timeframe, especially as we move beyond early history into the ‘deep time’ of geo-historical reflections, the more diffuse our sense of human agency becomes (Conrad 2016). The sense of the ‘city’ as a set of structural relations made manifest in topographic form extends over several millennia but our particular interest here is on the rapid set of changes associated with the rise of the nineteenth-century industrial metropolis. I am especially interested in the emerging interplay between urban nature and capitalist urbanization, even if the agency of nature, and the broader contours of environmental history, clearly transcend this more specific ensemble of socio-technical, cultural, and political developments (Massard and Mosley 2011; Mosley 2006; Taylor 1996; Worster 1990).

The chapter explores three facets to urban nature: first, I consider the ‘urban problematic’ and different aspects to urbanization as a process that has fundamentally altered relations between nature and culture; second, the chapter turns to the refashioning of nature to produce ‘fragments of paradise’ in a lineage from early garden design to modern public parks and utopian planning ideals; and third, with ‘signs of life’, I examine the sense in which cities create their own ecologies through an emphasis on urban dimensions to other-than-human geographies. Although I consider the place of nature in early cities, my primary focus here is on the modern city and the wider dynamics of urbanization unfolding from the middle decades of the nineteenth century onwards. The term ‘modern city’ invites caution since the historiography of modernity has been so heavily dominated by developments in Europe and North America. In particular, the tensions surrounding the growth of the nineteenth-century industrial metropolis have played a

pivotal role in the evolution of the modern urban imaginary. The emergence of the modern city is enmeshed with a cohort of cultural, technological, and political developments within which the metropolitan scale serves as one among many potential vantage points from which to reflect on the reach and characteristics of modernity.

THE URBAN PROBLEMATIC

The question of urban nature inevitably spills over into a consideration of the nature of the urban. For the French urbanist and social theorist Henri Lefebvre, the pivotal event of modern history is the move towards 'complete urbanization' (Lefebvre 2003 [1970], 1). Writing in the early 1970s, Lefebvre reflected on the social, technological, and political implications of an increasingly urbanized world. In Britain, for example, the urban population grew from just under a quarter of the total in 1800 to over three-quarters in 1900, so that urban life had changed from being a minority experience to the majority experience (Williams 1973). Although there are examples of pre-modern cities, such as Rome and Constantinople, exceeding half a million inhabitants, the nineteenth century sees the rapid growth of many cities across Europe and North America: London in 1800, for example, had a population of around 1 million, rising to 4.5 million by 1881, and 7 million by 1911; Berlin in 1800 had a population of 200,000 rising to 1.5 million in 1890; while the population of Paris grew from around 500,000 in 1800 to over 2.5 million by the end of the century. Other cities expanding dramatically during the nineteenth century include Bombay (Mumbai), Chicago, New York, Naples, Rome, St Petersburg, Vienna, Budapest, and Moscow.

In 1900 the ten largest cities in the world were located in Europe and North America in a marked shift from the global picture

in 1800 when six of the ten largest cities were located in China and Japan (Beijing was by far the largest) along with London, Constantinople (Istanbul), Paris, and Naples. By 1950, however, the picture begins to shift back towards this more global pattern with Shanghai, Tokyo, Buenos Aires, and Calcutta (Kolkata) all entering the list of the most populous metropolitan regions. These shifting contours of urbanization at a global scale highlight the limitations of an 'urban model', or at least a historiographic reading of modernity, that draws universal inferences from a relatively narrow historical window. While the advent of capitalist urbanization has become global in scope, the specificities of Berlin, London, Paris, and other leading metropolises within the literature should be placed in a broader perspective. In particular, it is valuable to consider an evolving set of relationships not only between different cities within the core and periphery, but also across different sets of processes that draw distant places and processes into the emerging nexus of urban modernity. In the case of London, and its evolving role as an imperial hub for the administrative and commercial tentacles of empire, its development forms part of a wider network of relations drawing in Bombay (Mumbai), Calcutta (Kolkata), Lagos, Hong Kong, and many other urban centres.

The shaping of urban nature is difficult to disentangle from the environmental conditions engendered by rapid urbanization: cities in themselves generated a set of challenges that necessitated an increasingly complex set of socio-technical and political interventions (Tarr 1996). The historian Frank Snowden describes Naples as 'the most shocking city of nineteenth-century Europe', marked by spiralling rents, land speculation, disease epidemics, and extreme overcrowding (Snowden 1995, 17). The urbanist Mike Davis wonders what nineteenth-century Dublin, Naples, and other cities would have been like without mass migration, and contends that there are now hundreds, if not thousands, of similar

cities overwhelmingly concentrated in the global South. For Davis, the ‘slum’ is not an aberration but a dominant and persistent characteristic of the urban condition: his explicit comparison between nineteenth-century cities and the current shift towards ‘complete urbanization’ is instructive because questions of capital flow, human mobility, and environmental conditions are placed at the centre of analysis (Davis, 2006; see also Newman 2015).

The growth of cities is inextricably linked with large-scale environmental transformations. In Jean Gottmann’s classic study of an urbanizing region, centred on New York City but extending from southern New Hampshire to the Appalachian foothills, he highlights the development of regional networks for water, energy, and other needs that extend far beyond the urban fringe (Gottmann 1961; see also Muscarà 2003). ‘The great technological momentum of the period in which Megalopolis grew was a great factor,’ writes Gottmann (1961, 775), ‘and the natural riches of the American continent were also instrumental.’ Similarly, William Cronon’s study of the growth of nineteenth-century Chicago emphasizes the regional transformations produced by demands for food, timber, and other commodities, so that the city ‘imposed on the land a new geography of second nature in which the market relations of capital reproduced themselves in an elaborate urban–rural hierarchy that would henceforth frame all human life in the region’ (Cronon 1991, 378).

The reorganization of nature within the modern city involved a set of simultaneous socio-technical, cultural, and political transformations that impacted on different elements of urban life. In the case of artificial illumination, for instance, we find a steady ‘colonization’ of the urban night beginning with various types of oil lamps, then moving onto gas lighting, followed by successively denser and brighter networks of electric lighting. Each of these technological pathways involved not just the utilization of nature – ranging from animal oils in the early

industrial metropolis to the more recent reliance on rare earths for the production of LED lights – but also the wider effects on urban ecological processes, circadian rhythms, and the loss of the night sky (Gandy 2017).

The modern city is a cultural appropriation of nature yet the apparent ‘naturalness’ of capitalist urbanization holds an ideological ambiguity under modernity. Even as the urban–rural distinction has become progressively blurred, the sense of a rural or ‘small town’ way of life has retained cultural and political resonance. The contrast between rural *Gemeinschaft* (community) and urban *Gesellschaft* (society), as delineated by the German sociologist Ferdinand Tönnies in 1887, has become a recurring point of departure. Many late nineteenth-century and early twentieth-century commentators emphasized the ostensible psychological effects of crowds, noise, speed, and light within the modern metropolis (Killen 2006; Martínez Estrada 1971 [1933]; Vidler 2000). The sociologist Louis Wirth, for instance, building on the insights of Simmel and Tönnies, further elaborated on this distinction between ‘urban-industrial and rural-folk society’ and explored the essence of urban modernity in terms of the effects of cities on their inhabitants. Wirth described how urbanization was a process of becoming more distant from ‘organic nature’ in an implicit elision of ‘natural’ human relations with smaller settlements and rural communities. Yet what Wirth identified as ‘the peculiar characteristics of the city as a particular form of human association’ was derived from a specific reading of North American urbanization in which there was little or no differentiation between different modes or experiences of urbanization, and where class, gender, or race distinctions were naturalized rather than problematized (Wirth 1938, 4). What Wirth referred to as the ‘essential determinants’ of urban life were the specific conditions of North American urbanization, experienced in the early decades of the twentieth century. Wirth, along with other prominent contributors to the Chicago School

of Sociology, such as Ernest W. Burgess and Robert E. Park, adopted various assumptions about kinship, community, and everyday life that not only assumed inherently problematic dimensions to urbanization, but also used a series of ecological metaphors as modes of ahistorical analysis (Wolch et al. 2002). If the romanticist critique of urbanization had focused on aesthetic concerns, the nascent social science perspective developed via Simmel and the Chicago School had focused on the psychological well-being of a putative universal human subject.

The characterization of cities as a kind of cultural aberration is widespread in romanticist and reactionary anti-urban imaginaries. Implicit within these formulations is a sense that nature and the built environment hold a formative set of influences over human culture and behaviour. It is important to note, however, that many of the leading critics of everyday life in modern cities, such as Georg Simmel, did not reject modernity in itself but merely drew attention to specific aspects of urbanization. Simmel, for example, characterized cities as the 'seat of cosmopolitanism' that offered the prospect of 'emancipation from prejudices and philistinism' (Simmel, 1950 [1903], 419). In contrast, the fully articulated anti-urban argument is to be found in the work of Nazi philosophers such as Hans Günther, who explicitly pitches his critique of modernity against Simmel, and the ostensible 'rootlessness' of urban modernity in an organicist appeal to authoritarian and anti-Semitic ideologies (Günther 1934; see also Chapoutot 2018).

An emphasis on 'natural relations' draws on the ideological sustenance of nature as a bulwark against demands for social and political change exemplified by neo-Malthusian interpretations of subsistence crises as unfortunate yet inevitable (Harvey 1974). The analytical impasse posed by behavioural and psychological interpretations of urban life remains mired in various cultural essentialisms. In contrast, the evolution of the neo-Marxian analytical tradition has stressed

how the environmental conditions of modern cities, including poverty, ill health, and overcrowding, are the outcome of underlying social inequalities. A form of environmental anarchy enveloped rapidly growing cities that exceeded the regulatory scope of existing 'nuisance' ordinances and other kinds of legal instruments. In the case of food and markets, for example, spoiled, rotten, and adulterated products were ubiquitous. Here is a description of a Hamburg market in 1810 (cited in Evans 1987, 166):

Bad lemons and oranges, rotten almonds, figs, and plums, stinking cheese swarming with maggots. ... When seafish are sold, their gills are smeared with cows' blood to deceive the public as to their freshness.

Consider also Friedrich Engels's description of mid-nineteenth-century Manchester (1952 [1845], 62):

The cottages are very small, old and dirty, while the streets are uneven, partly unpaved, not properly drained and full of ruts. Heaps of refuse, offal and sickening filth are everywhere interspersed with pools of stagnant liquid. The atmosphere is polluted by the stench and darkened by the thick smoke of a dozen factory chimneys.

The poverty and environmental chaos of nineteenth-century cities provoked a range of responses: for moralists, the deprivation was explained away as an outcome of cultural or moral degeneration, often supplemented by appeal to racist stereotypes; for the burgeoning romantic movement, the darkening skies symbolized an aesthetic and cultural crisis permeating modernity itself; and for early social scientists and political reformers, the underlying cause of the urban crisis was to be found in low wages, inadequate housing, terrible working conditions, and a general disregard for human health. Over time, however, new forms of regulation emerged since existing controls proved increasingly ineffective. The growth of cities had profound consequences for urban politics as more representative and responsive modes of local government gradually emerged. Ineffective

agrarian elites, rotten boroughs, uncoordinated vestries and turnpike boards, and other sources of political power were swept aside by the articulation of new urban interests and the gradual widening of the political franchise (Evans 1987). The emergence of municipal government in the late nineteenth century saw multiple advances in fields such as education, primary health care, and the universal provision of basic services such as water and sanitation.

FRAGMENTS OF PARADISE

Although the English word ‘garden’ begins to appear in the thirteenth century, and is derived from the French *jardin*, the presence of gardens in human culture can be traced much earlier. The sense of the garden as a place of contemplation or pleasure, rather than a mere plot of land for cultivation, originates from at least the third millennium BCE. The idea of the landscaped garden, with complex planting schemes for trees, flowers, and herbs, reached Europe via what is now the Middle East and North Africa. In Assyria, for instance, between 900 and 700 BCE there is archaeological evidence for large public parks and royal hunting preserves, and in Egypt we find some of the first evidence of botanical gardens, including a wide range of exotic plants collected over vast distances, as depicted in the tomb paintings of Tutmosis III (1504–1450 BCE) (van Zuylen 1995). In Persia, there is a rich history of gardens, culminating in the construction of palace complexes and royal parks described by the French garden historian Gabrielle van Zuylen as ‘mirrors of paradise’. The etymological origins of the word ‘paradise’ are derived from the Persian *pairidaeza*, denoting a protected garden serving as a lush haven in an otherwise inhospitable landscape. Similarly, in ancient Greece the term *paradeisos* is adopted to refer to landscaped gardens, often including the elaborate use of water. It is in

the Roman empire, however, that we find the beginnings of what might be considered the European landscape tradition involving a hybrid aesthetic derived from Greek, Egyptian, and Persian antecedents (van Zuylen, 1995). The garden fresco in Villa Livia (30–20 BCE) discovered in Pompeii, for instance, shows a planted garden with fruit trees and songbirds.

After the collapse of the Roman Empire in the fifth century, there is less archaeological evidence for gardens. The violence and uncertainty of the medieval period, especially in northern Europe, saw garden traditions mainly survive in monasteries and other types of enclosed or protected spaces, while gardens fared better under Islamic control in southern Europe. The spread of Muslim influence in Spain from the eighth century onwards brought elaborate garden designs, along with the translation of botanical texts from ancient Greece, as well as seeds from Asia and Africa (Mikhail 2011). In northern Europe meanwhile, the idea of the garden mainly persisted as an ‘imaginary’ place serving as an allegory of hope in dark times. Examples include the illustrated manuscripts of Évrart de Conty, dating from the late fifteenth century, where the garden is depicted as a secret place for love and dreams (Figure 31.1).

The re-emergence of European interest in gardens during the fifteenth century forms part of a wider rediscovery of the classical world. In the place of the medieval walled garden there are new types of gardens that are ‘open to the world’ as an emblem of new freedoms under the Renaissance (van Zuylen 1995, 45). The first botanical garden in Europe to showcase rare or medicinal plants is created at Pisa in 1543, followed by Padua in 1545, and then Florence in 1550. The architect Leon Battista Alberti, drawing inspiration from Vitruvius and Pliny the Younger, describes landscaped gardens in his *De re aedificatoria*, printed in 1485, as spaces for the contemplation of nature. The use of geometrical patterns in garden design,

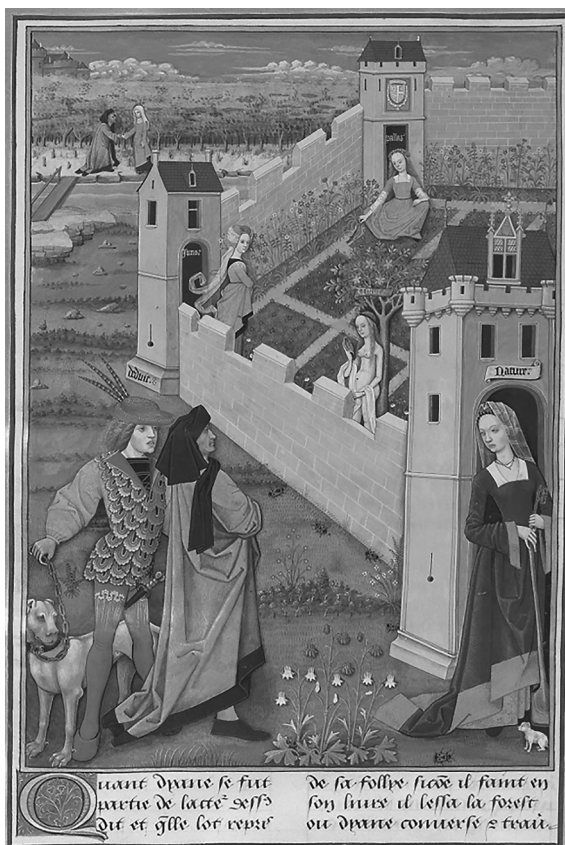


Figure 31.1 Évrart de Conty, *Le jardin de nature*, c. 1496–99. The walled garden in medieval Europe served as a secluded space of sanctuary and imagination

Source: Évrart de Conty (1995). *Le livre des échecs amoureux*. Paris: Éditions du Chêne, and Ms. Français 143 Folio 198v Bibliothèque nationale de France (BnF), Paris. Reproduced with the permission of the BnF.

with multiple vantage points, is taken to a new level of sophistication with the Tivoli gardens north of Rome, with a profusion of statuary, water features, and the use of topiary to create mazes and labyrinths. The influence of the Italian renaissance style becomes especially significant in France, with the development of what is termed the ‘formal style’ based on the symmetrical reorganization of nature, that finds its acme in André Le Nôtre’s ostentatious plans for Versailles, that took some 40 years to complete. The new gardens of Versailles served to showcase the burgeoning power of the French state through the use of military engineering to recast the

raw materials of nature into a stunning visual display (see Mukerji, 1997). The French formal style is then emulated by other royal gardens in Russia, Spain, Italy, and elsewhere, and is also adopted in Pierre L’Enfant’s grid layout for Washington, DC, presented in 1791.

In contrast to formal garden design, a different approach characterized as the ‘English picturesque’ emerges in the late eighteenth century, marked by renewed interest in Arcadian and mythological landscapes. These developments are driven by an emphasis on more poetic, naturalistic, and informal features of landscape that might be contrasted

with the utilitarian spaces of agricultural improvement. The aesthetic value of wild or 'pristine' nature becomes increasingly valorized in the context of new types of wastelands produced by quarries and other industrial activities (Palma 2014). These novel vistas are also influenced by changes in aristocratic taste, marked by a shift from deer hunting to fox hunting and the demand for more open types of landscape. Other influences include the French artist Claude Gellée (known as Lorraine), who created a series of imaginary scenes that resembled theatre sets in their self-conscious re-articulation of mythical and pastoral motifs for wealthy patrons. An emerging dialectic between imaginary and material spaces is given further impetus by capitalist enclosure, thereby increasing the amount of land available for the creation of landscaped grounds. These emerging types

of 'naturalistic' design then become an influential element in the layout for urban parks, often through the incorporation of existing features of the site topography, as illustrated by Calvert Vaux and Frederick Law Olmsted's design for Central Park in Manhattan and Jean-Charles Adolphe Alphand's layout for Parc des Buttes-Chaumont in Second Empire Paris (Figure 31.2). These ambitious parks mark a heightened level of complexity in terms of combining different aesthetic traditions, applying sophisticated legal instruments, and deploying the latest advances in engineering science.

The reconstruction of Paris under Napoleon III, and his prefecture of the Seine Baron Haussmann, has repeatedly served as a point of critical departure for wider reflections on urban modernity. The large-scale public works encompassed different facets

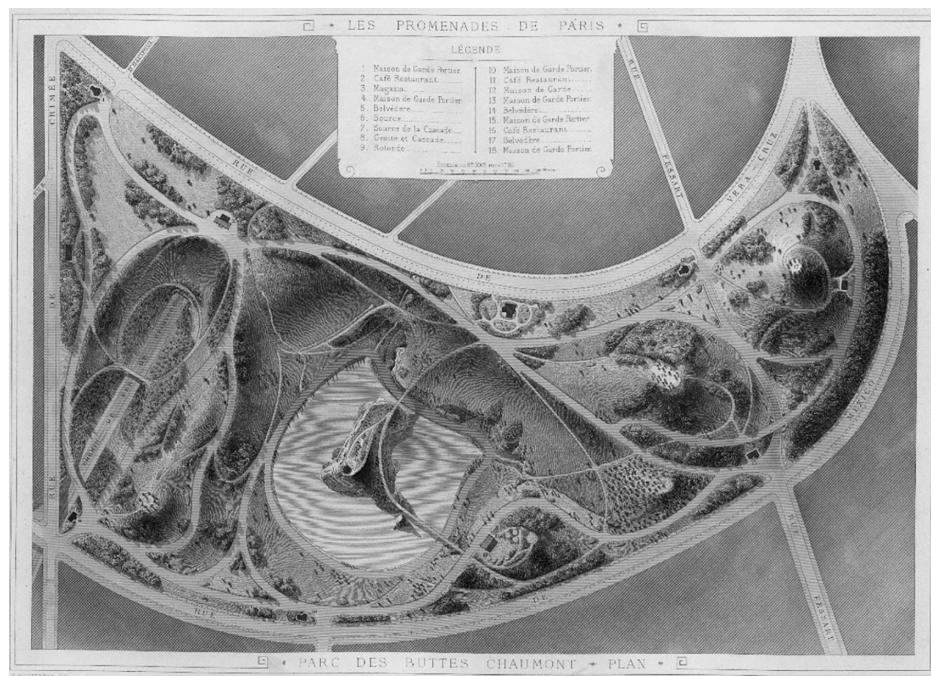


Figure 31.2 Map of Parc de Buttes Chaumont, Paris, 1867. Adolphe Alphand's park design transformed a scarred landscape of old quarries into an elaborate public park with waterfalls and woodland walks

Source: Adolphe Alphand (1867). *Les Promenades de Paris*. Paris: J. Rothschild.

to the reconstruction of nature, ranging from unseen technological networks and tree-lined boulevards to a new system of urban parks. As the art historian Nicholas Green (1990, 75) notes, the reconstruction of nature in Second Empire Paris involved the simultaneous re-ordering of cultural and ideological subjectivities:

The point is that we are dealing not with an evolutionary history of ideas, but with a materially-situated ideology whose specific organisation does not simply translate from one period to another. In that sense, the particular working together of environmentalist priorities with Parisian modernity produced a nature not antithetical but integral to the living-out of metropolitan culture.

The new landscapes of metropolitan nature became part of a cultural milieu that rested on 'the naturalness of nature' rather than the self-conscious *trompe-l'œil* associated with earlier legacies of formal garden design. This 'new nature', to use Green's expression, was directed towards an enlarged public audience that extended far beyond elite encounters with earlier gardens or landscaped grounds. The urban beautification movement of the nineteenth century sought to reintroduce nature into cities to prevent urban space from becoming an uninterrupted vista of congested development. Many of these designs were influenced by European romanticisms and a conviction that greater contact with nature could help ameliorate social tensions in nineteenth-century cities. This is not to argue that these interventions were against speculative development *per se*, but rather that they reflected a different constellation of capital, aesthetics, and private interests. Manhattan's Central Park, after all, was no anti-capitalist oasis but rather the 'eye of the storm' within an immense real estate market (see Gandy, 2002).

With rapid urban growth, outlying fragments of countryside that were protected from development became incorporated into urban park systems, such as Berlin's Grunewald forest and London's Hampstead

Heath. Much of Hampstead Heath, which had constituted 'common land' with limited legal protection, was purchased in the 1870s by the recently created Metropolitan Board of Works (the precursor to the London County Council) to protect the area from further development. Other significant interventions include the later creation of 'green belts' to contain urban sprawl and the loss of agricultural land. In the case of London, interest in creating a green belt developed from the 1890s onwards, and is reflected in the London development plan of 1919, but full implementation only occurred after comprehensive advances in planning legislation in the 1930s and 1940s, as part of a wider reconfiguration of the public interest in land use policy.

New approaches to land use planning also developed significantly in Weimar Germany with the modernist synthesis of nature and culture advanced by Ernst May, Bruno Taut, Martin Wagner, and others. These new models moved far beyond the garden city ideal, and directly critiqued the limits to spatial planning under capitalist urbanization. Wagner's vision for a socio-ecological technological utopia in Weimar Berlin, for instance, extended beyond urban design to include work, leisure, and the fulfilment of human creative potential (Scarpa 1986). A similar impetus towards a radical synthesis of nature and culture can also be observed in the Soviet Union during the 1930s, although none of these utopian proposals for 'green cities' was ever realized (Josephson et al. 2013).

By the postwar era, we find a fracturing of many of the assumptions that underpinned spatial planning. The twentieth-century synthesis of nature and culture, and the associated infrastructures of technological modernism, became increasingly manifest in a series of replicative landscapes that owed little inspiration to place, critical regionalism, or progressive political ideals. Neo-Marxian architectural critics, such as Aldo Rossi and Manfredo Tafuri, explore the dislocations

between place and collective memory in the modern city as part of a wider critique of the exhaustion of the utopian ideals associated with twentieth-century modernism (Rossi 1982 [1966]; Tafuri 1987). Similarly, the architectural historian Christine M. Boyer highlights the dissipation of a putative public interest in large-scale planning initiatives as part of a wider reassessment of relations between space and power (Boyer 1983). From the 1960s onwards, the exhaustion of modernism in its technocratic guise gathers momentum under the wider dissipation of cultural modernism (Anderson 1998).

The Eurocentric assumptions underlying teleological readings of modernity have been displaced by recognition of a more polyvalent and interrelated set of developments marked by multiple geographies and temporalities. The contradictory dimensions to urban planning are brought into sharp relief in the colonial context where the replication of the 'ideal city' repeatedly founded on a mix of fiscal impoverishment and limits to technocratic expertise (for example, Rabinow 1989). New patterns of residential segregation, exacerbated by elite monopolization of public space, become emboldened by a series of cultural essentialisms in the service of the colonial state (Home 1987). In the case of West Africa, for example, new epidemiological insights into malaria led to the deployment of 'scientific racism' to bolster the racial segregation of housing in Freetown, Kaduna, and other cities.

Although European and North American garden design incorporates many other influences, from Asia in particular, the interpretation of these 'hybrid' spaces has tended to fall back on a series of dichotomous generalizations. Simplistic contrasts are drawn between the Judaeo-Christian tradition and the identification of alternative animist or pantheistic understandings of nature in non-western cultures. In the field of art history, for instance, we encounter a series of assumptions about both the subject matter of Chinese art and the extent of landscape change in China itself.

Claims that Chinese art is concerned with the 'spirit' or 'essence' of the cosmos and that landscape in particular forms the 'great subject' of Chinese art tend to fall back onto a series of cultural essentialism rather than historical analysis (Tan 2016, 224). Many of the 'natural' landscapes depicted within Chinese art actually reflect the 'naturalization' of modified landscapes into spaces of contemplation in an analogous process to that observed in Europe and the fascination with wilderness and other specific kinds of cultural landscapes. The extent of environmental destruction in China through deforestation, soil erosion, and other processes over many centuries is equivalent to, or arguably in excess of, that observed in modern Europe.

SIGNS OF LIFE

Cities encompass several different kinds of ecological assemblages. Remnant ecologies include traces of nature that predated intensive human modification of the landscape such as lakes, rocky outcrops, or areas of woodland that have become incorporated into park systems and urban landscapes. Constructed forms of nature, by contrast, include those conscious elements of design, such as parks and gardens, where the layout, planting schemes, and other features are dominated by human intent. Spontaneous ecologies are different again, and include the many species that have simply arrived, and in some cases flourished, within urban environments. Those species most closely linked, or even dependent, on human settlements for food, shelter, and other needs, termed synanthropic, include a variety of pests as well as the benign ubiquity of many birds and insects, such as the house sparrow (*Passer domesticus*) or the honey bee (*Apis mellifera*) (Marzluff and Angell 2005). In practice, however, this trifold distinction between 'remnant', 'constructed', and 'spontaneous' can become decidedly blurry:

there are species of animals and plants that were originally introduced but have since become feral or naturalized elements of urban ecology. Examples include giant hogweed (*Heracleum mantegazzianum*), a nineteenth-century ornamental curio from the Caucasus, that now grows along canals and other overgrown places in many European cities. Urban ecology is an outcome of global history: the characteristics of urban nature bear the imprint of a myriad of connections and influences accrued over many centuries.

There is archaeological evidence for distinctive urban ecologies emerging in response to trade routes and human mobility. Examples include pollen deposits from Roman London that indicate a variety of adventive plants drawn from across the Roman Empire, such as corn buttercup (*Ranunculus arvensis*) and caper spurge (*Euphorbia lathyris*), as well as species cultivated for food, such as almonds, peaches, and apple varieties (Witcher 2013). The Roman era also saw the spread of significant urban pests, such as the black rat (*Rattus rattus*) and the saw-toothed grain beetle (*Oryzaephilus surinamensis*). Elements of the urban landscape can be regarded as an ecological palimpsest derived from different moments in human history: the botanist Richard Deakin's classic study of Rome's Colosseum, for example, published in 1855, found some 420 different species growing on the ruins, including several highly unusual plants found nowhere else in Europe that may have arrived in the fur of gladiatorial animals imported from Africa.

We can consider the human home as an ecosystem in its own right, as successive waves of different species responded to changes in architectural design, construction materials, heating methods, and other factors. Although many synanthropic organisms associated with the domestic interior are harmless, there are a small number of highly stigmatized species that have had a notorious presence in modern cities, such as bedbugs, cockroaches, and rats (Biehler 2013).

Once ubiquitous, these pests have become increasingly associated over time with the ecological niches produced by poverty and inequality, such as poor housing or inadequate infrastructure systems. And if we were to consider the human body itself as part of a set of wider ecological relations, we should extend our lens to include the epidemiological dimensions to cholera, typhoid, tuberculosis, and many other diseases.

The relationship between animals and the city has gone through several phases, beginning with early forms of companionship, domestication, and food production. The presence of feral urban nature, such as stray dogs, pigs, or other animals, became a characteristic feature of the early nineteenth-century metropolis as a further facet to environmental chaos in industrial cities. 'Not only were there more people around to own animals,' notes the historian Catherine McNeur (2014, 8) in relation to early nineteenth-century Manhattan, 'but those people were also creating more garbage that, left uncollected on the streets, fed a burgeoning, free-roaming animal population.' Impoverished New Yorkers kept hogs and other animals as a means to supplement their diet in the face of exorbitant food costs, but the animals themselves became stigmatized symbols for their owners. Periodically, the city authorities hit back against the army of animals with brutal bio-political interventions, such as the 'dog war' of 1836 in which over 8,000 animals were killed (see also Howell, 2018).

Ultimately it was the question of food, diet, and public health that instituted a new phase in the relationship between animals and urban modernity. The rapid growth of nineteenth-century cities necessitated new approaches to the production of food, and in particular the need to ensure the availability of cheap and safe protein for urban populations. Central to this biopolitical reorganization of urban space was a new generation of more efficient and technologically sophisticated abattoirs, now operating under the



Figure 31.3 Cattle being slaughtered with a spear in a Chicago abattoir, c. 1870s. The intensified slaughter of animals in the nineteenth-century city can be interpreted as a precursor to the emergence of assembly line production methods

Source: Ernst von Hesse-Wartegg (1880). *Nord Amerika*. Leipzig: W. Weigel.

regulatory eye of public health authorities (Figure 31.3). By the late nineteenth century, earlier concerns with noise, stench, and congestion had been supplemented by public health revelations such as the dangers of trichinosis and other hidden dangers

emanating from unregulated production of meat (Brantz 2005). ‘What makes the history of slaughterhouses particularly interesting,’ notes the historian Dorothee Brantz, ‘... is that they shed light on the continuous interdependence of human and animal

bodies even as livestock was increasingly removed from the streets of cities.’ Animals not only provided protein, but also performed much of the labour needs for capitalist urbanization. The horse, in particular, was widely regarded as a kind of ‘machine’ that was integral to the functional dynamics of modernity. In 1879, the *New York Times* referred to New York as ‘stable city’, while a survey in 1900 found that there were 7.4 people for every horse in Kansas City (McShane and Tarr 2007, 16). So numerous were horses in the nineteenth-century city that the topography of urban space reflected the need for stables and other facilities (see also Pick 1993, 178–88).

CONCLUDING REMARKS

For Lefebvre, the ‘urban revolution’ is not simply a matter of urban growth, reflected in a series of morphological transformations, but something much more far-reaching. According to Lefebvre, even the countryside, through the construction of roads, telecommunications, and other connective elements of modernity, is now effectively part of the ‘urban fabric’ (Lefebvre 2003 [1970], 4). With more than half of the global population residing in urban areas since 2014, and over 500 cities now with over a million inhabitants, the question of what constitutes the urban has become even more ill-defined since Lefebvre’s original observations. The refashioning of urban nature in the context of capitalist urbanization encompasses many different developments, such as new patterns of resource utilization at successively greater scales, the construction of increasingly complex technological networks, and the incorporation of elements of nature within public space and landscape design. If the history of urbanization has marked a steady separation of human societies from one kind of nature, it has also rested on the steady re-incorporation of modified fragments of nature, ranging

from food to landscape design, from technological networks to new socio-ecological assemblages.

How far back should our historical frame of reference extend? When we consider the place of urbanization within ‘deep time’, and the longer timeframes of the Anthropocene, there is a move away from historical and geographical specificity towards a more general account of changing human relations with nature. The recent interest in geo-historical change that is focused on a ‘species’ history of humankind poses profound questions for historical analysis.

‘While providing important and indispensable insights,’ notes the historian Sebastian Conrad, ‘the category of “species,” and of large time frames alone, does not enable us to address questions of responsibility, either historically or in the present’ (Conrad 2016, 160). The construction of both nature and the human subject under modernity poses profound questions, including the intersections between race, science, and global capital, that have been largely occluded within the anthropocene literature (Yusoff 2018). The precise role of cities and urbanization within this geo-historical transition has yet to be systematically investigated.

The role of nature in urban historical analysis has wavered between that of analogy and analysis. The conceptual terrains of nature and ecology have provided something of a tabula rasa for speculations on the innate characteristics of modernity, urban space, and the human subject. In the place of nature-based analogies, however, alternative scholarly traditions have pointed towards an explicit engagement with class-based inequalities, later elaborated through successively expanded fields of work that take account of race, gender, and ultimately the ethical dimensions to other-than-human natures in more recent iterations of radical urban scholarship. The presence of nature as an ecological analogy or ideological motif has been largely displaced by a sense of nature as materially produced and historically specific.

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