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Harini Nagendra. *Nature in the City: Bengaluru in the Past, Present, and Future.* New Delhi: Oxford University Press, 2016. 244 pp. $45.00, cloth, ISBN 978-0-19-946592-7.

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When headlines pair the South Indian city of Bengaluru (formerly Bangalore) with nature, they tend to take an apocalyptic slant. Studies predict the city's environmental demise any day now, and as its lakes catch fire, tree cover vanishes, and air pollution exceeds hazardous levels, it can be tempting to say that Bengaluru's once abundant natural heritage is already dead. The city is far from unique in this respect, with all of India (and much of the globe) dealing with the environmental consequences of neoliberalism and rapid, highly uneven development. Urban ecologist Harini Nagendra's survey of Bengaluru's natural heritage in *Nature in the City* crosses disciplinary boundaries to address two urgent questions: What is the role of nature in a ten-million-strong urban space like Bengaluru? And can that nature be saved?

Nature in the City describes an environment in crisis, but it does so while maintaining an unlikely optimism for both the present moment and the city's future. The book moves from Bengaluru's verdant past to those aspects of the urban natural world that still thrive, and demonstrates how even a degraded nature remains psychologically and practically important to city dwellers. Drawing from Elinor Ostrom's Nobel Prize-winning work on the commons (*Governing the Commons: The Evolution of Institutions for Collective Action* [1990]), Nagendra combines academic tools from ecology, history, and anthropology to study Bengaluru's changing environment, with the hope of aiding efforts to create and protect an urban environmental commons. This synthesis of diverse topics by blurring disciplinary lines is one of the book's strengths, but it could have been pushed further. Caste and class remain at the sidelines in Nagendra's analysis of nature as common property, leaving gaps in her argument that could have been filled by keeping caste and class more central.

The book is divided, roughly, into Bengaluru's relationship with the natural world in the past, present, and future. Nagendra starts by mapping the slow accretion of villages in environmentally favorable areas of what is now Bengaluru a millennium before the city's official founding by Kempe Gowda in 1537. She demonstrates how landscape shaped urban growth: from the curvature of the land to the fertility of the soil, to water availability in a water-poor region. But as land ran out and as technologies to control natural resources improved, the natural environment became a thing to control and then to ignore. Chains of man-made lakes to store monsoon rains began to dot the landscape, expanding the possibilities for agriculture. Rulers from Hyder Ali and his son Tipu Sultan in the eighteenth century to the

British in the nineteenth worked hard to green the city. They planted avenue trees and built parks, thus transforming the semi-arid, scrubby area into what became known as a "garden city" fed by thousands of lakes.

Today, most of Bengaluru's lakes and canals are gone. Those that have not been built over in recent decades are now a health hazard, choked with unprocessed sewage. The growing metropolis has a perpetual water crisis, relying on a combination of water piped from the Cauvery River over one hundred kilometers away and depleted groundwater. Road-widening projects in the traffic-jammed city have reduced its cover of wide-canopied avenue trees. Some estimates suggest that the city's built up space rose by 632 percent from 1973 to 2009, even as green cover has reduced, leading to an intense urban heat island effect.[1] The city is losing the moderate climate it was once famed for, with an average temperature rise of 2 to 2.5 degrees Celsius in the 2000s alone, [2] and a combination of industry, ubiquitous construction projects, and rising traffic has caused air quality to plummet.

Nagendra's aim is not to cover what led to this environmental deterioration, however, or to quantify the damage. Her focus is on what is left, why it matters, and how to save it. She uses tools from ecology and anthropology to study Bengaluru's nature and the people who nurture or otherwise benefit from it, in multiple contexts: from shade trees that offer community meeting places in slums, to networks of kitchen gardens supporting a wide variety of fauna, to lakes that remain places of worship even in vastly diminished shape. She details work done by her students to catalogue a surprising diversity of vegetation in both public and private spaces, from roadsides to parks to gated residences, and to study the value of that vegetation to its surroundings. Dozens of stories emerge along the way through interviews with the city's residents: from street vendors who park their wares beneath shade trees for the cool temperatures on hot days, to ordinary people who fought for and won the right to protect the green spaces where their children play.

One thread that ties the book together is the question of the urban environmental commons. How can we foster an urban community that has a sense of agency over its surrounding environment, and that works together across differences of language, religion, class, and caste to rejuvenate and protect that environment? Nagendra's postdoctoral work with Ostrom at Indiana University, Bloomington, tackled similar questions, albeit in a wilder setting. She found that forest resource management in protected areas within India and Nepal is most effective when local communities are actively involved in decision-making processes, working closely with government officials (and each other) to define the guidelines that affect them.[3] In this model, one avoids Garrett Hardin's "tragedy of the commons," where property that belongs to no one is protected by no one and exploited by all, by inspiring communication that turns each user into a pair of protective eyes —watching both their own behavior and that of others.[4]

In this context, Nagendra also devotes space in *Nature in the City* to Bengaluru's nascent environmental movement. This movement is not always a cohesive one, often springing from very local concerns, and it has had a variable success rate. However, she outlines some significant victories that stand out. The Environment Support Group won a court case in 2011 to stop the privatization of Bengaluru's few remaining lakes, preserving them as public commons open to all. In 1998, a protest by a handful of women to stop development within Cubbon Park—one of the city's largest public green spaces—expanded into a letter-writing campaign by thousands, and managed to save the park. And there have been a few successful cases of disparate communities coming together to work with public officials and protect a common resource in Bengaluru, notably, the reju-

venation of Kaikondrahalli Lake, which Nagendra covers in more detail elsewhere.[5]

However, the book ends with the acknowledgment that collaborative victories like Kaikondrahalli have been few and far between. Successful environmental interventions have largely been carried out by the upper classes, even though environmental degradation has the largest effect on the economically insecure. She outlines the nature of the problem: that "cities, with their disconnected, growing populations in constant flux, represent one of the most difficult locations for sustained collective action" (p. 193). And collaborative action is not only made difficult by urban diversity and rapid change. Communities do not all have an equal voice, as Nagendra also points out: "the social exclusion of the greater part of the city from planning cannot provide long-lasting solutions for its future, however technically well designed such solutions may be" (p. 195).

Nature in the City provides a wealth of information about Bengaluru's natural environment in the past and present, including exhaustive data about how vegetation improves a city's livability, both in practical and psychological terms—from reducing pollution levels to providing space for civil society to bloom. The book begins by asking what role nature plays in cities today, and ends with the solid argument that a healthy natural environment is vital for urban spaces. However, the book has no solutions for its final, heartfelt plea: that to save its environment, "the city of Bengaluru needs to forge new approaches to build inclusive commons" (p. 195).

How does one build an inclusive urban commons, and why is it so hard to do so? Nagendra hints at some reasons why inclusivity may be difficult in her discussions of agency through the book: who feels that they have it, who does not, and why. She describes slum dwellers who do not unclog their own gutters because they do not want to draw attention from authorities who might evict them. Likewise, she mentions roadside-dwelling bamboo weavers in Bengaluru who also live in fear of eviction from their decades-old home, since civic authorities have promised to replace the weavers with parking spaces. Elsewhere, Nagendra describes the case of Sarakki Lake, where civic groups succeeded in getting encroaching developments cleared—and low-income residences were the first to go. At the same time, Nagendra acknowledges that Bengaluru's environmental activism suffers from the fact that it is largely by and for the city's elite. The book is peppered with such references to class and caste, as it emerges that a sense of agency over one's environment is a mark of privilege, but such references remain peripheral to the discussion. Brought to the center, an analysis of caste and class may have helped the book's search for how to create an urban commons.

For example, *Nature in the City* argues for a modern-day environmental movement that draws inspiration from older Indian traditions, in which communities took up stewardship of natural resources, such as lakes and sacred groves. However, this argument elides the fact that "community" in India is often shorthand for "caste," and that upper-caste groups cared for natural resources in part by excluding lower castes from their use, abandoning such protection once they lost exclusivity. This history casts a different light on Nagendra's statement that under British colonial rule in India, "communities ... lost the incentive to manage the lakes once the control of their commons had been wrested by the state" (p. 180). Looking at Nagendra's observation through the lens of caste offers additional possibilities: that control of the commons by the "state" extends its use across communities, across caste lines—which may have stretched the idea of "community" to its breaking point.

India's population has historically been so segregated along caste lines that isolation shows up in its genes. Recent population genetics studies

find that the country, though possessed of high genetic diversity over all, is dotted with communities like islands that have scarcely interacted for centuries.[6] Such stark social divisions pose a challenge to an inclusive urban commons even going by Ostrom's own design principles expressed in *Governing the Commons*, formulated by looking at cases of common property resource management worldwide. The first of these principles claims that a successful commons needs to be looked after by a community with clearly defined borders, where every member of the community knows and accepts who belongs (and who does not). Although there are cities in this world with a sense of community that transcends difference, Bengaluru is not one of those cities. To get there, one would need to ally an environmental movement not just with the struggle for equality across economic lines but also with B. R. Ambedkar's dream of caste annihilation (*Annihilation of Caste* [1936]). The movement would need not just to advocate for the cleaning up of sewage in Bangalore's lakes but also to expand its view to a deeply flawed urban sewage system that treats the lives of Dalit sanitary workers as expendable. It would need to fight not just against avenue tree destruction but also against the slum evictions that create a high degree of land insecurity particular to lower castes, recognizing that we cannot collectively protect the environment around us without the knowledge that it is ours to protect.

Nagendra's idea of an urban environmental commons in a diverse city like Bengaluru is a necessary and important one, and far from impossible. But it cannot become a reality without a deeper engagement with history than *Nature in the City* provides, recognizing that a true commons would mean a radical break from certain aspects of both the past and the present. The narrative that she follows is that Bengaluru's environmental heritage was crafted by successive rulers from the Marathas to the Wodeyars to the British, and that its loss will be detrimental to both the mental and physical health of the city's denizens. While all of that is undeniable, there is another important way to read the history here: that Bengaluru's green cover, still most abundant in the city's wealthier areas, points to a long history of exclusion and appropriation. Nagendra mentions in passing that to build the famed Lal Bagh gardens, Hyder Ali dispossessed a community of mango growers. The British built their gardens in the still verdant Cantonment area of the city in part by appropriating what had been agricultural land. The gardens and shade-giving avenue trees of Bengaluru can become part of an urban environmental commons, but only once we recognize that they were not built that way. They were imposed by rulers with absolute power, often usurping more practical uses of the land.

The critique underlying *Nature in the City* is both valid and timely, asking for a rethink of the development mindset erasing Bengaluru's green and blue heritage. Nagendra mentions, for example, that avenue trees play no role in future designs for Bengaluru's streets, and calls this "a short-sighted view of urban development that breaks with the culture of the past" (p. 120). It might be useful, however, while framing new paths toward an equitable, environmentally livable future, to look more deeply at what those cultures of the past signify in an urban space like Bengaluru. The defining quality of Bengaluru's modern aesthetic, choked by flyovers lifted straight from M. C. Escher, dwarfed by glass-walled office buildings and shopping malls, is that it is the polar opposite of the genteel colonial aesthetic that shaped so much of the city for so long. Nagendra's research presented in *Nature in the City* shows that the aging colonial-style bungalows of Bengaluru with their rambling gardens have a greater diversity of flora and fauna than more modern developments. But this fact only reinforces the strong imperial flavor of Bengaluru's green heritage, a flavor that is mixed heavily with class, as colonial structures of power were not de-

stroyed but inherited by the Indian upper classes with independence in 1947.

Even now, it is easy to tell the old dividing line between the British and the Native sides of the city: here is where the greenery and broad boulevards stop, and high density living begins. Today, what that greenery and space signify is wealth, which again tends to correlate with segregation of neighborhoods by caste. And it is true that much of that greenery is simply gone: parts of Bengaluru have looked like a disaster zone for the better part of a decade, as they undergo an elaborate facelift on their way to the future. What that future will look like is still deeply unclear; the hit Kannada movie ***Super*** (2010) echoed some civic officials when it imagined a Bengaluru that resembled a transplanted Singapore, all skyscrapers made of glass and concrete. This vision of a future that virtually erases the past is vehemently anti-nostalgia, but in its deliberate blindness toward natural constraints it is also a road map toward environmental disaster.

Bengaluru's history carries seeds for many alternative conversations about urban development. For example, many of Bengaluru's buildings of the 1930s and 1940s were designed by a German Jewish refugee, modernist architect, and urban designer Otto Koenigsberger. These nondescript buildings, many of which are still in use, were designed by Koenigsberger with a minimalism and practicality intended to be the opposite of imperial grandeur. Koenigsberger created his designs to fit locally sourced materials and incorporated traditional aspects of South Indian architecture that were adapted to the local environment, resulting in a fusion style that has been hailed by some as a precursor to the green architecture movement.[7] Through such models of green urban development it is possible to imagine a style of city planning that remains critical of but in conversation with the past, while staying grounded within the environmental realities of the present day.

Currently, Nagendra is one of very few scholars working on Bengaluru's environmental crisis who is able to cross between the social and natural sciences with ease, a talent that is necessary for any environmental study of such a dense, historically complex metropolis. This is a topic that could benefit from even more cross-pollination between disciplines. ***Nature in the City*** hopefully represents the beginning of a long, crucial conversation about how to create equitable and environmentally livable urban spaces during rapidly changing times.

Notes

[1]. T. V. Ramachandra and Uttam Kumar, "Greater Bangalore: Emerging Urban Heat Island," ***GIS Development*** 14, no. 1 (January 2010).

[2]. Ibid.

[3]. Elinor Ostrom and Harini Nagendra, "Insights on Linking Forests, Trees, and People from the Air, on the Ground, and in the Laboratory," ***PNAS*** 103, no. 51 (2006): 19224-19231.

[4]. Garrett Hardin, "The Tragedy of the Commons," ***Science*** 162 (1968): 1243-1248.

[5]. Harini Nagendra, ***Restoration of the Kaikondrahalli Lake in Bangalore: Forging a New Urban Commons*** (Pune, Maharashtra: Kalpavriksh, 2016), http://www.vikalpsangam.org/static/media/uploads/Resources/kaikondrahalli_lake_casestudy_harini.pdf.

[6]. See, for example, Analabha Basu, Neeta Sarkar-Roy, and Partha P. Majumder, "Genomic Reconstruction of the History of Extant Populations of India Reveals Five Distinct Ancestral Components and a Complex Structure," ***Proceedings of the National Aacademy of Sciences*** 113, no. 6 (2016): 1594-1599.

[7]. Vandana Baweja, "A Pre-history of Green Architecture: Otto Koenigsberger and Tropical Architecture, from Princely Mysore to Post-colonial London" (PhD diss., University of Michigan, 2008).

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