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# Matthew Gandy

## Andrew Karvonen

### Key urban writings

- Gandy, M. 2002. *Concrete and Clay: Reworking Nature in New York City*. London: The MIT Press.
- Gandy, M. 2004. Rethinking urban metabolism: water, space and the modern city. *City* 8(3): 363-379.
- Gandy, M. 2005. Cyborg urbanization: complexity and monstrosity in the contemporary city. *International Journal of Urban and Regional Research* 29(1): 26-49.
- Gandy, M. 2014. *The Fabric of Space: Water, Modernity, and the Urban Imagination*. London: The MIT Press.

### Introduction

Matthew Gandy is a British geographer who studies the social and cultural production of nature in cities. Drawing on ideas from the social and natural sciences as well as the humanities, he has conducted research on infrastructure networks, parks and open spaces, environmental management practices, and public health and disease in prominent cities of North America, Europe, Africa, and Asia. He is best known for his contributions to the field of urban political ecology including key ideas about metropolitan nature, urban metabolism, ecological imaginaries, and cyborg urbanism. This body of work challenges Marxist, Neo-Marxist, and post-structuralist thinking on urban nature by introducing cultural ideas from film, art, and sound to forward an expansive perspective on the hybrid relations of nature, technology, and humans in cities.

Gandy is Professor of Cultural and Historical Geography and Fellow of King's College at Cambridge University.

### Academic biography and research focus

Gandy grew up in the north London borough of Islington and received a BA in Geography from Cambridge University in 1988 and a PhD from the London School of Economics and Political Science in 1992. His doctoral research involved a comparative historical study of solid waste management in London and Hamburg. This work was subsequently published with an additional case of New York City as *Recycling and the Politics of Urban Waste* (Gandy 1994). Here, municipal waste flows serve as a lens to examine the tensions between environmental policymaking and urban economic development. He argues that market-based environmental policies for solid waste recycling that first emerged in the 1980s are incompatible with environmental protection activities due to the strong influence of the profit motive by private waste management companies as well as an impoverished conception of the relationship between urban residents and material flows.

Gandy was appointed as Lecturer at the University of Sussex in 1992 and moved to UCL's Department of Geography in 1997. In 2005, he founded the UCL Urban Laboratory, an influential research centre on urbanization and cities that spans the social sciences, humanities, and engineering disciplines, and since 2013, has served as a co-editor of the *International Journal of Urban and Regional*

*Research*. In 2015, he returned to his alma mater, Cambridge University, where he was appointed as Professor of Cultural and Historical Geography and Fellow of King's College.

The notion of landscape is central to Gandy's work on urban nature. From the pastoral depictions of painters in the sixteenth to eighteenth centuries to the designs of landscape architects in the nineteenth and twentieth centuries, landscape provides a conceptual framework to represent and position humans in the physical world. In his 2002 book, *Concrete and Clay: Reworking Nature in New York City*, Gandy adopts a landscape perspective to explore historical and contemporary conceptions of urban nature in New York City. Drawing on ideas from political economy, environmental studies, social theory, cultural criticism, and the design disciplines, the book explores the larger tensions in the political, cultural, and social aspects of urban nature through a series of essays on water infrastructure, parks, highways, neighbourhood politics, and environmental pollution. For Gandy (2002: 5), 'The production of urban nature not only involves the transformation of capital but simultaneously intersects with the changing role of the state, emerging metropolitan cultures of nature, and wider shifts in the social and political complexion of city life.'

In addition to landscape, the dynamism of water provides additional insights on urban nature. In his 2014 research monograph, *The Fabric of Space: Water, Modernity, and the Urban Imagination*, Gandy uses hydrologic flows as a common thread to study nature in six global cities (Paris, Berlin, Lagos, Mumbai, Los Angeles, and London). In each city, he focuses on a particular time period to compare and contrast the 'multiple modernities' that are embodied in the production of urban nature and their relation to lived urban experience. He argues that 'by tracing the history of water in urban space we can begin to develop a fuller understanding of changing relations between the body and urban form under the impetus of capitalist urbanisation' (2014: 29). The sewers of nineteenth century Paris, the water supply system of post-colonial Mumbai, and the imaginary future of a flooded London all involve dialectics of body and city, social and physical, natural and capital flows, visible and invisible.

A third emphasis of Gandy's work is the body and its relation to urban form, as evidenced in his studies of disease and public health (Gandy and Zumla 2002, Gandy 2006b). Building on notions of the hygienic and bacteriological city from the nineteenth century, he emphasises the body-technology nexus at the heart of cultural and social interpretations of urban nature. He writes (2005: 33), 'The blurring of boundaries between the body and the city raises complexities in relation to our understanding of the human subject and the changing characteristics of human agency.' This perspective emphasises the personal and entangled character of humans in the material world and their indelible connection to the physical fluxes of the urban condition.

### **Key ideas**

An early idea developed by Gandy, particularly in his work on New York City, is that of *metropolitan nature*. Departing from contemporary notions of urban ecology as defined by proponents of environmental science and landscape design (e.g., McHarg 1969, Giradet 1992), Gandy (2002) argues that the natural elements of cities are an outcome of processes of urbanisation and modernisation. Thus, metropolitan nature involves more than the valuing of ecological services and the provision of parks and green spaces; instead, it is bound up in the technical and social networks of cities. The notion of metropolitan nature extends the field of urban political ecology (Swyngedouw 2004, Kaika 2005, Heynen et al. 2006) beyond critiques of capitalism by calling for a simultaneous reading of material and social changes that continuously overlap, interact, and co-evolve. Nature thus emerges

as an infrastructural achievement of the city and is shaped as much by cultural and political dynamics of cities as biological and ecological drivers.

The idea of metropolitan nature is closely connected to a second idea developed by Gandy, that of *urban metabolism*. There is a long-standing tradition among urban thinkers to describe cities as holistic systems akin to machines and human bodies, an oft-cited example being Abel Wolman's *Scientific American* article on 'The Metabolism of Cities' (1965). For Gandy, urban metabolism is not simply a quantitative approach to account for the flows of materials into and out of cities. Such a natural science perspective promoted by advocates of industrial ecology (Bai 2007), ecosystem services (Daily 1997), and ecological footprints (Wackernagel and Rees 1998) assumes a linear and functional perspective on cities while neglecting the dynamics of material, cultural, political, economic, and virtual flows. Building on the tradition of political economy inspired by Marxist and neo-Marxist scholars such as **Neil Smith** and **David Harvey**, Gandy uses urban metabolism to develop a richer understanding of urbanisation and modernisation as simultaneously physical and virtual, real and imagined, political and cultural, ecological and economic. Attending to the circulation of people, things, and ideas allows for the interpretation of the relational, hybrid, and increasingly fragmented and polarised character of the urban landscape.

Beyond metropolitan nature and urban metabolism, Gandy is interested in the historic development of collective visions of the relationship between nature and cities, what he terms *ecological imaginaries*. In the late 19th and early 20th centuries, influential actors forwarded ecological imaginaries based on metaphors from the bio-physical and medical sciences to interpret the form and function of cities. These were later superseded by the City Beautiful and Garden City movements of urban planners and then by technological visions informed by engineers (Gandy 2006c). Throughout this evolution of ecological imaginaries, the aim was to forward an overarching vision for the ideal synthesis between nature and culture, a vision that naturalised urban development processes while simultaneously suppressing political and cultural difference. For example, Gandy's case study of the Los Angeles River presents competing ecological imaginaries of engineers who were advocating for flood protection versus environmentalists who promoted ecological restoration (Gandy 2006a, 2014). These visions are embedded with normative assumptions about the 'good' or 'most desirable' city and are important not only for what they include but also about what they leave out (in this case, marginalised communities with alternative imaginaries about the river). Moreover, ecological imaginaries expose explicit and implicit framings of urban nature that often reinforce the dichotomy between humans and their non-human surroundings. However, Gandy also sees imaginaries as having an emancipatory potential to promote more complex and variegated perspectives on urban nature (such as metropolitan nature and urban metabolism described above). He writes, 'we can begin to explore the production of urban space as a synthesis between nature and culture in which long-standing ideological antinomies lose their analytical utility and political resonance' (2006c: 73).

The notions of metropolitan nature, urban metabolism, and ecological imaginaries all inform Gandy's most radical idea, that of the post-human ontology of *cyborg urbanism*. The notion of the cyborg is often attributed to the work of sociologist Donna Haraway (1989) to challenge dualist, disembodied, masculine, and teleological modes of thought. Gandy draws on Haraway and other post-human thinkers to promote a hybrid ontology that embraces the messy socio-material character of cities. Humans are not separate from the natural and technological systems that are ever present in cities; instead, they are bound together in hybrid configurations. Infrastructure networks, notably water and sewer systems, reveal this hybridity while spatializing and grounding the cyborg concept by interpreting cities as sociotechnical amalgams of body, technology, and space. As Gandy (2006a: 140)

writes, 'networks of urban infrastructure do not simply create modern cities, they also create their own distinctive spaces or landscapes within the fabric of the city.' And building on the idea of ecological imaginaries, cyborg urbanisation not only includes the physical but also the virtual: 'The cyborg metaphor allows for the simultaneity of concrete and imaginary perceptions of urban infrastructure so that the categories of the "real" and the "virtual" become interconnected facets of urban experience' (Gandy 2005: 38). In effect, what is imagined and projected is just as important as what is real and experienced.

### **Contributions to urban studies**

As a whole, Gandy's ideas about metropolitan nature, urban metabolism, ecological imaginaries, and cyborg urbanism involve an expansive and multifaceted understanding of the role of nature in cities. He extends the existing debates on urban political ecology by going beyond the urban disciplines (geography, planning, and architecture) and social sciences (political science, sociology, and anthropology) to include concepts from the humanities (art history and film criticism) and the natural and medical sciences (public health and disease theory). Even for a geographer, Gandy's work is regarded as highly promiscuous in its theoretical and empirical inspirations, ranging from neo-Marxian and post-structuralist perspectives on cities to ideas from feminist studies, queer theory, post-colonial studies, art history, and cultural studies. For his critics, such a nomadic form of academic scholarship results in a cacophony of ideas that never quite crystalizes into a convincing argument (see Castree and Swyngedouw 2003, Lynch 2004). But for others, his careful and thoughtful juxtaposition of ideas from a wide range of sources creates a multi-layered and nuanced understanding of urban nature as a palimpsest of material, economic, cultural, and social relations.

Beyond his theoretical and empirical contributions, Gandy's work incorporates visual materials to inform the real and imagined urban landscapes of his writings. Similar to historians, he draws on primary and secondary archival materials including paintings, drawings, photos, films, maps, and plans to illustrate the contradictory character of modernisation and urbanisation. This emphasis on visual representation has resulted in an expanded portfolio of writings on art (Joseph Beuys, Gerhard Richter, Ulrike Mohr), landscape architecture (Giles Clement, Patrick Blanc), and cinema (Michelangelo Antonioni, Werner Herzog, Pier Paolo Pasolini). Gandy also includes his own images derived from experiential research methods, notably the peripatetic methods akin to the Parisian *flâneur* of the late nineteenth century, the *dérive* or drift favoured by Situationists and psychogeographers, and the walking practices of land artists such as Richard Long. In 2007, he directed and produced *Liquid City*, a 30-minute documentary to examine social inequality in Mumbai as revealed by water flows. The film exemplifies the importance of visualisation in developing new ecological imaginaries about humans and their physical surroundings.

Gandy's ideas about bodies, technologies, and cities provide a natural extension to the late nineteenth and early twentieth century on the hygienic and bacteriological city alongside sanitary reformers such as Colonel George E. Waring Jr. and Edwin Chadwick, designers such as Ebenezer Howard and Patrick Geddes, and social reformers such as Jane Addams and Alice Hamilton. However, he provides a sustained critique of the scientific, rational, and technocratic ideas that informed the Progressive Era of urban governance and that continue to influence contemporary urban development processes. Instead, he emphasises the wide array of social, cultural, and political currents that shape and influence the everyday, lived aspects of cities to promote an expansive and complex perspective embodied in his ideas about cyborg urbanism. This allows for a deeper understanding of how environmental justice activities in New York City are related to global circuits of capital and how the mosquitoes and the persistent threat of malaria in Lagos are symptoms of the

multiple contradictions of contemporary urban development. Modernity is not a smooth, teleological process of rationality but is comprised of multiple overlapping (and at times contradictory) ruptures and frictions that make indelible connections between individuals, their immediate surroundings, technological networks, urban conglomerations, and ultimately, the world. It is through this pluralist and relational perspective on the co-evolution of social and technological systems that Gandy challenges conventional accounts of urbanisation through the concurrent examination of material, political, and cultural dynamics.

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