

# Ecologies of Urbanism in India

## Metropolitan Civility and Sustainability

Edited by Anne Rademacher and K. Sivaramakrishnan



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# 1

# Introduction: Ecologies of Urbanism in India

Anne Rademacher and K. Sivaramakrishnan

## **Ecology and Urbanism**

As analysts turn to the urban question in India, estimates of the scale and rapidity of urban change in India multiply. One predicts that by 2030 nearly 600 million Indians will live in cities, and in them 70 percent of all net new employment will be generated (Sankhe et al. 2010). For India's young and mobile population, cities are undeniable magnets—for resources, and for their aspirations.

Transforming Indian cities into sustainable environments is the single greatest opportunity that governments, entrepreneurs, and innovators face in the coming decades. In this project, we consider that same transformation as a scholarly opportunity to re-imagine engagement with the Indian city. Positioned at the crossroads of urban studies and environmental studies, contributors to this volume seek to understand how rapidly proliferating and resource-intensive urbanism affect everyday lived environments and the ecological processes that undergird them. To do this, we employ an urban ecologies analytic that attends both to ideas of nature in the city, and to the dense networks of livelihoods and intimate connection that make urban life possible.

Urban ecologies can be explored through familiar ideas and dynamics that unfold in urban landscapes, including improvement, planning, infrastructural organization, political struggles over resources and amenities, and the aesthetics of nature. Such analytics are often deployed with an explicit concern for synergizing urban environmental and social processes in more sustainable ways. Concepts from ecological theory also inform urban analysis, and are often so deployed. Ecological footprints, for instance, are

widely used to convey the amount of land needed to support the resources ingested, and wastes extruded, by cities over time. Urban expansion, similarly, is widely discussed in terms of patch dynamics and edge effects within ecological complexes as a way of mapping the density and rapidity of urban material inputs and outputs (see Collins et al. 2000). Likewise, concepts from social theory are brought to bear on understanding urban ecologies; Erik Swyngedouw's ideas about circulation and metabolisms provide one example. Here, one sees a generative connection between historical materialism and the hybrid socio-natures produced in the biophysical–technological complexes that gird cities, and facilitate flows within and across them. As Swyngedouw writes,

the creation of urban space as space of movement of people, commodities, and information radically alter(s) the choreography of the city . . . connections are lost, identities reconfigured, and attachments broken down. Yet, at the same time, the accumulation of movement, and of capital, also signal(s) an intensified and accelerated accumulation of new urbanized natures. (2006, 112)

Another common approach to urban ecologies is grounded in considered examinations of urban nature itself. Here, it is useful to contrast earlier views of cities as destroyers of nature and harmonious rural life with a new regard for managed urban nature and cities as ecosystems. Parks, gardens, and tree-lined boulevards brought designed, controlled nature into critical purview, while the acknowledgement of cities as themselves ecological systems challenged ideas of nature as located everywhere *but* in cities. The gathering critique of modernist planning since the 1970s fostered new intersections between urban design and biophysical science. Urban nature now plays a role in creating public spaces that 'green' the city by providing recreation, oxygen, and enhanced private property values. As Gandy argues,

the urbanization of nature—and the concomitant rise of a metropolitan sensibility toward nature—encompasses not just new approaches to the technical management of urban space such as improved housing and sanitation but also extends to different kinds of cultural interaction with nature as a source of leisure. (2006, 64)

To this point we add that nature also serves as a source of authority and legitimation; in its intimate mingling with what human activity builds as

its urban ecumene, nature becomes a key repository for ideas of history and belonging.

In this volume, we draw from these varied analytical frames to address ‘ecologies of urbanism’ in India. We do so through explorations based largely in two major Indian cities, Delhi and Mumbai. Both immensely important to contemporary India, and each representing different historical conjunctures that produced them as urban locations in Indian landscapes, these cities are symbolic of two major patterns of Indian urbanism—one in the hinterland, the other coastal.

Writing of how imperial New Delhi was designed and built when the British moved the colonial capital from Calcutta to Delhi in 1911, Khuswant Singh remembers that the city’s chief architect and designer, Edwin Lutyens chose the village of Malcha on Raisina Hill for its elevation and proximity to stone that could be quarried in the Ridge. He describes his partner in designing New Delhi, Herbert Baker, standing on this hill, looking down on “the vast collection of ruins of cities, tombs and monuments lying below” wondering if the epicenter of the new capital was well chosen (K. Singh 2010, 4). A certain deep, if not admired, history of Delhi, recalling the series of Sultanates that made it their capital, and the monumental landscape of Mughal rule, was visible from such a vantage point, and this is better known. But there is more, ancient and prehistoric, that marks Delhi as an urban site, less visible for its dislocation and submergence in the magnificent architecture of medieval and modern Delhi, but woven all the same into contemporary urban nature in the form of pillars, fragments of old sculpture, and abandoned shrines to lesser gods (U. Singh 2010, 23–26).

If Delhi stands on many millennia of history, and specifically a history of serving as the capital of many kingdoms and empires, Mumbai (earlier Bombay) is very much a colonial city, and its fort, white and native enclaves, slums, and suburbs have a distinct quality even as they reveal a set of patterns that one might also see in Kolkata (Calcutta) or Chennai (Madras)—all ports and presidency cities of modern India, forged in the colonial encounter with the British Empire.<sup>1</sup> As Gyan Prakash writes, “the physical form of the city invites reflection on its colonial origin . . . in fact, the Island City occupies land stolen from the sea,” and it “bears the marks of its colonial birth and development” (Prakash 2010, 26–27). Unlike Delhi, Mumbai’s built environment has no monuments to a deep past, but it does testify to land reclamation and occupation in the construction of a vast

empire of colonial commerce (*ibid.*). To an ecologist, Mumbai appears a product of deforestation, concretization, and encroachment that has deeply transformed Bombay's coastal, littoral, and intertidal ecosystems. An urban ecosystem is dependent for most of its primary needs—like air, water, and food—on the immediate environment, and increasingly, on more distant areas. The supply of these ecosystem services depends crucially on landform, land use, and the preservation of biophysical conditions that generate these services. In Mumbai, given the constriction of usable contiguous land by surrounding water bodies, the pressure for space has given land gain such prominence that landforms have taken a back seat (Srivastava and Mukherji 2005, 3908).

Arguably, the ecological ruptures through which contemporary Mumbai was made over the last 150 years were more dramatic and certainly of a faster pace than those that shaped Delhi and New Delhi over several centuries. But as two of the fastest growing metropolitan centers in India after the First World War, Delhi and Mumbai experienced several similar processes of change as well. And in that regard, by the later part of the twentieth century, they also found themselves on a comparable trajectory. As Delhi and Mumbai now refashion themselves as global cities, we find it useful to use the broad scheme outlined by Manish Chalana, who identifies three forms of modernism at work in Indian cities: the first colonial (Lutyens' Delhi), the second nationalist (Le Corbusier's Chandigarh), and the third global—the latter associated with the deepest and most radical transformation of cityscapes and city use patterns (Chalana 2010).

Authors in this volume investigate urbanism, nature, and ecological sustainability in major Indian cities, primarily Mumbai and Delhi, but also Chennai and Bengaluru. As mega-cities like these take new shape throughout Asia, they leave unprecedented ecological imprints on those who live in them, and on the hinterlands around them. Fecund yet stressed, nature in these cities seems typified by polluted air, unsafe and inadequate water, crowded tenements, choked highways, and mounting quantities of industrial and consumer waste. Yet in these same cities, urban nature is encountered anew in shining gated communities, new city parks, greenways, zoos, and growing pet industries. Although marked by a proliferation of life in myriad forms, urban sustainability in Asian cities is suspended in the growing tensions between humans and non-human nature, and between different classes and

social groups that include historical settlers, new immigrants, itinerants, and occasional travelers.

It is in this twenty-first-century context, when for the first time in human history the majority of the world's population resides in cities (UN 2003), that scholarly work urges a complete rethinking of 'the urban' as an object of study (e.g., Amin and Thrift 2002; Low 1996). The proportion of the world's population that lives in cities has grown since the Industrial Revolution, from about 3 percent of the world living in urban places in 1800, to about 13 percent in 1900, over 40 percent in 1980, and 47 percent in 2000. That latter figure equaled about 2.9 billion people. Since 1950, urban growth in less developed parts of the world has been about 1.62 percent per year, compared to 0.65 percent in countries regarded as most developed (Smart and Smart 2003, 265). In a couple of decades India is predicted to join other regions of the world in finding more people in cities than in the countryside. The projected expansion of urban built and social environments, especially in and around large metropolitan centers in India, comes in the wake of high rates of GDP growth, particularly over the last decade. While India's urban population, as a proportion of total population, has increased gradually but significantly, from about 10.87 percent in 1901 to 27.78 percent in 2001, it has since topped 30 percent of the total population in the last ten years. This trend is expected to accelerate in the coming decades.

## Rethinking Urban Contexts

In the midst of such sweeping change, scholarly and policymaking arenas resonate with uncertainty and concern over the pace, magnitude, and primary geographic location of contemporary urbanization. Major, rapid-growth cities of the southern hemisphere, often shorthanded as 'cities of the global South,' are typically framed as mired in varying combinations of intractable poverty, environmental disorder, and a present or expected 'urban explosion'<sup>2</sup> with potentially catastrophic socio-environmental implications.<sup>3</sup> Dawson and Edwards (2004, 6) capture the perceived urgency of this predicament when they write, "the megacities of the global South embody the most extreme instances of economic injustice, ecological unsustainability, and spatial apartheid *ever confronted by humanity*" (emphasis added).

A sense of historical exceptionalism tends to accompany such anxieties, and attendant appeals for new thinking about the conceptual content of

'the urban,' urbanism, and urbanization are a result. These appeals are often couched in the language of sustainability, a malleable, almost ubiquitous, and yet enormously powerful modifier when applied to conventional concepts and practices in cities. In this volume, we engage and problematize the social life of sustainability thought and practice by exploring urban ecologies in Indian cities. In doing so, we aim to understand more fully the stakes, form, and meanings of the socio-environmental transformations that animate the everyday lives lived in them, and the multiscaled processes of which they are a part. We take particular interest in the sense of historical exceptionalism that urban sustainability praxis often implies, arguing that despite its future-focused orientation, the processes through which specific cities were initially formed continue to influence urbanization's meaning and implications. Contributors to this volume explore the ways that history shapes contemporary urban socio-ecological life, noting its modern guises and underlining its enduring traction. At the same time, they take seriously the aspirations for deep and lasting socio-environmental transformation that sustainability thought and practice so often imply.

One need not look far for historical threads that join past and present articulations of urban sustainability, particularly for echoes of perceived and pending chaos in the cities of the global South. Recall, for example, the now classic description of Delhi with which the demographer Paul Ehrlich opened his extremely influential, if later roundly critiqued, 1968 volume *Population Bomb*. Locating his dismal outlook on urbanism's immediate future precisely in India, he wrote,

I have understood the population explosion intellectually for a long time. I came to understand it emotionally one stinking hot night in Delhi a few years ago. My wife and daughter and I were returning to our hotel in an ancient taxi. The seats were hopping with fleas. The only functional gear was third. As we crawled through the city, we entered a crowded slum area. The temperature was well over 100, and the air was a haze of dust and smoke. The streets seemed alive with people. People eating, people washing, people sleeping. People visiting, arguing, screaming. People thrusting their hands through the taxi window, begging . . . People, people, people . . . It seemed that anything could happen . . . (Ehrlich 1968, 1)

Past echoes like this in no way discount the real material, social, and environmental stresses that accompany twenty-first-century urbanization,

nor do they undermine the importance of asking whether, and how, contemporary urban settings might be rethought and reinvented as more sustainable, “livable cities” (Evans 2002). They do, however, suggest that diagnoses of urban problems that are grounded in historical exceptionalism may risk missing key explanatory variables. It is this assertion that compels some of the contributors to this volume to invoke historical analysis as a mode for understanding the contemporary ‘unprecedented’ nature of Indian urbanization. Their approach is surprisingly unconventional. In fact, the general sense of an urgent and exceptional urban predicament is perhaps nowhere more visible than at the interface of urban environments and societies, the site of urban ecologies. Indeed, the past decade and a half has witnessed a shift from largely passive or discipline-specific attention to something called ‘urban ecology’ to the inclusion of this concept in an inventory of our most pressing *transdisciplinary* global concerns.<sup>4</sup>

Special urban issues of scholarly journals ranging from *Social Text* (2004) to *Science* (2008) supplement a wealth of literature on the contemporary global urban condition intended for a more popular readership. Recent titles like *Planet of Slums* (Davis 2006), *Shadow Cities* (Neuwirth 2006), and *Maximum City* (Mehta 2004) have both constructed and reinforced understandings of a global, and yet simultaneously Southern, twenty-first-century urban crisis marked by seemingly intractable poverty, marginality, uncontrolled growth, and environmental degradation.

It may be the case that, in a manner similar to the way that an overarching aspiration for something called ‘development’ focused scholarly, policy, and popular analytics on the ‘dysfunctional’ polities and economies of the global South in the late twentieth century (cf. Crush 1995; Escobar 1994; Ferguson 1994; Greenough and Tsing 2003), environmental improvement, and in particular an aspiration called ‘sustainability,’ anchors our attention to, and in turn reproduces, a ‘global South’ in the early twenty-first. We contend in this volume that this is a question worthy of exploration, for it underscores the importance of maintaining a historical orientation that simultaneously illuminates enduring processes and exposes those that are truly without precedent.

We notice that in some ways, the surge in attention to particular aspects of global urbanization continues longstanding engagements with, and concerns over, the future of cities, modernization, and social life (AlSaiyad 2003, 8). The category of the urban has long stood for concentrated sites of wealth,

opportunity, social diversity, and state bureaucratic activity; it continues to represent the possibility of social mobility, accessing basic services, and engaging in certain forms of cultural life. As is the case today, cities are also historically associated with particular kinds of social inequality, quite notably specific class formations, patterns of segregation, and affinities linked to the expansion of transnational industrial capitalism. It is primarily through these analytical associations that cities have also served as sites—both imagined and enacted—of potentially powerful and far-reaching social, political, and cultural transformation.

Likewise, urbanization has a long analytical history as the primary lens through which we view and understand the physical growth of cities and the material processes associated with that growth, while urbanism captures a distinction between the social, economic, and political life of cities and that of their rural hinterlands. The meaning and content of the categories of 'urban' and 'rural' change over time and across place, and their mutual social production has long been recognized as distinct from fixed, essentialist definitions of the city and the countryside (e.g., Ferguson 1999; Lefebvre 1991; Williams 1973).

Within anthropology, scholars compelled by an interest in the relationship between urban life and the reproduction of community, kinship networks, and social mobility looked to cities to conduct early work in 'community studies,' network analyses, and the reproduction of wealth and poverty (e.g., Bott 1957; Gluckman 1971; Lomnitz 1977; Mitchell 1969; Stack 1974, 1996; Werbner 1984). Mid and late twentieth-century scholarship in the emergent multidisciplinary arena of urban studies refined the "urban question" by investigating the interface of urban contexts and transnational capitalism (Castells 1977; Harvey 1989; Sassen 1991). They eventually popularized the idea of the "global" (Abu-Lughod 1999) or "world" (Hannerz 1996) city, the "global circuits" (Sassen 2002) on which it could be mapped, and the power of cities as organizing centers for capital and politics (Sassen 1991).

Attendant questions of scale and state power (Brenner 1998), the future relevance of nation-states (Chatterjee 1986), emergent forms of citizenship (Holston and Appadurai 1999), and questions about the future of social movements (Mayer 2000) all elaborated on parallel processes of globalization and urbanization. In this volume, cities like Delhi and Mumbai remind us that the global aspect of urbanization must be grounded in regional environmental and social processes; these, in turn, have no single pattern.

We explore two significantly different historical patterns of urbanization here; one is a modern commercial port city that formed in just 200 years through dense settlement on the western coast of India. The other is a much older urban formation in the north Indian plains; its history involves the rise and fall of urban settlement over a much longer period.

One way to explore and account for these multiple patterns is to address the interface between environmental change and urban transformation. Such an inquiry enjoys a long and complex genealogy that easily warrants its own much more detailed account. A very general sketch recognizes that in the social sciences, 'urban ecology' has sometimes stood for the relationship between a human social community and its larger social whole; it has also indicated attention to human social life at a variety of scales and the relationship between those social scales and the natural cycles, systems, and processes with which they interact and through which they forge material and cultural lifeworlds. Of longstanding interest is the question of how human social actors organize social life in response to, and for engagement with, changes in the natural environment, and vice versa.

Yet another strain of socio-environmental scholarship focuses on the social production and implications of mutually separate conceptual spheres, such as 'society' and 'nature,' or 'the city' and 'the environment.' Taking inspiration from critical theoretical work on the concept of "nature-cultures" (e.g., Demeritt 1994; Haraway 1989, 1991, 1997; Latour 1993, 1999; Swynnedouw 1996; Zimmerer 2000), some anthropologists have begun to produce ethnographic analyses that engage the social life of environmental knowledge, perception, and problem definition, in cities. Anthropology has tended to foreground issues like the politics of place (Baviskar 2003; Gregory 1998a, 1998b; Hansen 2001; Hayden 1995), concerns over segregation and citizenship (Caldeira 2001; Holston and Appadurai 1999; Low 2003), urban governmentality (Chakrabarty 2002; Chatterjee 2006; Joyce 2003; Scott 1998), and cultures of consumption and class formation (Davila 2004; Davis 2000; Liechty 2003; Mankekar 1999; Mazarrella 2003; O'Dougherty 2002).

However, many social scientists who draw on ethnographic theory and practice, including contributors to this volume, recognize the need to apply anthropological forms of analysis to the twenty-first-century urban sustainability predicament described above. In this volume such issues are illuminated in case studies that explore the ecological dimensions of urban features like infrastructure. The discussion of waste, for instance, points

to the tension between waste as a crucial source of livelihood and its role in urban strategies for realizing more sustainable energy production. In a similar vein, urban ecological perspectives show how riparian ecological improvement can simultaneously recover nature and sever crucial ties on which everyday urban social life and work depend. Tensions such as these are increasingly central to urbanization itself.

When one considers the environmental dimensions of contemporary urbanization, it is perhaps the scholarly tradition of political ecology that brings the most instructive inspiration to this volume. This body of work offers rich insight into questions of environmental knowledge and practice (e.g., Blaikie and Brookfield 1987; Brosius 1999a, 1999b; Bryant 1992; Bryant and Bailey 1997; Escobar 1996, 1998, 1999; Peet and Watts 1996), the cultural politics of conservation, development, and statemaking (e.g., Baviskar 1995; Fairhead and Leach 1996; Ferguson 1994; Mosse 2003; Sivaramakrishnan 1999), modern ecology and territoriality (e.g., Brosius and Russell 2003; Saberwal 1999; Vandergeest and Peluso 1995), the formation of environmental subjects (Agrawal 2005), and the historical production of ideas and imaginaries of nature itself (Grove 1989; Peet and Watts 1996; Raffles 2002; Williams 1980). Nevertheless, significant openings remain for a better understanding of these issues in contemporary urban contexts. It is with this in mind that we assemble the works in this volume.

Our work suggests that an urban political ecology in India would have similar concern for social stratification, power, and unequal access to natural resources and ecological services. It would likewise confront the precarious lives of the poor in conditions of environmental degradation. But our work also indicates that contemporary urbanism raises new kinds of questions about networks, neighborhoods, enclaves, and communities, highlighting the different ways that city dwellers are embedded in dense urban webs, yet remain connected to more distant locations beyond the city.

With these elaborations on existing scholarly considerations in mind, our analytical approach to sustainability, civility, and urbanism in India employs the idea of multiple 'urban ecologies.' In singular form, the phrase is not new; the long and diverse scholarly histories of 'urban' and 'human' ecology are sufficiently rich and complex to warrant the separate and more detailed histories that others have capably undertaken. Many genealogies of urban ecology in the social sciences point to the Chicago School of the early twentieth century, which famously analyzed urban social life, difference,

and change through an analytical map of concentric urban 'niches' radiating outward from a central core (e.g., AlSayyad 2003). Indicators such as class and occupation then determined an individual or collective's location in the series of rings; movement across them became a method for capturing and expressing urban social change.

More recently, critical geographers have vigorously engaged and elaborated on urban ecology theory (e.g., Gandy 2002; Kaika 2005; Smith 1984; Swyngedouw 1996, 1999), calling attention to 'flows' and global economic processes that often warrant reconceptualizations of the urban scale. A notable limitation of this innovative work, however, is its tendency to miss many of the specificities of everyday urban environmental knowledge production, transfer, and application that are the rich contribution of work in environmental anthropology, political ecology, and, most recently, ethnographic science studies.

In this volume, we address the ways that struggles over the environment and quality of life in urban centers are increasingly framed in terms of their future place in a geography of global sustainability, and the future relationship between cities and their changing hinterlands. In these struggles, nature, with its imputed attributes of simplicity, purity, health, balance, cultural anchoring, and spiritual appeal, often grounds imaginaries of, and aspirations for, urban ecological, cultural, and social well-being. We are, therefore, interested in social nature, urban or rural, as a contested site and a constituent of imagined sustainable lives in Asian cities and their domains of influence.

Our analytic, that of urban ecologies, assumes the presence of multiple, simultaneous, and overlapping representations of the urban nature–urban culture interface. Each represents competing visions, ideas, and stakes of urban environmental change. Their corresponding efforts to ensure, create, or imagine ecological stability are often infused with, and shaped by, aspirations for political, social, or cultural stability; to promote particular urban ecologies may also involve the reproduction or contestation of cultural ideas of belonging to certain social groups, including the city, the nation-state, the region, and the realm called the 'global.'

These issues highlight the ongoing methodological and conceptual challenges of studying urban ecologies and their attendant socio-natural processes. Their multiple forms and practices in contemporary cities demand an adaptive analytical framework that can assess biophysical change while

attending to the production of the categories, histories, and meanings that legitimize them in social life. We would like to advance the view that “a city is a process of environmental production, sustained by particular sets of socio-metabolic interactions that shape the urban in distinct, historically contingent ways” (Swyngedouw 2006, 114).

Analyses will inevitably capture moments in otherwise dynamic processes, since, like their biophysical counterparts, social categories and histories are never fully fixed and stable. Yet understanding why, after fervent efforts including measured policy interventions and scientific prescriptions, certain forms of undesirable environmental change continue unabated demands attention to such snapshots; through them, we discern the form and content of the claims to moral order through which certain ecological logics are rendered legible, powerful, and active.

Complex and multiple forms of social exclusion often accompany particular experiences of the environment, and the ways that social groups try to preserve or recreate certain environmental experiences. Specific *social* expectations, whether made explicit or simply implied, nearly always accompany urban environmental interventions. We may usefully ask what kinds of communities, affinity networks, and politics do actors imagine or intend when they advocate for particular urban ecological practices, policies, and outcomes? How do those expectations shape the range of responses that are considered reasonable, acceptable, and moral, and how do those expectations influence metrics of environmental failure and success? These considerations are critical aspects of urban ecologies, as they signal social processes that constantly engage, and sometimes rework, the structures within which specific knowledge forms, claims to identity and territory, and narrations of history are acknowledged and legitimized, while others are not.

Urban ecologies, particularly in the form of sustainability aspirations and practices, may also be studied for their perceived emancipatory power. Ideas and practices of urban environmental sustainability often fold together hope for positive change and engagement with powerful material and discursive tools understood as imbued with the capacity to effect that change. In this sense, practices of urban ecology imply a capacity to reproduce belief in the very possibility of change, that is, to operate socially as facilitators of the capacity to aspire (Appadurai 2004). Urban environmental change narratives are often infused with aspirations for broader socio-environmental transformation, and it is precisely these aspirations, and the belief that they

can and will be realized, that give those narratives powerful social traction (Rademacher 2011).

## **Environmental Sustainability**

Many policymakers and environmental practitioners find their anxieties about the urban future potentially assuaged through innovations in the fields of ecosystem science and environmental design (WRI 1996; UN 1996; UN-HABITAT 2001). They look to two emergent movements: one, the rise of distinctive *urban* ecosystem ecology within the ecosystem sciences (e.g., Grimm et al. 2003; McKinney 2002; Parlange 1998; Pickett and Cadenasso 2002; Pickett et al. 2001; Rebele 1994), and two, the rise of green design technologies and interventions worldwide (Buchanan 2005; Gissen 2003; Leach 1997; Williamson et al. 2002). The two are interrelated, insofar as urban ecosystem ecology often provides the scientific basis for particular green technological interventions, and urban environmental problems and particularities often shape urban ecosystem sciences research (e.g., McKinney 2002; *Science* 2008). This synergy produces new conceptualizations of what constitutes sustainable 'urban nature' and how best to assess its order, functionality, and quality. It also foregrounds the set of environmental problems that urban areas are thought to face, folding within them demographic, economic, and cultural assumptions that are often taken as automatic, self-evident, and universal. As noted above, these are sometimes distinctly located in a new and unprecedented historical era called the twenty-first century.

While the scientific dimensions of ecology give us essential tools with which to compare cases of environmental degradation, and to render commensurate and intelligible common environmental conditions in cities around the world, multiple urban ecologies suggest the need to engage the context, and the context-generating power, of urban ecology enacted in place. It emphasizes social knowledge production and its hierarchies, and suggests that the meanings of urban ecology defy any single, ordered way of knowing, or changing, nature. Experiences of urban ecological change are real and often unprecedented, but the urban nature and social dynamics in which they are experienced in everyday life form mosaics of moral logic, aspiration, and struggles over power. These require us to bring the places and situated practices of urban ecology more fully into focus, and to ask not only

how change is occurring, but also when and how dominant environmental narratives sharpen or obscure the full contours of those changes.

We therefore propose a dual frame for understanding urban nature, in which it is both a bundle of enablers and imagined values for particular forms of urban social life, and, simultaneously, a set of overlapping institutions, processes, and interdependencies through which urban material and cultural life are continually produced, defined, and organized. Such a frame leads us to think about environmental sustainability in India in a way that recognizes the presence and influence of multiscaled processes and multiple histories.

It also underlines the point that urban ecology is as much a question of social life as it is an assessment of the quality and vitality of biophysical systems. This point is not always self-evident, as biophysical scientific accounts of nature, whether in the city, suburb, or countryside, usually assume an authoritative posture among competing accounts of environmental problems. Assembling such accounts is typically the domain of natural scientists, engineers, and planners—those producers of knowledge whose work most directly translates into prescriptions for management and intervention (Mitchell 2002, 30). Their modes of inquiry and the languages through which they convey their diagnostics tend to occupy a privileged place among the many ways of experiencing the socio-natural environment.<sup>5</sup> Yet these same approaches often yield an incomplete understanding of why people undertake specific forms of action in relation to their environment.

Indeed, science is in many ways essential for expressing and understanding environmental processes and change. In the ecosystem sciences, urban ecology marks a specific sub-discipline wherein cities are theorized and modeled as hosts to specific combinations of stresses, disturbances, and structures that affect nutrient cycling, hydrological processes, air and soil quality, vegetative cover, and a range of other parameters (McDonnell and Pickett 1990; Pickett 1997; Sukopp et al. 1990; Walbridge 1998). By engaging with urban contexts, urban ecosystem ecology has also highlighted important limitations of the rural-centric ecology that has historically regarded cities as antithetical to natural space, and human social activity as a *de facto* perturbation of natural systems. It has in many ways driven a rethinking—albeit confined to particular epistemological parameters—of human–nature interactions, and roundly challenged the supposition that nature can be scientifically understood as separate from human activity (e.g., Grimm et al. 2003; McKinney 2002; Pickett and Cadenasso 2002;

Pickett et al. 2001; Rebele 1994). The result is a set of scientific models that explicitly link human and natural components of singularly conceived urban ecosystems.<sup>6</sup> These models, however nascent, invite studies of human sociality into scientific mappings of ecosystems in a way that demonstrates the extent to which modern science is itself transforming.<sup>7</sup>

In its fullest sense, the urban ecologies analytic that we employ in this volume spans a vast disciplinary terrain that requires combinations of natural and social science analytics to capture. As Auyero and Swistun (2009) have recently shown, and as our contributors elaborate here in cases from India, ethnographic evidence suggests a constant tension between the production and control of ‘valid’ knowledge—that is, facts about biophysical processes—and the meanings that are attributed to the everyday life realities shaped by those same facts. We are concerned with the production of meaning because it is closely associated with human agency and action; meaningful accounts of the past, present, and future motivate purposeful human action. ‘What urban ecology means,’ across actors, times, and places, is thus an extremely important entry point for understanding how and why individuals and collectives engage the environment and one another as they do. It is reasonable to expect that purposeful action on behalf of the urban environment or specific ideas of urban social life—or both—may be driven by processes not captured or conveyed through scientific facts.

Yet let us underscore that the urban environment is never an exclusively social construct. Biophysical settings, including dense urban landscapes, are not infinitely malleable, regardless of our recognition that social forces are crucial for delineating the form and content of environmental categories (Benton 1989; Gupta and Ferguson 1992; Mosse 1997). As Sivaramakrishnan has argued elsewhere (1999, 282), any concept of nature is, in fact, “produced through the interaction of biophysical processes that have a life of their own and human disturbance of the biophysical.” Thus nature is conceived out of this interaction between the human and the biophysical. Sivaramakrishnan continues, “Human agency in the environment, mediated by social institutions, may flow from cultural representations of processes in ‘nature’ but we cannot forget the ways in which representations are formed in lived experience of social relations and environmental change” (ibid.). Understanding how biophysical constraints and social imaginings converge on a given landscape, then, is fundamental to studying ecology as the set of

experience and action (Peet and Watts 1996; Redclift and Benton 1994) that constitute an important part of a fuller analytic of urban ecology.

## **Citizenship and Nature in Histories of Indian Urbanism**

How does one maintain an active and generative tension between dynamic ecological processes and human experience when considering the urban question in India? To answer this, we begin with Rotenberg's (1996) contention that the identity of a city also structures residents' urban experience, adding urban identity to place and time as universal sources of metropolitan knowledge. Sennett's (1994) interest in embodied urban experience is further instructive here. These are admittedly universalizing characterizations, but they also provide provocative means for perceiving cities, as bundles of processes that link social experience and social structure (Low 1996, 401). To return to our framing question, the work assembled in this volume draws on analytical categories of urban citizenship and civility, which for us invoke the question of rights, their formulation, and their negotiation in law, government and social conflict.

We agree with John Gledhill that "the politics of citizenship was about rights in the positive sense that people struggled to have more and new rights" even as modern nation-states were being formed (Gledhill 2005, 85). And we recall the valuable distinction between political and civil rights, which T. H. Marshall (1950) argued constitute defenses against abuses of power by states. In this sense, social rights are those that require active intervention by states to equalize citizen opportunities.<sup>8</sup>

A characteristic of late twentieth-century urbanism in many parts of the world is the fracturing of neighborhoods and kinship-based community. A sharp separation of spaces of wealth and poverty is enforced in new urban forms, in part by private security and in part by state policing. These can generate a market conviviality that makes vending, buying, and traveling to the market one of the few activities that infuses urban living with thick interaction and social spontaneity that are otherwise mostly sucked out.<sup>9</sup> And as Smart and Smart (2003, 271) note, increased inter-urban competition further complicates the picture when we look at any particular urban experience. In this context, diverging trajectories for the economic prospects of residents raise crucial issues for urban governance and citizenship. We might usefully ask: is economic redistribution counterproductive in an era

of urban entrepreneurialism (Gregory 1998a, 1998b; Jessop 2002)? How are development coalitions constituted and maintained (Logan et al. 1997)? What are the implications of increasing inequality and disenfranchisement for the civility of urban society (Holston 1999)?

If citizenship is articulated in a language of rights, and calls our attention to political struggles, social movements, and litigation in the urban public sphere, civility refers to the contested realm of style, taste, personhood, and cosmopolitanism in India's growing, and largely urban, middle classes. These two streams of public engagement converge in specific environmental experiences, and form the basis of each author's contribution. Contributors therefore examine the ecologies of urban India in light of infrastructural development, varied connections and destabilizations of the city as an imagined or experienced place, struggles over rights and resources in the city, and the crafting of aspiration to new forms of urban life among planners, residents, and investors.

Using urban India as its focal geography, the authors further explore questions germane to understanding the dynamics of social nature in contemporary urban settings. They address intersections between urban social processes and assessments of urban environmental order and disorder, asking: how are relationships between urban environments and urban societies made, remade, and rendered *meaningful* in contemporary cities? How do biophysical properties, rules, and histories of nature converge to enable social actors to construct new identities and demarcate political spaces?

We therefore frame this collection of studies of urban ecologies in India through two intersecting analytics. One requires an examination of the way nature functions as a set of properties and amenities, endowments in short, that biologically, physically, and spatially render urban life possible. The other explores the institutions and processes through which urban life creates and relies on webs of interdependence; connections and flows that concentrate life in cities and sustain such concentration through increasing internal regulation and proliferating external linkages.

As noted earlier, the cases are drawn chiefly from Mumbai and Delhi. These South Asian mega-cities have attracted considerable global attention for their demographic, economic, and political dynamics. Yet, like all cities, they have distinct, layered, and regionalized histories. Delhi, for instance, has a long pre-colonial, colonial, and postcolonial heritage as the seat of empire,

the headquarters of regional polity, or the nation-state capital. Mumbai, a much newer city and commercial center, is a key historical and contemporary node in Indian Ocean flows and connections.<sup>10</sup> In the twenty-first century, in separate but comparable ways, these are now mega-cities of India's post-industrial aspirations. They serve as examples of how knowledge industries shape megalopolises, and they are fruitful urban settings within which to explore questions of urban social nature.<sup>11</sup>

We should clarify that 'nature' in this volume captures processes and relationships that invoke and involve resources, histories, and collective aspirations. The transformative power of these processes and relationships reflects the extent to which they embody intense economic interests, political contests, moral evaluations, and biophysical experiences. With these conceptual and terminological definitions in hand, let us turn in some detail to the histories of urbanism in Delhi and Mumbai.

Before Delhi there was Shahjahanabad. There, neighborhoods of caste and occupation were less commonly the pattern of settlement; it was more that retainers settled in clusters around their patrons or amirs (Spodek 1980, 258). Delhi remained a city of military encampment in the early colonial period, and issues of regional security shaped the way urban walled and open space was utilized until the colonial capital was moved there, just before the First World War (Gupta 1971).<sup>12</sup> Dramatic population increase, densification of urban living space, insufficient potable water supply, and massive drainage and sewerage difficulties were the major urban problems in colonial India (Mann 2007, 2), and Delhi was no exception in facing these predicaments. Urban governance until the end of the nineteenth century was preoccupied with public health, and disease in the city was frequently attributed to the 'corruption' of air due to decaying vegetation, lack of natural light, and the cramped and poorly ventilated housing that seemed to dominate the *mohalla* landscape of pre-colonial urban settlement (Sharan 2006, 4905).

There was soon a Delhi Improvement Trust, and similar entities followed in Bombay and Calcutta. Regulation of smoke nuisances in Calcutta had already pioneered the idea of urban improvement by mitigating air pollution (see Anderson 1995). Piped water supply began to take the place of canal and well water in some parts of Delhi by 1890, and avenues and parks began to separate European quarters from native settlement, bringing Delhi into conformity with models already in place for colonial settlement patterns in the port cities of the Bombay, Calcutta and Madras Presidencies, the oldest

British provinces of colonial India. Public defecation and polluting industries also drew the occasional ire of the colonial government in Delhi, Bombay, and Calcutta (Sharan 2006, 4906). When the new capital of British India was inaugurated in 1931, New Delhi was born, and certain implications associated with this had to be faced. As the municipal government was inaugurated, municipal services focused on New Delhi to the neglect of Old Delhi, as the walled city and adjacent suburbs were now called (Mann 2007, 28). The urban landscape in these two parts of Delhi began to diverge, as one was planned and beautified through active state intervention, and the other languished in crumbling visible memorials to older *mohallas* and patterns of self-organization.

The afforestation of the Central Ridge was part of the enormous changes that altered the environment and the ecology of the region. By 1913, twenty-five villages and their agricultural land had been acquired, many stretches of low-lying land were filled up, and several hillocks were leveled (Mann and Sehrawat 2009, 557). This led to an urban forest on the Ridge by the 1930s, creating an English prospect on an Indian landscape and thereby crafting new vistas of power and government.<sup>13</sup> Delhi in the 1950s was reshaped by partition, the arrival of refugees, and a round of planned development that now looked to the United States for inspiration. By that time, the city that planners encountered was one deeply embedded in the regional economy, drawing upon resources and providing goods, but above all attracting people, both migrants and refugees. For the development of Delhi as a metropolis, slums and industry became the chief environmental concerns. As Sharan (2006) notes, apart from some cotton mills, very few industries had come to Delhi in the years between the great wars. Refugees brought new commerce and manufacturing, especially to Old Delhi, where they mingled industry with residence and created new anxieties about pollution and nuisance, which generated a new wave of efforts to relocate them elsewhere. It appears the politics of sanitation dominated Indian town planning and municipal politics until after Independence, most prominently during the 'Emergency' (1975–77) with its notorious clearance and resettlement schemes for Delhi.<sup>14</sup>

Urban planning was initiated by the Delhi Development Authority (DDA) in 1957, following what Sundaram (2004) rightly calls classic modernist urban design principles: enumeration, classification, zoning, and slum management. He also observes that, as the city rapidly expanded in areas of housing and commerce through the 1980s and 1990s, planned development

lost both efficacy and popular support and Delhi sprawled (Sundaram 2004, 65). Notably, though, this expansion was mediated through a series of non-legal informal arrangements by the urban poor, small businesses, and affluent house owners wanting to expand private space beyond legal norms. Included as well, of course, were private builders and contractors.

Despite complex informal arrangements and processes, slums and the relocation of industries remained major issues in environmental struggles in Delhi.<sup>15</sup> But to those older, even colonial concerns, we can add the growing interest in amenities like parks, as well as the gating of residential colonies to privatize access roads, increase safety, and exclude itinerants.<sup>16</sup> The building of planned Delhi was thus mirrored in the simultaneous emergence of unplanned Delhi. As Baviskar notes, “in the interstices of the Master Plan’s zones, the liminal spaces along railway tracks and barren lands acquired by the DDA, grew the shanty towns built by construction workers, petty vendors, and artisans, and a whole host of workers” (Baviskar 2003, 91).

Between 1951 and 2001, the population of the National Capital Region of Delhi grew from 1.7 million to 13.8 million (Census of India), and about half of the population now lives in informal settlements, shanties, or *juggis* (Delhi Development Authority 2000 cited in Sivam 2003). The repertoire of responses that poor people have in such situations has grown out of available legacies of protest and mobilization, but also has a distinctive urban flavor. In Delhi, the poor have used their votes, relatives, and moral claims on employers to contest this; they have also formed effective neighborhood associations, and most recently, a coalition of slum-dwellers’ organizations, trade unions, and NGOs. Baviskar argues that such “multiple practices, simultaneously social and spatial, attempt to democratize urban development even as they challenge dominant modes of framing the environment–development question” (2003, 97). It is important to remember, though, that civic urbanism and associated forms of resistance arise not only from internal fractures in civil space; they also reflect awareness among the leaders of such movements that informal social relations are also vulnerable to predation and cooptation by states and powerful financial interests (Gledhill 2005, 90).

In this regard, looking at contemporary struggles in Mumbai, there is much to find in parallel to contemporary Delhi. The efforts of governments to fashion global cities has led to the massive transfer of urban land to private developers and this has mainly affected the urban poor. In Mumbai, it has meant that slums, squatter settlements, and defunct industrial lands in the

city center have been targeted. In this context, we may ask: how have cities become strategic sites for the enactment of new kinds of citizenship?

Since big cities concentrate both the most advanced service sectors and a large marginalized population, they often become a setting in which new citizenship practices can emerge. For Saskia Sassen (2006), the struggles of the poor over rights to the city do not necessarily bring power, but the presence of struggle itself has generated “operational and rhetorical openings” for new political subjects to emerge. James Holston (2008) argues that when the gap between substantive and formal citizenship becomes intolerable, people search for insurgent spaces within which they become active citizens. Partha Chatterjee (2006) seems to develop similar arguments with his ideas on political society, even as they stop short of describing such insurgent populations as active citizens.

Grounding general formulations of the emergence of urban citizenship in actual social experience requires us to locate the political structures through which power works across any city. Urban renewal in Mumbai, for instance, was initiated neither by national-level reforms nor by actions of the municipal government, but by the policies and programs of the state government, the middle rung of India’s three-tiered federalist structure. A combination of mass protest and court filings have marked the response to slum clearance and textile mill land reallocation drives, and these actions have prevented large-scale privatization of land. They have also enabled a constant reworking of the decision-making process of central city redevelopment, and facilitated some gains for the urban poor (Weinstein and Ren 2009, 415–426). These few positives have to be put in perspective, however. Mariam Dossal’s moving account of the aftermath of the disastrous floods that crippled Mumbai in 2005 provides an example. As she reminds us, since the plague of the 1890s, plans to improve Bombay and Mumbai had foundered in the face of traders and developers who had grown stronger with rising real estate values in the city. “To give back the city to its citizens, to protect its environment, urban heritage, cosmopolitan culture, and vibrant economy,” she writes, “will require Herculean efforts on the part of all those who care about this city and all that it has stood for” (Dossal 2005, 3900).

Chopra (2007, 109) writes that colonial Bombay was the product of the fragmentation of two modes of urbanism: one colonial and one local. While the former sought architectural regularity, the latter offered stability of purpose, though there were also intersections of style and spatial design.

So, she writes, “colonial urban interventions acted to punctuate or envelop parts of the city with facades that hid or fronted the inner city. One entered through the gates and lanes between these facades only to be transported into a different world” (2007, 123).

In 1898 the Bombay Improvement Trust was the first such trust to be founded in India, in response to the threat of plague and disease in one of the country’s foremost ports (Kidambe 2001, 60). Here began a process of social and slum reform that mirrored practices in other colonial cities at the turn of the last century, not least because key colonial figures of influence in these institutions, such as J. P. Orr, were familiar with these concerns from several other Indian cities (Legg 2008).

It is in this context that we can see a colonial approach to urban citizenship where political representation and participation rights were closely tied to class privilege. To enable the growth of industrial enterprise in Bombay, the colonial government was interested in working out property and trading rights and facilitating freedoms of movement and residence—albeit within a grid of imperial and racialized spaces—and this encouraged modern urban markets more than the development of public civic consciousness. As Hazareesingh (2000, 803) notes, “while the rules of the market-place ensured inter-community rivalries, the values of caste emphasized communitarian obligations to promote particular group interests, largely impervious to any wider notion of collective urban solidarity.” Even during the colonial period, Patrick Geddes challenged this pattern of urbanism and cast urban citizenship as primarily an engagement in the local arena. If water supply and health were basic civic entitlements, he was quick to observe that urban poverty was a serious impediment to the achievement of minimal urban citizenship. Homes and affordable public transport would assure not only amenities, but also the cultivation of the spirit that was conducive to the proper exercise of citizenship.<sup>17</sup> By 1920, an expanded public sphere of press, political, and voluntary groups was questioning the hitherto untroubled hegemony of the market sphere of urban civil society, guaranteed by the limited colonial framework of legal rights (Hazareesingh 2000, 812).

As was the case in Delhi, Calcutta, or Madras, urban sanitation became the most readily available point of entry for urban government in Bombay. The City Improvement Trust concerned itself primarily with improving sanitation and hygiene as anxiety grew about overcrowding and filth in the old city. In addition to making limited improvements there, building spacious

east–west boulevards to bring sea breezes, and moving some people into suburbs were also part of the urban improvement plans that began to take shape in the early twentieth century (Rao 2007, 45–49). The native town in Bombay was similar to the others in that it was heterogeneous, with blurred boundaries between residential and work-related spaces. But Bombay was unique in that it developed apartment dwelling for the middle classes long before such dense and segregated housing emerged in other Indian cities.

Earlier *wadis* and *mohallas* developed around the idea of the multifunctional street and the emotional centers provided by temples, water tanks, mosques, and bazaars. This stood in contrast to the grid of residences or commercial complexes built around intersecting streets that mainly served as channels of communication (Rao 2007, 28–29). Despite the ecological limitations posed by Bombay’s location on a series of interlinked, and gradually landfilled islands, and the socio-economic obstacles created by the lack of transparency in land markets, urban consolidation made its presence steadily known across the burgeoning metropolis. A series of redevelopment efforts were mooted and partially carried out; many involved building high-rise complexes. But for both *jhuggi* and *chawl* residents, although relocation into high-rise apartments might ensure better services, it was invariably at the expense of earlier forms of conviviality. Chalana writes, “the drastic rearrangement of life in a vertical high-rise . . . lead[s] to social isolation and the breakdown of community and economic networks . . .” (Chalana 2010, 33). But as *chawl* and *wadi* came to be replaced by apartment and neighborhood, urban planning powerfully altered notions of community as well, and led the formation of Bombay’s modern middle class and its unique forms of modern urbanism (Rao 2007, 184–187).

The emergence of an urban middle class, and its associated aspirations and desires, is closely connected to urban spatial configurations, new ecologies of urban life, and elaborations of ideas of urban nature. This point is adumbrated by Leela Fernandes when she argues that lifestyle issues related to consumption in the public sphere have come to dominate the self-fashioning of the urban middle class. This, she says, stands in opposition to work and community-based living in distinct neighborhoods. She writes,

Historically . . . metropolitan cities in India did not develop into strict class-segregated spaces. While cities like Mumbai, Delhi and Calcutta have certainly reproduced spatial distinctions between wealthier, middle-class and poorer, working-class neighborhoods, such distinctions

have historically been disrupted by the presence of squatters, pavement-dwellers and street entrepreneurs such as tailors, shoe repairmen and hawkers. (Fernandes 2004, 2420)

The push to shape new global cities in a compact between rising middle class expectations of urban civility and governments keen to attract service industries and host world spectacles like international sports events, remakes urban ecologies in a manner less tolerant of these disruptions. The result is a form of spatial purification, named beautification, and cleaning, to purge the city of the poor (Fernandes 2004, 2421).

In this form of new urban civility, civic activism is deeply ambivalent about consumerism, the decline of ‘community,’ and exclusionary ways of defining citizenship. A technocratic associational elite tends to define a consumer citizen, while the rise of neighborhood associations reinforces a particular model of urban living (Harriss 2007; Nair 2005). Resisting neat class-based assumptions, Anjaria (2009, 393) observes that an unlikely “grouping of powerful builders, corrupt state officials, and small-scale hawkers as urban villains suggests the uneven and contradictory nature of urban reconfiguration.”<sup>18</sup> And such a reconfiguration, puzzled out of civic action on diverse issues like environmental sustainability, social justice, urban governance, and the rights of the working poor, projects citizenship as that which aligns with a public and future-oriented spirit for the conservation of the city as heritage site. Notably, this variegated and contradictory civility cannot be contained in any narrative that sees urban government as moving from welfare and guardianship to profit and world recognition (cf. Smith 2002), or encompassed by neat ideas about civic governmentality or technocratic urban citizenship (cf. Roy 2009).

This point comes across elegantly in Arjun Appadurai’s examination of the urban public sphere in Mumbai. Writing about the Society for the Protection of Area Resource Centres (SPARC), the National Slum Dwellers’ Federation (NSDF), and Mahila Milan, all organizations born in the 1970s and 1980s, Appadurai (2002, 24) notes, “movements among the urban poor, such as the one I document here, mobilize and mediate these contradictions. They represent efforts to reconstitute citizenship in cities. Such efforts take the form, in part, of what I refer to as *deep democracy*.” He underlines the fact that in Mumbai the growth of aspirations to global city status, with its corresponding privatization of urban resources and marginalization

of the poor, is also productive of new forms of activism that unite middle classes and the most disenfranchised among the poor through the work of specialized NGOs and their broader alliances. These are alliances that make local democracy more effective because of the translocal cultural capital that is brought to bear through urban civic networks. Participation in transnational social movements is a particularly crucial dimension in the adoption of a global worldview. The nature of citizenship is affected by affiliation with distant individuals, groups, or causes (Smart and Smart 2003, 275).<sup>19</sup>

Inchoate yet powerful middle classes have a central role in the formation of new urban ecologies that are considered and depicted in many ways in the various chapters in this volume. How they do that and more, illuminating the many questions and themes highlighted by us, will be briefly anticipated in the next section of this introductory chapter.

## **Ecologies of Urbanism**

The volume begins with a set of contributions that use historical approaches to understand questions of the Indian 'urban,' the shifting concept and uses of 'environment,' and the mutual constitution of rural and urban contexts over time in South Asia. Taken together, these chapters ground the volume's analytical approach in temporal, spatial, and historical specificities; separately, each author—Nair, Sharan, and Glover—offer historically grounded and empirically rich explorations of Indian urbanism, the environment, and the rural-urban continuum, respectively. In an extended consideration of the vagaries and outcomes of urban planning and its legal manifestation in Bengaluru, Janaki Nair wonders why cities elude the most persistent efforts of capital and state to render them in a fashion amenable to their mutually interested workings. Her answers focus on the messy complexities of the urban public sphere where rights are articulated, and civility imagined and defended. It is her insight that the failures of planning do not create illegible landscapes that benefit the urban poor in particular. As her account of improvement activities in Bangalore, inaugurated by a law passed in 1945, reveals, illegal construction and the politics of regularization are at least as old as modern urban planning itself, which was a force shaping the urban ecologies of Bengaluru from the very first decade of independent India.

The politics she examines is that of urban settlement and its systematic lack of conformity to extant urban regulation. Janaki Nair locates these

struggles in the wider context of the relationship between government and sovereignty. As she notes, colonial government established a pattern of framing rules for urban civility that were left in their implementation to the working of multiple competing sovereign powers that operated in the localities where urban life was actually regulated or eluded control. The fractured nature of the colonial public created the conditions for contemporary urban public spheres to be stratified and segmented, leaving space open for cross-cutting coalitions, a space only enlarged and enlivened by the working of democratic politics in the municipality and the city.

The limits of urban planning and their particular antecedents are also the subject of Awadhendra Sharan's discussion of the management of air quality in Delhi. He vividly describes the early days of master planning in Delhi, and the emergence of fine distinctions between noxious and non-conforming industries. Once again, a distinct trajectory is found for the way illegality is carefully delimited against other forms of regulatory violation and the ways in which lines are drawn around the admissible conditions of urban civility. Air pollution in Delhi also drew the Supreme Court into the struggles over its definition and management. The growth of public interest litigation and the issue of the environment of Delhi, the very seat of the highest government agencies, each left their stamp as the contestation developed. And as science was marshaled with considerable adroitness by all parties in the dispute over pollution and its causes in industry and transport, the courts elaborated a different principle—one of risk mitigation—that sidestepped the politics of constructing scientific authority in the service of an exalted standard of urban civility named the precautionary principle. The story that Sharan tells, therefore, takes us beyond looking for patterns of social antagonism in the city to the modes of elaboration by which urban ecology is itself constructed and deployed in sophisticated public debate.

A chapter by Will J. Glover anchors these two more contemporary questions about urban planning practices to a historical analysis of key colonial and postcolonial notions of the relationship between material built forms and sociality. Glover traces historical connections between intellectual movements in colonial era sociology and planning, and suggests that underlying assumptions in the new town planning approaches that became a locus of bureaucratic attention in the postcolonial period were and remain socially "conservative." This is true, he argues, insofar as they anticipate "a kind of society putatively based on the collective rather than the

individual, on people's organic habits and psychological needs rather than on independent will and the restless search for the 'new' " (this volume, 26).

In an interesting complement to the essay by Janaki Nair, Shubhra Gururani analyzes the discourse of planning and the spectacle of unplanned development in Gurgaon, a rapidly growing urban formation on the edges of Delhi, and an emerging center for information technology industries, high-end shopping, and luxury. She describes the malleability of planning and policy in practice, showing how the letter of policies and plans rarely determine their form in everyday life. Calling this opposition between legal guidelines and technically illegal official practices "flexible planning" (this volume) she shows how flexibility takes the form of exemptions built into plans. She contends that the political economy of urban development necessitates this approach due to the varied ways in which private enterprise and civic organizations are included in urban futures. That several interests beyond welfarist concerns of government are at play in any major urban project is intrinsically destabilizing of any planned activity, as intense negotiations and the pursuit of divergent priorities characterize the process of urban development at every stage.<sup>20</sup>

While planning itself unfolds, in her essay, as inherently fluid and unpredictable, Gururani is also mindful of Gurgaon's location, both in relation to the prosperous agrarian areas of Faridabad that benefited from the Green Revolution, and the rich and dense urban universe of Delhi that moved to encompass Gurgaon in its outer reaches. In a sense, across the regional scale, Gurgaon was caught between agrarian and urban identities and it took that uncertainty into recent decades of vertical and opulent urbanism. As Gururani pithily describes it, land development policies in Delhi, and the expulsion of major private developers from Delhi, coincided with a series of enabling Haryana laws to open Gurgaon to large private builders and their imagined cities.

Urban infrastructure makes the urban agglomeration work as a town or city. It creates grids of transmission lines, roads, and pipes and channels that bind the city into a self-regulating unit. But urban infrastructure also produces space and in doing so delineates relations of power that shape the flow of resources and human mobility through and across the city. All the papers in this group are interested in this production of space and the associated relations of power. The papers are also concerned with socio-economic

changes in the cities—Delhi, Mumbai, Chennai—that are characterized by terms like privatization, rights, and mobility affecting people and resources.

Coelho and Raman remind us that if land and water are the physical infrastructure of urban life, spatial patterning and services, variably defined, might be thought of as the social infrastructure of urban concentration. In this account, slums come under a different kind of analytical scrutiny. They are an urban necessity, for they mark the process of continuous property creation in the city; they represent property that is valued differently in different historical moments thereby generating the logic by which slums appear in some places, are destroyed or dislocated, and are rebuilt elsewhere. Their erasure may be read as urban renewal or reclamation, their reappearance as a sign of urban decay. Yet they are hard to place outside any putative urban center, and in that sense, along with land, water, waste, and energy, slums are part of the infrastructure of the city.<sup>21</sup>

Coelho and Raman also make the important suggestion that the provision of infrastructure changes dramatically in agency and scope as economic and state regimes move to different logics of organization. Thus, concerns for public health, safety, and reliable transportation networks, often key motivators for public provision of the infrastructure of sanitation or roadways, can be replaced by concerns about unfettering enterprise, or easing the flow of finance capital into the city. In the latter case the infrastructure development reveals a spatial pattern and regimes of access that create mechanisms to enable specific kinds of investment. Such shifts can have a direct influence on urban ecology, for land may become water, where once water more often became land, or, at least, a place to dump waste from land. What is fascinating about this reversal is that it alters the material landscape, but also signals a new regime of values in which water in marshes, artificial lakes, and tanks, is revalorized in historic locations for newly acquired sensibilities.

From an ecological perspective Coelho and Raman also note that the poor live in the most ecologically unstable, and hazardous, areas where they are most exposed to the vagaries of climate events and natural calamities. They are also, often, living in proximity to toxic urban waste streams. While such living conditions pose dangers that are often poorly understood even by those who might wish to help such poor urban dwellers, those who live in them are also threatened by reclamation and beautification projects that would displace and relocate the poor rather than improve their access to amenities.

Coelho and Raman deftly juxtapose these harsh material conditions against the urban aesthetic at work, and the related social imaginaries of urban living, in schemes of river restoration, waterfront development, and the creation of green enclaves in the city.

These harsh realities and the notions of formality and informality that undergird them are then taken up in a study of municipal waste management and collection in Delhi by Vinay Gidwani. Waste, after all, can be understood in terms of its producers, for whom it is a consequence of having more than they can consume. Waste can also be understood in terms of its collectors, for whom it is a source of survival and possibly accumulation. This distinction, though heuristically clarifying at one level, can at another level obscure the ways in which waste is a part of the urban economy of materials and signs. Therefore, for some, it is both a product of their actions and a collectible in their business.

Taking as a starting point the recent consolidation of private waste management services in Delhi, Gidwani examines how earlier private sector operations are either supplanted or absorbed in newer forms of waste management service. He links this to the broader issue of understanding urban transformations as struggles over values. He argues that “the exclusionary urbanism and renewed enclosure of the common that is transforming contemporary cities in the global South [in this case, Delhi] is repeating with difference a centuries old class war against ‘waste’” (this volume). By attending to the sociality of urban waste management in Delhi, he thus identifies important connections between middle class aspirations to develop Delhi into a ‘global city’ and the enduring social relations that undergird the consumption patterns of everyday life. Changes such as those Gidwani considers in the waste management sector can be seen in processes of industrialization more generally; the displacement of artisanal forms and labor-intensive modes are a prominent facet of everyday urban ecologies in Delhi.

From here, contributions by Anand and Rademacher, Doshi, and Ghertner address different dimensions of the relationship between contemporary urban ecological processes and the forms of housing deemed environmentally sound within them. Through contemporary studies from Mumbai and Delhi, these authors explore how complex caste, class, and gender asymmetries are reproduced or reconfigured in practices of housing advocacy, ‘improvement,’ and formalization. Anand and Rademacher’s detailed account of the

everyday experience of the contemporary housing initiatives of the Slum Rehabilitation Authority (SRA) in Mumbai is complemented by Doshi's study of the complex and uneven effects of this relocation scheme. While Doshi's accounts are not stories of absolute dispossession, they nevertheless involve complex caste, class, and gender asymmetries produced and reproduced in this otherwise widely lauded policy for reworking informal housing landscapes in Mumbai.

Ghertner then turns our analytical attention to questions of informal housing management in Delhi, offering a rich ethnographic and theoretical discussion of the everyday cultural politics of remaking Delhi as a world-class city. He shows how discursive framings of informal housing, particularly its occupants as a 'nuisance,' inflect everyday symbolic, discursive, and legal constructions that are at work in the city. In turn, he argues, the boundaries between legality and illegality are shaped and reinforced in everyday life. Resident welfare associations, assisted by media and government agencies like the local police, produce a more aggressive and exclusionary account of what belongs and does not belong in the neighborhood, in Ghertner's account.

Across the chapters in this volume, we see the emergence of a set of conflicts that involve not merely the material conditions of urban life—security, green spaces, municipal services, unimpeded mobility through the city—but also the very people, mostly slum dwellers, who might undermine these conditions. Thus, discussions of metropolitan civility and sustainability reference contention not only in terms of matter, but also people, who are deemed out of place, a disruption to the ecologies of urbanism imagined by different groups in the city.

## Notes

1. See Preeti Chopra (2007) for a basic schematic account of the development of colonial port cities distinguishing native town and European quarter, the former dense and unplanned, the latter spacious, green, and well designed.
2. See, for example, the film by the same name, produced and distributed by the National Geographic Society as part of its *Journey to Planet Earth* film series: <http://www.pbs.org/journeytoplanetearth/about/urbanexplosion.html>, accessed August 10, 2012.

3. Studies of the cities of the 'global north,' in turn, tend to focus on issues of over-consumption, greenhouse gas emissions, and other conditions associated with relative wealth. At both poles of the binary, our expectations and priorities are pre-conditioned by the categories North and South.
4. See, for example, World Resources Institute (1996), which introduced 'the urban environment' as a comprehensive set of global problems for its audience of policymakers and academics. For more recent representations of the city as an ecosystem and an environmental problem, see Alberti (2003); Collins et al. (2000); Parlange (1998); Pickett et al. (1997); Pickett et al. (2001). See also *Science* (2008) special issue.
5. All forms of knowledge emerge within particular sets of social relations and institutional dynamics. Knowledge is not simply the revelation of facts; it is itself productive and reproductive of specific social and power relationships. Some useful elaborations of expert knowledge in political ecology and science and technology studies include Blaikie (1985); Bocking (2004); Brookfield (1999); Bryant (1998); van Buuren and Edelenbos (2004); Collingridge and Reeve (1986); Davis and Wagner (2003); Dimitrov (2003); Jasanoff and Martello (2004); Mitchell (2002).
6. Attempts to conceptualize how natural and social factors come together in cities include the Burch–Machlis human ecosystem model (Machlis, Force, and Burch 1997; Pickett et al. 1997), which posits that human–non-human "hybrid" characteristics (Pickett et al. 1997, 189) are found in most urban ecosystems. Unlike previous models that suggested reciprocal interconnections between a human and a natural ecosystem (Boyden 1993), this model uses more fluid nature–culture categories, suggesting that, "some [ecosystem] components, fluxes, regulators, and processes in [urban] systems retain many of their 'natural' behaviors, whereas others may be entirely altered or constructed by humans" (Pickett et al. 1997, 189). The Burch–Machlis model also explicitly recognizes what it terms "key hierarchies" (Pickett et al. 1997, 189) in social organization (wealth, education, status, property, and power), and the difficulty of representing these at a variety of spatial scales. Thus urban ecology has become the theoretical terrain in which longstanding disciplinary divisions between the natural and social sciences have begun, perhaps by necessity, to dissolve.
7. In this way, disciplinary urban ecology complicates the conventional Latourian critique of modern science and its "purification rituals" (Latour 1993).
8. In essence, citizenship has been argued to include civil rights like freedom of speech, freedom from assault, and equal treatment under the law; political rights such as participation in the exercise of political power through elections; and social rights like entitlements to a modicum of material and social welfare guaranteed by the state. See Janoski (1998, 28–33); and for the original ideas he builds on, see Marshall (1950).
9. It is also important to remember, as Helen Siu notes in writing of Guangzhou, "although drawn into a fast-forward mode of market-oriented gain, residents of

village enclaves in Guangzhou seem surprisingly grounded and dispossessed” (Siu 2007, 345).

10. We draw the distinction tentatively here, but earlier writing on Indian urbanism quite emphatically distinguishes inland and port cities as two separate patterns of urban settlement and growth in India. Rhoads Murphey (1977) and John Brush (1970) point to the sharp differences in organization, function, ecology, and cityscape of colonial port cities and the Hindu or Muslim cities of the Indian hinterland.
11. We are mindful here of Manuel Castells’ (1996) network society thesis that focuses on how a new space of flows draws producers of information goods everywhere into powerful communication networks. And as Ravi Sundaram (2004, 64) notes, elite urban enclaves service/house these classes, simultaneously marginalizing other forms of labor in the city.
12. Anthony King (1976) traces the ideas of the cantonment, the civilian quarter, and the old city, as Indian urban forms were adapted and overlaid with colonial ones through the nineteenth and twentieth centuries.
13. The development of the Ridge as a colonial urban forest is sometimes forgotten in the more recent struggles to conserve the Ridge, as NGOs in Delhi fight to restrict industrial and residential development in the green spaces of Delhi, claiming as postcolonial natural heritage the landscapes that were part of the planned development of colonial Delhi.
14. See Tarlo (2003) for a close examination of the resettlement colonies of East Delhi, a striking product of this spectacular effort to clean Delhi in the mid-1970s.
15. Most slums are located on land owned by DDA, the Municipal Corporation of Delhi (MCD), the New Delhi Municipal Council (NDMC) and Indian Railways. This is a reflection of the biggest urban problem—the absence of equitable land distribution. In virtually all metropolises in India nearly two-thirds of the people live on one-tenth of the urban land. The Draft National Slum Policy seeks to freeze this by describing slums as “under-serviced areas,” and does away with the promise of equitable land supply (Navlakha 2000, 4471).
16. Taneja (2008) shows how different interests in amenity and heritage rub up against each other in Delhi. He describes the development of a public golf course getting tangled with the heritage of Prithivraj Chauhan in a time of growing Hinduized reconstruction of the built heritage of Delhi.
17. Geddes developed these ideas in a number of ways. See, for instance, Geddes (1965[1915], 1972). See also R. Guha, *Scottish Internationalist*, *The Hindu*, January 21, 2007.
18. In this reconfiguration, the point being made here is that, middle class NGOs do not clearly identify particular classes as the main or only enemy of their vision of a sustainable city. This allows for issue-based alliances to blur and destabilize class conflict.
19. Michael Smith (2001) sees contemporary cities as being profoundly changed by the “rise of translocalities” (places separated by national borders but united

- through social and cultural affiliations with groups, categories, networks, and amenities) where the politics of transforming and defending place are generated in the friction between bounded jurisdictions and translocal coalitions.
20. Even before the myriad forces and concerns we see in Gurgaon at the end of the twentieth century became prominent, in the case of planning for New Bombay earlier in the twentieth century, similar departures from ideals in actual accomplishments can be noticed. See Shaw (1999) for a detailed analysis of the uncertainties of this planning exercise in much earlier times.
  21. Then there is the most interesting case of providing services in slums and linking them into infrastructure networks without giving them legal status that might destabilize property regimes in the city. For a discussion of this aspect, see McFarlane (2008, 6–12).

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