NOTES

2. A rich literature explores the architectural and design dynamics of colonial governance in the making of late nineteenth and early twentieth century Bombay. While work like Metcalf’s *An Imperial Vision* argued that there was a distinct colonial intention to foreground notions of traditional society in its architecture, and to link these notions to fostering acceptance of European ideas of progress, more recent work—notably Chopra’s *A Joint Enterprise: Indian Elites and the Making of British Bombay*—shows how the city was forged as a dynamic and shared endeavor. Chopra rejects a historical model that assumes that Bombay was made only by its British rulers, showing instead that both colonial and Indian elites forged the city in negotiated dialogue. Chopra points to specific buildings, their plans and their styles, as well as to specific figures from architecture and planning, to demonstrate the hybrid qualities of the “joint enterprise” of making Bombay. Most often, the Indian elites in question are Parsis. Additional work along this continuum includes Evenson’s *The Indian Metropolis*, Dossal’s *Imperial Designs and Indian Realities*, and Kidambi’s (2007) expansive *The Making of an Indian Metropolis: Colonial Governance and Public Culture in Bombay, 1890–1920*. Considered together, these works demonstrate a scholarly trajectory that has come to appreciate the negotiated qualities of urbanization in Mumbai and the complex interplay of power and social positionality that produce any city’s material forms over time. For the making of contemporary historical narrative in Mumbai, see in addition Mehrotra, 2004.
3. See for example Patankar et al. 2010.
1. CITY ASCENDING, CITY IMPLORING

1. For a review of the intersection of urban planning and utopian thinking across a range of historical cases for South Asia, see Srinivas 2015.

2. See Anand 2017. In Anand and Rademacher (2011, 5–7), we discussed how the past two decades of economic liberalization and globalization, in combination with other nation-level reforms, have produced significant economic and ideological transformation in India. Foreign-capital driven speculative investment in newly opened urban real estate markets led some observers to describe economic change in India as “casino capitalism” (Nijman 2000). But even as Mumbai has been regarded as a city awash with cash, commerce, and consumption (Appadurai 2000), it is also a global icon for discussions of urban informality, inadequate housing, and the patterns of neoliberalism, capitalism, politics, and gentrification that occupy policymakers, scholars, and shape the lived experience of informality and marginality. As we wrote in Anand and Rademacher (2011, 5–7), over half of Mumbai’s population lives in settlements that occupy only eight percent of the city’s area (McFarlan 2008); eighty percent of these live in homes of less than 100 square feet (Sanyal and Mukhija 2001). Over the last century, the Maharashtra state and Mumbai municipal governments have addressed inadequate housing through simultaneous strategies of accommodation, regulation, and demolition (Chatterji and Mehta 2007). See also Roy 2009; Doshi 2013; Weinstein 2014.

3. See note 2 regarding histories of colonial urbanization processes in Bombay.

4. See, for example, Prakash 2010; Hansen and Varkaik 2009; Chalana 2010; Weinstein 2008; Rao 2011.

5. See Davis 2006.


7. The global popular press included accounts such as Karkaria 2014.


10. See Cushman & Wakefield 2014.

11. As we wrote in Anand and Rademacher (2011), over half of Mumbai’s population lives in settlements that occupy only eight percent of the city’s area (McFarlane 2008). Eighty percent of these live in homes of less than 100 square feet. (Sanyal and Mukhija 2001). Under the auspices of the Slum Redevelopment Authority and other initiatives, the city faces an enormous and contested rehousing challenge. See also note 5.

12. See, for example, Patankar et al. 2010.

13. Ibid. Although set in a very different regional and political context, Zeiderman 2016 offers an instructive study on the sociopolitical intersection of risk, security, and urban vitality.

14. See, for example, Fuchs 2010.

15. For discussions of expertise in this sense, see Boyer 2008; Carr 2010; Jasanoff 2003; Mitchell 2002.

16. In a now-classic work, Simone (2004) explored the city as a process always inflected with the work of aspiration and imagination. In this case, specific publics were fashioned
in the social experience of collective aspiration, regardless of its ultimate outcome in the material form of the city.

17. The planning and consulting firm Group SCE India Pvt. Ltd. (a French firm with Bangalore-based India offices) was appointed by the MCGM (Municipal Corporation of Greater Mumbai) to develop preparatory studies for the Development Plan (DP). Once the preparatory studies were put into the public domain, several points were raised and considered by the MCGM. Thereafter, a consultant was appointed to prepare the Draft DP 2014—34. This was prepared by EGIS Geoplan Pvt. Ltd. (formerly Group SCE India Pvt Ltd.) in collaboration with an MCGM team, under the leadership of Mr. Vidyadhar Pathak, former Chief of the MMRDA (Mumbai Metropolitan Regional Development Authority). After this DP was published, public outcry underlined several discrepancies within it. A revised committee was then established to revise the DP, headed by a retired MCGM officer.

18. See, for example, the discussion of civic responsibility and sustainability in the editors’ introduction in Rademacher and Sivaramakrishnan 2013.

19. See, for example, Rao 2008.

20. Various firms have prepared projections for future new floor space. According to Rawal et al. 2012, for example, in the next eighteen years, India will add 67% of the floor space projected for 2030, or about 2.3 billion square meters.


22. See, for example, McLeod 1983; Hall 2002; Anker 2010.

23. Through this figure, Marx quite famously proposed relations between human life and the non-human natural world. This familiar, oft-quoted passage set the stage for decades of theoretical and political rethinking, and yet revisiting it afresh grounds us in enduring puzzles. The first volume of Capital (1967 edition) states “Labour is, in the first place, a process in which both man and Nature participate, and in which man of his own accord starts, regulates, and controls the material re-actions between himself and Nature. . . . By thus acting on the external world and changing it, he at the same time changes his own nature. He develops his slumbering powers and compels them to act in obedience to his sway. . . . We presuppose labour in a form that stamps it as exclusively human. A spider conducts operations that resemble those of a weaver and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality. At the end of every labour process we get a result that existed in the imagination of the labourer at its commencement. He not only effects a change of form in the material on which he works, but he also realizes a purpose” (pp. 177–78). Quite simply, through labor, Marx considered human beings more as architects than bees. The declaration was powerful in part for its assumption, consistent with existing understandings of bees at the time, that bees did not inhabit sophisticated sensory worlds. See Harvey 2000.

24. Social structures powerfully conditioned, and even confined, consciousness for Marx, shaping the potential of the human imagination to glean a true sense of the limitlessness of the possible. Whether or not full liberation from structurally conditioned modes of thinking can actually be realized remains a core, enduring question around which generations of social analyses continue to organize, albeit with considerable distance from Marx. As Harvey wrote, “we often seem to oscillate in our understanding of ourselves and in our ways of thinking between an unreal fantasy of infinite choice and a cold reality of no
alternative to the business as usual dictated by our material and intellectual circumstances” (Harvey 2000, 204).

25. An exemplary illustration of the importance of temporality in environmental anthropology is assembled in a special issue of the Journal of the Royal Anthropological Institute entitled “Environmental Futures” (Barnes 2016). See also McKay 2012 on temporality and humanitarianism, Hetherington 2014 on temporality and development, and Bear 2014.


27. As I have noted elsewhere (Rademacher 2011), Sivaramakrishnan (1999) points out that for Bourdieu (1990, 52), “practice” is “the site of a dialectic between opus operandum and modus operandi, of the objectified products and incorporated products of historical practice.” My consideration of cultural languages of power as part of structure and practice takes cultural meanings themselves to be “produced in social life and permeated by power relationships that are organized in time and space” (Faure and Siu 1995, 213). The interplay of structure and practice hinges on the analytical concept of the human agent. My own study follows Faure and Siu (1995, 218) in their view of the interaction between culture, history, and agency: “history is created and made significant by meaningful, purposeful actions. However compelled human actions and their unintended results may seem to be, social order and change are not guided by immutable laws. Our view of the human agent as the motive force of history treats culture not as an existing repertoire of values that generations learn and practice, but as a process produced in the flux of social life.”

28. As in my previous work, my analytical posture toward social structure and human agency is grounded in the work of Philip Abrams (1982). His idea of “structuring” invites a process-oriented understanding of the “paradox of human agency” (1982, xiii—xiv).


30. See Whatmore 1999.

31. For example, see Candea 2010; Ryan 2012; Singer 2014; Ogden et. al. 2010.

32. See Chakrabarty 2009.

33. See, for example, Ogden et. al. 2010.

34. See, for example, Gandy 2010.

35. I note here the use of these terms as shorthand, but caution that both are complex and connot precise histories and have disciplinary implications.

36. As Keith Murphy has shown in his recent ethnographic work on design as a social process, “design” is conceptually expansive, and, as such, poses a particular kind of analytical problem. He writes, “design itself isn’t really a single term, but a collection of homonyms, each of which bears some semantic resemblance to the others, but all of which cover rather different terrain. When we talk about design, we tend to assume we’re all really talking about The Same Thing, even if we’re not, and this contributes to a fair amount of cross-talk when we collectively think hard about design and its possibilities. I care about this because I wandered to design from other places, and when I landed there, the situation was confusing to me. Design was about things to some people, and practices to others. Or forms and aesthetics. Or systems engineering. Or capitalism. Or collaboration and creativity. Or “what it means to be human.” And so on.” (Murphy 2016). See also Murphy 2015.

37. Within North American environmental studies, sustainability, particularly in design, was initially widely embraced as a “revolutionary” paradigm shift (Edwards 2005) that promised an entirely new set of technological and cultural norms (McDonough and
Braungart 2002). Architecture, and its green practitioners, were sometimes regarded as part of the potential vanguard of this movement (Gissen 2003; Williamson 2002; Leach 1997; Buchanon 2005).

41. See Cadenasso and Pickett 2013.
42. Since 1980, the United States National Science Foundation has supported long term ecosystem research at several sites in North America (http://www.lternet.edu/). Two of these are expressly urban sites: the Baltimore Ecosystem Study (http://www.lternet.edu/sites/bes) and Central Arizona-Phoenix Long Term Ecosystem Study (http://caplter.asu.edu/). Both urban LTER sites maintain extensive online libraries of data and analyses.
43. Pickett, Cadenasso, and McGrath 2013.
44. See, for example, Pickett et al. 2001; Rebele 1994.
45. See, for example, the Burch-Machlis Human Ecosystem model as presented in Pickett et al. 1997.
46. See, for example, Turner and Robbins 2008.
47. See Alberti et al. 2003; Collins et al. 2000; Machlis, Force, and Burch 1999; Pickett 1997.
48. See Guy and Moore 2005; Campbell 1996.
49. See Ingersoll 1996.
50. See Rademacher 2015. See also Lawhon et al. 2014.
52. See, for example, Jasanoff 2004.
54. See, for example, Harvey 1973; Brenner 2017.
55. For a rich ethnographic treatment of the ways that ideas and experiences of the “urban” and the “rural” intersect in everyday life, see Harms 2011.
56. Early observations of the untenability of a nature/culture, and by extension nature/city, divide, include now classic work that ranges from pieces such as Cronon’s (1995) “The Trouble with Wilderness” to Latour’s (1993) We Have Never Been Modern.
57. See, for example, Ong 1999 and Sassen 1991.
58. See, for example, Kaika 2005; Swyngedouw 1996, 1999; Gandy 2002; Kabirh 1984; Castells 1996.
59. See Baviskar 2003.
60. See, for example, Mitchell 2002; Tsing 2000, 2012.
61. See, for example: Castree and Braun 2001; Braun 2005.
62. Science and Technology Studies (STS) has paid productive attention to the social dynamics of scientific knowledge production (Dumit 2004; Downey and Dumit 1997; Franklin 1997; Hogle 1995; Stengers 1993; Rabinow 1992), rigorously demonstrating how situated actions and contingent decisions characterize scientific work (e.g., Knorr-Cetina 1981; Latour & Woolgar 1986); this book extends this line of inquiry to architectural practice and problem solving. Work in STS has also shown that technical problems are often defined in
relationship to spaces in which, and processes through which, specific forms of knowledge are produced (Callon 1995). This book aims to contribute to work in STS that explores disciplined ways of organizing and making sense of the natural world (Barnes, Bloor, and Henry 1996; Gooding 1992; Lynch 1985) by asking, how do architects acquire, and organize, the “ecological” knowledge that forms the basis of their practices? What “counts” as ecology?


64. See Choy 2011.


66. See Rademacher and Sivaramakrishnan 2013.

67. For instance, an extensive literature illustrates the complex ways that postcolonial modernities and cultures shape the built environment. King 2004, and authors like Hosagrahara (2005), Chattopadhyay (2012), and Rajagopalan and Desai (2012) refine, critique, and enrich debates about the ways that architecture and urbanism intersect with colonial, nationalist, and modernizing projects.

68. It is helpful here to invoke Foucault’s now-classic discussion of architects, architecture, and space in *Space, Knowledge, Power*. Here, we are reminded to think of the built environment as in many ways a product and mechanism of Foucault’s idea of power-knowledge. The agency of individual architects is embedded in a web of knowledge forms, social structures, and cultural norms that constitute power-knowledge relations and histories. Often, the potential for any form of meaningful agency is fully negated by those same relations.

69. Anthropologists have long taken interest in the imagined relationship between the built form and social form, as well as social change, social harmony, and social process. An early review of these efforts may be found in Lawrence and Low (1990). Buchli (1999) adds important insights to these engagements by showing “how seemingly weighty, inscribed, and totalizing world views (Blier 1987) or ‘spatial logics’ (Hillier and Hanson 1984) can be radically subverted.” Buchli’s work notes that anthropologists, most often those working in studies of material culture, have formally and carefully recognized a tendency to “posit a direct, iconic, and at times homologous correspondence between an item of material culture and the society with which it is associated,” and that we must attend to the ways control can be exercised at multiple social scales (Foucault 1977; Shanks and Tilley 1987, 1992). Buchli’s work directly addresses the enduring analytical dilemma of identifying the parameters of human agency, describing the challenge “to overcome the image of (human actors) enslaved to the fixed meanings and deterministic structures of a given society, where individuals were seen to respond in a mechanistic, and ultimately helpless, fashion to irresistible structural prerogatives as in the unilineal and deterministic tradition in Morgan, Marx and Engels, and all the way through to structuralism (Levi Strauss 1966; Chomsky 1968; Glassie 1975; Deetz 1977)” (Buchli 1999, 8). By layering ecosystems and ecosystem processes into the analytical calculus, we face the complicated juxtaposition of systems that are understood as relatively mechanistic (that is, biogeochemical systems) and those in social life that, although structurally conditioned, are never automatically pre-configured. See Buchli 1999. See also Fennell 2015.

70. See examples in Hall 2002 and Anker 2010. For an excellent treatment of a contemporary experiment in urban environmental design see Günel 2016 and forthcoming (2018).
71. Here, I use “hybridity” in the sense first proposed in work by Swyngedouw (1996, 2006).
72. See work by Jasanoff and Martello 2004; Mitchell 2002; Bryant 1998; Blaikie 1999; Bocking 2004; Buuren & Edelenbos 2004; Collingridge and Reeve 1986; Davis and Wagner 2003; Dimitrov 2003.
73. See Taylor and Buttel 1992.
74. In *Reigning the River* (2011, 15), I suggested that the making of nature and the simultaneous making of meaningful life in the city involves a complex social identity construction process that may beget “new affinities . . . environmental affinities that might ‘foster’ cohesion where other ways of marking sameness and difference (cannot).” These affinities may reveal the many dimensions of existing identity struggles, contests over governance, and collective reworkings of the moral ecologies of city living. In this sense, the ‘places’ of nature in the city are always in a state of refashioning (see also Rademacher and Sivaramakrishnan 2017).
75. See Braun 2005.
76. See Appadurai 2013.
77. Jyoti Hosagrahar (2005, 55) explores anxieties about identity in Indian architecture, observing, “the revised canon about Indian architectural history continues to be steeped in a ‘message of ancient and medieval greatness’ and highlights reasons like the role of institutional bureaucracy.” Her analytically important references to the control of architectural education by such bodies as the All India Council for Technical Education, the AICTE, remain relevant to an always-changing institutional landscape. In 2009, for example, AICTE was reformed with important implications.
78. Paniker (2008, 58–62) makes a useful distinction between a “discourse level” (architectural historiography) and an “institutional level” (architectural education) in the production of architectural knowledge in India.
80. Leadership in Energy and Environmental Design (LEED).
81. Green Rating for Integrated Habitat Assessment (GRIHA).

2. THE INTEGRATED SUBJECT

3. At the time of the work, the total fees per student per year were Rs. 87,000 (which included a refundable library deposit of Rs. 4000). RSIEA provides concessions for students whose financial circumstances prevent them from paying in full immediately. A few scholarships were available for students in their second year, but these did not constitute the bulk of tuition.
5. A portion of the RSIEA website reads, “The Research and Design Cell of the Institute provides independent consultancy wherein a team of students guided by faculty members undertakes projects. Some past projects include Ecotourism projects in Sawantwadi, Restoration of Charolette lake at Matheran, Dahiser River Restoration Project, Environment Improvement Projects in slums such as Behrampada and Mahatma Phule Nagar, Mumbai, &
Rainwater harvesting for several housing societies and corporate houses including HPCL, Mumbai office.” See http://rachanasansad.edu.in/.

6. Dr. Ashok Joshi, interview transcript, March 2012.
7. Ibid.
8. Ibid.
9. See http://rachanasansad.edu.in/.
10. Dr. Ashok Joshi, interview transcript, March 2012.

11. This follows work by Goldman (2001) and Li (2008) on eco-rational subjects, as well as Agrawal’s (2005) application of these ideas directly to an environmental domain, demonstrating the utility of the concept of “environmentality” as a social process that is constitutive of environmental subjectivity. A range of work has followed in this vein, as environmental anthropologists have noted the ways that certain configurations of institutions, knowledge, and politics relate in turn to subjectivities that reinforce certain conceptual categories and notions of proper care for the natural environment. An excellent recent account may be found in Mathews (2011).

13. Ibid.
14. Ibid.
15. The literature on commensurability in political ecology studies is vast, but an instructive starting point may be found in the work of J. Martinez-Alier, particularly 2004.

17. Roshni Udyavar-Yehuda, Rajeev Taischete, and Mukund Porecha were also partners in Enviro-Arch, an environmental architecture firm.

18. Field notes, April 17, 2012.

3. ECOLOGY IN PRACTICE

2. International Society for Krishna Consciousness (ISKON).
4. Dr. Ashok Joshi, interview transcript, March 2012.
6. Through his Gaia Hypothesis, James Lovelock (1979) advanced the idea that the Earth’s biosphere is usefully conceptualized as an organism, the constituent parts of which constitute mechanisms for self-regulation. RSIEA course material introduced this idea without endorsing it as fact or fiction. It was invoked to mark an influential way of applying systems ecological thinking to the scale of the Earth’s biogeochemical complex.
8. Mathews (2011, 23) notes that a rich literature in science and technology studies outlines these points more substantively. He notes in particular how Gieryn (1995) argued that the boundary between political and technical domains is constantly reworked and contested, while Hilgartner (2000) argued that scientific advice is always in some way shaped
by the assessments of its audience. Any application of scientific knowledge in practice may be seen, in this way, as automatically public—a performance of expertise.

9. An instructive starting point for thinking about such forms of interdisciplinary borrowing may be found in Dove 2001.


11. Ibid.

12. Ibid.

13. Carrying capacity in this sense is generally defined as the total population of living organisms that a defined habitat area can support.


15. Quotations in this section are derived from field notes, March 17, 2010.


18. For an instructive critical account of indicators and metric formulas in arenas of governance, see Merry, Davis, and Kingsbury 2015.


21. Over the past decade, standard Euro-American metrics for assessing the sustainability of built forms, such as LEED and BREEAM, have been engaged, contested, sometimes reinforced, and sometimes reworked, in India. The U.S. Green Building Council, which developed LEED standards, played a foundational role in establishing the World Green Building Council, a consortium that includes national councils worldwide. Among these is the Indian Green Building Council (IGBC). Concerns among Indian architects and builders that these standards were not always the most appropriate measures for built form sustainability, as well as reservations about the relationship between the IGBC and the Indian construction industry, led to the development of alternative national and regional guidelines for green design; examples include ECOHOUSING and GRIHA. Localized alternative metrics such as these, and the ways they are used to challenge the IGBC, exemplify the many ongoing contests between “local” and “extralocal” ideas and practices of green architecture.


23. Quotation recorded in field notes, December 8, 2008, Grundfos Manufacturing Chennai, Regional CEO.

24. Ibid.

25. Field Notes, Design Studio course, March 18, 2010.

4. RECTIFYING FAILURE

1. Readers with a particular interest in the complex politics and multi-scaled audiences that spectacles such as the ones described in this chapter attempt to reach may find these topics more fully addressed in the chapter, “Emergency Ecology and the Order of Renewal,” in Rademacher 2011.

2. See Anand and Rademacher 2011 for a fuller discussion.
3. Many figures exist. This figure was published by a Special Commission appointed by the Indian Housing and Urban Poverty Alleviation Ministry, and reported in the Times of India. See “City of Dreams?” Singh, Mahendra Kumar, *Times of India*, November 15, 2010.


6. Government of India Census, 2011. Readers should note that the overall reliability of such statistics has been called into question. For example, see Agrawal and Kumar (2014).


8. In a twenty-four hour period, 994 mm, or 39.1 inches of rain fell on Greater Mumbai.

9. See, for example, Baviskar 2011.

10. See, for example, D’Souza 2002, 2006; D’Souza, Mukhopadhyay, and Kothari 1998.

11. See Daud 2011, 207.

12. See also Villiers-Stuart 1913.

13. On Victorian gardens, see Morgan and Richards 1990.

14. The firm’s website may be reviewed here http://www.pkdas.com/.


17. Ibid, 3.


20. Seafront promenade projects at Bandra Bandstand and Carter Road, as well as the Gateway of India, were highlighted with a dramatic before-and-after photo; Juhu Beach illustrated what was possible, while Dadar-Prabha-Devi Beach exemplified a dire beach conservation and nourishment problem.


22. See, for example, Baviskar 2003b, 2009; Rademacher 2009; Ghertner 2013; Doshi 2013; Sharan 2014.

23. According to the group’s website, “CitiSpace (Citizens’ Forum for Protection of Public Spaces), established in June 1998, is an NGO which networks over 600 Resident Associations, Community Based Organisations (CBOs), NGOs, Trade/ Commercial Establishments and individuals in most of Mumbai’s 24 Wards. Our creed is the protection of all Public Open Spaces (such as Footpaths, Playgrounds, Recreation grounds, No Development Zones, Beaches and Mangroves, etc.) and advocacy of the rightful use of those spaces.” (http://nagaralliance.org/citispace/).

24. This NGO had over fifteen years of advocacy experience among slum dwellers and open space advocates, highlighting the political work of open space provision in contrast to the Open Mumbai emphasis on an aspirational imaginary.

25. The survey was led by Neera Punj and Nayana Kathpalia of CitiSpace, and assisted by architects and architecture students. The website reads, “In 2008 CitiSpace undertook a survey of Reserved Public Open Spaces which was completed in 2013 with about 1800 spaces surveyed. The first phase of the Survey was published in the book entitled *Breathing Space: A Fact File of 600 Reserved Public Open Spaces of Greater Mumbai in June 2010*.”


27. See Rao 2013, 158.

28. Ecology is usually traced to its etymological origins in the Greek *oikos*, or home, and *-ology*, or “the study of.”
29. The article continued: “A desperate fire department threw in everything they had in battling the blaze, pressing 26 fire engines into service and managed to evacuate nearly 3,000 employees but could not prevent the blaze from completely destroying the top three floors of the state government’s main administrative building.”

30. The Adarsh Housing Society scandal was publicly exposed in November 2011, when a report by the Comptroller and Auditor General of India detailed how various elites from political, bureaucratic, and military domains conspired to alter urban development and construction regulations in the course of building the Adarsh Housing Society in Colaba. In the process, they ensured for themselves luxury flats at rates well below-market value. In the scandal’s wake, then-Chief Minister of Maharashtra, Ashok Chavan, resigned his post.

31. See Rao 2013, 155.
32. Ibid, 27.
33. Ibid, 54.

34. See Rao 2013,145 and the section entitled, “Architects and the Profession” for a more detailed account of factors such as the rise and consolidation of an Indian middle class, the arrival of reinforced concrete cement technology, and important design modifications like the introduction of the toilet inside the flat.

35. “Even though the Trust required that all builders get their plans approved by an architect, the architect’s role was usually quite superficial at the time.” (Rao 2013, 145).


37. This figure is according to the 2001 Government of India Census.

38. See Rao 2013, 204–5 for a list of specific responsibilities.

40. Ibid.
41. Ibid.
42. Ibid.


44. Laxmi Deshmukh, interview transcript, All India Institute of Local Self Government, March 26, 2012.

46. Ibid.
47. Laxmi Deshmukh, interview transcript, All India Institute of Local Self Government, March 26, 2012.


49. Text to come

5. MORE THAN HUMAN NATURE AND THE OPEN SPACE PREDICAMENT

2. Ibid.
3. See, for example, Baviskar 2003b, 2009; Rademacher 2009; Ghertner 2013; Doshi 2013.
4. See, for instance, Rademacher and Sivaramakrishnan 2013.
6. See, for example, Baviskar 2003b, 2009; Rademacher 2009; Ghertner 2013; Doshi 2013.
7. The Parsis are a Zoroastrian minority group concentrated in Gujarat and Sindh. In Mumbai, the group has roughly sixty thousand members, and a general decline in the overall population characterizes the past several decades.
8. See Bombay Natural Historical Society 2012, 4.
10. It should be acknowledged that embedded in this moment of imagining a future Mumbai, the city’s Parsi community is famous for its own anxiety about its future. Although a thorough treatment of this issue is beyond the scope of this chapter, the fact that many regard Parsi religious and cultural identity as itself “endangered” gave a particular valence to the future of the Towers of Silence and the Doongerwadi forest. See Axelrod 1990.
11. Personal communication, March 2012.
13. A classic starting point for understanding this concept is Costanza 1997. See also Boyd and Banzhaf 2007; DeGroot et al. 2010; and Farber, et al. 2006. More recent critical treatment of ecosystem services as a concept and bundle of practices abounds; an excellent entry point to this literature is Ernston 2013.
14. A classic starting point for understanding the concept of disturbance in ecosystem ecology is Pickett and White 1985.
15. Here, Harvey’s (1999) “Considerations on the Environment of Justice” is instructive. In pointing to the inherent contradictions of the idea of a universal environmental ethic, he argues that it is simultaneously impossible, desirable, and inevitable. The inevitability is conditional, however, and fully reliant on our human social capacity for what he calls a more honest mode of translation—one in which the terms and lifeways that frame another person’s experience of the environment is a starting point for communication and analysis. The advocate of environmental justice, he argues, must be constantly self-reflexive and humble.
16. Following the concept of ecologies of urbanism developed in partnership with K. Sivaramakrishnan (2013, 2017), I mean to signal here that there may be many ways of valuing, and naming, the multiplicity of forms of life on Earth. These may go unrecognized for their overlap with the content of the natural scientific and policy term, “biodiversity.” The more expansive content of the concept may be captured in other ways of knowing nature, and its value may be differently designated in those multiple knowledge forms.
3. In *Reigning the River* (2011, 15), I suggested that the making of nature and the simultaneous making of meaningful life in the city involves a complex social identity construction process that may beget “new affinities . . . environmental affinities that might ‘foster’ cohesion where other ways of marking sameness and difference (cannot).” These affinities may reveal the many dimensions of existing identity struggles, contests over governance, and collective reworkings of the moral ecologies of city living. In this sense, the “places” of nature in the city are always in a state of refashioning (see also Rademacher and Sivaramakrishnan 2017).


5. Paniker (2008, 82) also notes that in 1984, the Indian National Trust for Architectural and Cultural Heritage was established, identifying its main objective as the restoration and conservation of “neglected” art and cultural heritage in India; Paniker interprets this as “the making of public meaning and belief about the Indianess of things.”


7. Anonymized student reflection on returning from Auroville, transcript.


9. Invoking cow protection, though treated as largely politically benign in the context of this field study visit, is laden with political symbolism, much of it associated with various strains of Hindu Nationalism. See for example Ghassem-Fachandi 2012; Hansen 1999; Pandey 1983; Freitag 1980.

10. Anonymized student reflection on returning from Auroville, transcript.

11. Anonymized student reflection on returning from Auroville, transcript


15. Ibid, 148.


17. Sears 2001, 133.

18. Ibid, 134.

19. Ibid.


21. Ibid.


23. Auroville’s own public relations material, as reported on its website, lists a Governing Board, a Residents Assembly (comprised of the current full members of the Auroville community), a Working Committee, an International Advisory Council, and a Secretary of the Auroville Foundation. The International Advisory Council was established by the Government of India; it appoints the Council members. In the past, the Council has included such notable figures as Amartya Sen. See http://www.auroville.org/.


25. Anonymized student reflection on returning from Auroville, transcript.

26. Anonymized student reflection on returning from Auroville, transcript.
27. Anonymized student reflection on returning from Auroville, transcript.
28. Anonymized student reflection on returning from Auroville, transcript.
29. Sears 2001, 137.
31. A detailed description of the system, excerpted from the Govardhan eco-village website: “SBT system consists of an impervious containment and incorporates soil, formulated granular filter media, select culture of macro organisms such as earthworms and plants. It involves a combination of physical and biological processes for processing of wastewater and it derives its fundamental principle from the functioning of a terrestrial ecosystem. The process by design integrates with the natural bio-geochemical cycles of nature and hence proves to be most effective. The combined grey and black water from all the residential facilities are collected and transported via a water based underground sewerage network to a central collection point. In the first stage the physical separation of waste is accomplished in a primary treatment unit consisting of a perforated screen and gravity-settling tank and an equalization tank. The perforated screen helps in separating the undissolved solid wastes from the waste water and allows it to pass through a settling chamber that has a sloped bottom opposite to the direction of the water flow, thus facilitating the settling of solid particulates with higher specific gravity than the waste stream. Then the water enters the open top equalization tank that allows the dissolved pollutants to be exposed to natural sterilization by sunlight and ambient air. In this second stage the wastewater is sprayed, by means of a pump, onto a plant bed which is part of an engineered ecosystem that constitutes two bio-reactors, one for a coarse purification and the other for further refining through recycling. This ecosystem consisting of soil, bacterial culture and earthworms, mineral additives and select plants, treats the water in a combination of physio-chemical and biological processes. Purification takes place by adsorption, filtration and biological reaction. The entire waste is processed and converted into bio-fertilizer which is rich in organic content, and is being used in the plant nursery at GEV. The other useful by-product is the Biomass in the form of flower, fodder, fruit and fiber which are also completely utilized in house. Since the entire waste is converted, there are no issues like handling the wastes after treating the water, as is common in conventional chemical based sewage treatment plants. The entire process operates in aerobic mode thus eliminating the possibility of foul odor near the plant, creating a safe and serene ambiance for the people dwelling near the plant. The processed water can be reused in gardening, agriculture and also supports marine life. The SBT plant at GEV can handle up to 30,000 litres of sewage per day and operates in an 8 hour cycle daily. It can potentially produce up to 20,00,000 Tons of bio-fertilizer per year and most importantly offers an eco-friendly option to the growing menace of waste handling.” (See: http://www.ecovillage.org.in/perspectives/a-flush-story-iii-soil-biotechnology-plant-at-govardhan-eco-village/).
32. Examples include Desai and Rajagopalan 2012; Rajagopalan 2012; Rajagopalan 2011.
33. Sears 2001, 136. The question of whether the use of vernacular forms can be inclusive rather than exclusive is also posed by Hasan 2001.
34. Sears 2001, 137, quoting Meister (9–15) in the same volume.
7. A VOCATION IN WAITING

2. Field notes from group interview at RSIEA, June 24, 2012.
3. Ibid.
5. Siddharth currently works in an architecture firm that does not undertake specifically environmental architectural projects. It employs 70–80 architects, and serves clients all over India. At the time of this interview Siddharth was doing a residential development project in Kochi, on reclaimed land. Siddharth told me that the client wants a gold certification for this development.
7. Aditya, interview transcript, April 2012.
8. Ibid.
10. Ibid.
11. Ibid.
12. After graduation, Amrit worked for two years with what he called “typical commercial architects,” but then left the firm to seek environmental opportunities; at the time of our interview, he was in private practice, busy primarily with designing bungalows in Ali Baug.
14. Ibid.
17. Darius, interview transcript, February 2012.
18. Aditya, interview transcript, April 2012.
19. Darius, interview transcript, February 2012.
20. Aditya, interview transcript, April 2012.
22. Field notes from group interview at RSIEA, June 24, 2012.
25. Field notes from group interview at RSIEA, June 24, 2012.

8. SOLDIERING SUSTAINABILITY

1. I am grateful to K. Sivaramakrishnan for encouraging me to consider this point.
2. The work of Guha and Martinez-Alier (1997) provides a useful overview here, but there are vast literatures on all of these points. Again, I gratefully acknowledge K. Sivaramakrishnan for highlighting this point.
3. See, for instance, Srinivas 2015.
4. For example, see Pickett, Cadenasso, and McGrath 2013.
5. To further note that many good design examples were derived from non-city settings highlights the recurrence of a rather stark experiential binary in which nature in its most intact forms is sought in places separate from the city rather than embedded within them. Environmental architects in training went to nature—a “nature” removed from the city, and in many ways the city’s opposite—in order to learn environmental architecture. They actively sought guidance for the city of the future by leaving it altogether, in search of purer forms of nature.
6. Appadurai 2015, 481.
7. See Appadurai 2000. As Appadurai (2015, 482–3) further notes, this speculative territory is the “zone where the visible and the invisible come together,” the joining of the visible city to the processes that will activate its now invisible future form.
10. See, for example, Connolly 2013; Barua 2014; Whatmore 2003.