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Installing Automobility

Emerging Politics of Mobility and Streets in Indian Cities

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Notes

Preface

1. I follow Latour (2014, 2017) in the use of the term *Earthbound* to decenter the implicit anthropocentrism and reanimate the agency of the planet and the diversity of its residents—human, nonhuman, and inhuman.
2. With the term *terrane* I am indicating a post-anthropocenic condition whereby the earthbound abide by narratives of attachment, dependency, and responsibility (see Dibley 2012).

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Chapter 1

1. The film is freely available for viewing on Youtube: <https://youtu.be/hYxwSWfL3bI>.
2. *Bangalore* was the former, but still popular, name of the city of Bengaluru. In this book, I uniformly use *Bengaluru* to refer to the contemporary metropolis. The use of *Bengaluru* or *Bangalore* is a politically charged one with a long history. *Bengaluru* is the English transliteration of the name in the native Kannada language, while *Bangalore* is the name that the English colonials used when referring to this region. *Bengaluru* has precolonial origins, while *Bangalore* is of colonial vintage. This difference was reinforced in colonial times with spatial separation and demarcation. *Bengaluru* referred to the native precolonial town, while *Bangalore* indicated the colonial settlement (a few miles away from the native town) for the civil and military elite. In recent times, the use of *Bengaluru* or *Bangalore* has acquired a different political cadence. *Bengaluru* has come to be associated with a native, rooted, son-of-the-soil

identification with the city, while *Bangalore* has become a brand that the globally mobile, English-speaking, middle classes associate with.

3. Being a large metropolitan city, fresh produce, including fruits, flowers, vegetables, fish, and meat from the surrounding hinterland, arrives in bulk very early in the morning each day at K. R. Market. It is then bought by shops and other commercial establishment, as well as households, for sale and consumption throughout the city.

4. In the Anglo-American context, Lewis Mumford in *The City in History* (1961) demonstrates how the sprawling industrial metropolis of the modern age is emblematic of the reliance on advanced technical means to further what he calls “a socially retarded civilization” that accomplishes little other than “become the means to increase congestion” (544). He identifies mechanical forces such as the motorcar and the road as key drivers behind the universalization of a placeless nonentity—the conurbation. Although predominantly located in the early twentieth-century urban contexts of Anglo-America, Mumford’s dystopian imaginary of the industrial metropolis, despite its incapacity to trace contemporary forms of domination and inequality, is still relevant as cities around the world are contending with a host of crises involving burgeoning informal settlements, spiraling growth in motorization, and resource-consumptive lifestyles, as well as episodes of urban violence and fortification (Davis 2006; Graham 2011). In recent times, scholars have spoken about the damage to the socioecological fabric of cities from a patchwork of disjointed spaces interlinked by infrastructures of fear, suspicion, and exclusion, producing what Gyan Prakash (2010) refers to as “noir urbanism.” Thus, while gated communities, enclaves, edge cities, and the suburban fringe, with their infrastructures of expressways and flyovers, have become desirable spaces, other spaces are characterized as slum cities, dead zones, or network holes that drop out of mainstream reckoning (MacLeod and Ward 2002; Pow 2015). The spatial disintegration marking capitalist accumulation points toward what Featherstone, following the philosopher Zygmunt Bauman, refers to as the “utopic-dystopic event horizon” (Featherstone 2010, 57)—a fearful urban world conditioned by violent collisions, disruptions, and collapse. This spatial disintegration is keenly evident in K. R. Market—the congested market on the ground and the placeless flyover suspended above. But K. R. Market also exemplifies the close juxtaposition of the contradictory utopia-dystopia event horizon in Bengaluru. On one side is the congested marketplace with multiple intersecting mobility modalities, while suspended above on the flyover is the space for fast, linear, motorized transits across spaces of congestion and slowness.

5. “Seven and a Half Million Cars Trigger Parking Wars in Delhi,” *New York Times*, July 1, 2013; “Delhi’s Traffic Chaos Has a Character of Its Own,” *Guardian*, October 10, 2011.

6. “Why Mumbai Should Get Over Its Obsession with Cars,” *Guardian*, November 27, 2014.

7. "Controlling Mumbai's Traffic," BBC News: <https://www.bbc.com/news/business-21804350>.
8. Although Chellan Rajan (1996), Kay (1997), and Newman and Kenworthy (1999) were early pioneers.
9. At the same time, Ladd (2011) suggests that despite the heavy presence of the automobile, Western cities nevertheless retain the potential for a more sustainable and less autocratic urban form.
10. Although see Zavestoski and Agyeman (2015) for a critique of the prevalent policy and planning practice of complete streets.
11. This is not to discount the value of recent research that attempts to historicize the rise of automobiles and the automotive industry in the early postcolonial period. See Tetzlaff (2016), for instance.
12. Although in terms of urban agglomeration, Bengaluru is considered the fifth largest in India after New Delhi, Mumbai, Kolkata, and Chennai.
13. "Bengaluru Is India's No 2 Petrol-Guzzler," *Deccan Herald*, April 17, 2017.
14. Thus, one sees articles such as "Is Bangalore a Garden City or a Concrete Jungle?" *DNA*, October 2, 2009; "Bangalore Has 1 Car for Every 2 People," *DNA*, July 20, 2011; "Bangalore Reduced to One Big Traffic Jam," *Hindu*, November 1, 2012; "Bangalore, a City of Two-Wheelers," *Hindu*, September 26, 2013; "Over 50 L Vehicles and Nowhere to Go," *Bangalore Mirror*, November 3, 2014; "Just Too Many Vehicles in Bengaluru," *Hindu*, October 30, 2015; "Over 60 Lakh Vehicles on Bengaluru Roads and Counting," *Hindu*, May 9, 2016.
15. "Google Maps Introduces Live Traffic Updates," *Hindu Business Line*, September 5, 2012.
16. Brahmins have traditionally occupied the pinnacle of the hierarchical caste structure in Indian society. Although primarily categorized as priests and religious preceptors, Brahmins were successful over time in cornering roles that required learning, education, and mastery over fields of codified knowledge, thus positioning the community as intellectual and professional elites in the country.

Chapter 2

1. According to IBM, "In 2011, the number of vehicles on the world's transport networks surpassed 1.1 billion. That number is expected to grow to 2.5 billion by 2050. ... Most of this growth is now in emerging nations. ... As the current transportation network will not be sufficient to handle the increase, many cities face increasing problems with transportation—congested freeways, city gridlock, pollution and parking problems, along with over-capacity and difficult-to-use public transport" (Huitema 2014, 2).

2. In the press release for the survey, Vinodh Swaminathan, IBM's director of intelligent transportation systems, noted that "we can't simply build our way out of congestion no matter which city," and emphasized what was required: "In order to improve traffic flow and congestion, cities need to move beyond knowing and reacting; they have to find ways to anticipate and avoid situations that cause congestion that could turn the world into one giant parking lot" (IBM 2011).
3. "Sanchara novu naraka: Bengalurige prashasti," *OneIndia Kannada*, September 10, 2011, Available: <http://kannada.oneindia.com/news/2011/09/10/bangalore-6th-most-painful-city-for-commuters-globally-aid0038.html>; "Bangalore 6th and Delhi 7th Most Painful City for Commuters in the World," *Economic Times*, September 10, 2011; "Bangalore '6th Most Painful' in the World for Traffic Congestion," *National*, June 28, 2012.
4. "Bangalore Is the 6th Worst City in the World for Commuting," *Times of India*, October 4, 2011.
5. "Causes of Traffic Congestion—Poor Roads No. 1 Cause of Traffic Congestion: TOI Survey," *Times of India*, March 19, 2008.
6. "Bangalore to Get 100 More CCTV Cameras," *Hindu*, November 29, 2012.
7. "Comprehensive Plan for Traffic Control Ready," *Hindu*, January 12, 2006.
8. "Network of Five Elevated Corridors Proposed to Fix Traffic Woes," *Hindu*, February 23, 2015; "Why Do We Find Ourselves in Such a Jam Today?" *Hindu*, February 28, 2012; "Setting the Wheels in Motion," *Hindu*, June 27, 2011; "Autorickshaw Lane: Boon or Bane?" *Hindu*, July 13 2007.
9. "Mr CM, Here's Why Bangalore Traffic Is a Nightmare," *New Indian Express*, December 17, 2015; "Multiple Agencies Make Bangalore Traffic Lose Its Way," *Hindu*, December 10, 2008.
10. "Jayanagar Cycle Track Inaugurated," *DNA*, September 23, 2012.
11. "The Vanishing Bicycle Tracks," *Hindu*, March 16, 2014; "Cycles-for-Hire Plan May Not Be a Smooth Ride," *New Indian Express*, March 20, 2017.
12. More often than not a result of the sociohydrological shifts resulting from the inability of urban land policies to curb speculative encroachment into the vestiges into Bengaluru's dense network of precolonial tank and canal irrigation systems (Ranganathan 2015; Nagendra 2010).
13. "Traffic Thrown out of Gear as KRRS, DSS, SUCI Take Out Rally," *Hindu*, June 24, 2014; "DSS Rally Causes Traffic Chaos," *Hindu*, July 23, 2009.
14. "Garment Workers' Stir Continues in Bengaluru, Traffic Hit for Second Day," *Hindu*, April 16, 2016.
15. Traffic on the streets of ancient Rome, crammed as it was with mule trains, wagons, porters, and elites on their sedan chairs, has received some attention in

scholarship. In these accounts, historians note how congestion was the outcome of a particular social, political, and spatial order. Thus, congestion was accompanied by numerous responses, such as regulations that restricted certain kinds of traffic to specific times of the day (van Tilburg 2007; Laurence 2013).

16. This argument was premised on the understanding that since congestion was the result of unpredictable and unmanageable horses, the shift to new mechanical, and therefore predictable, automobiles would ease congestion (McShane 1994).

17. Norton (2008) presents a compelling account of how streets in major metropolises in the United States in the first decades of the twentieth century were remade in the interests of improving safety and reducing automotive and pedestrian congestion.

18. A similar case of the unproblematic emergence of a scientific field is associated with congestion pricing or the cost of the effect of congestion on the roads for road users (Lay 2011).

19. Urban critics such as Jane Jacobs notably flagged the consequences that this preoccupation with motoring would have on the life of American cities. She notes, "The simple needs of automobiles are more easily understood and satisfied than the complex needs of cities, and a growing number of planners and designers have come to believe that if they can only solve the problem of traffic, they will thereby have solved the major problem of cities. Cities have much more intricate concerns, economic and social concerns than automobile traffic" (Jacobs 1961, 7).

20. This ambivalent relation to the centrality of the automobile in transport planning is also borne out in the report's historical legacy that juxtaposes its overt concern with conserving urban environmental areas with its acquiescence for urban highways and such projects of reconstruction that facilitate automotive travel (Gunn 2011).

21. The installation of the automobile as a powerful agent that shapes the trajectory of urban change is only now being examined carefully. Scholars have discerned that automobiles are enmeshed within a "system of automobility" that binds together a range of disparate spheres, such as land use, transportation engineering, public policy, consumer choice, and lifestyle (Urry 2004; Dennis and Urry 2009; C. W. Wells 2012). Others identify in (American) automobility a shared cultural covenant that is mobilized through a range of subjective and affective experiences arising from driving (Seiler 2008).

22. Most historians of the city agree that while Bengaluru's existence as a village or dispersed settlement can be traced back as early as the ninth century (a temple inscription from that time specifically mentions Bengaluru), thickening of this settlement into an urban node can be dated back to Kempegowda's efforts (Government of Karnataka 1990).

23. The idea that history matters arises from the appreciation that historical context is necessary for gaining systematic knowledge about sociopolitical processes (Tilly and Goodin 2006).

24. By focusing on the relevance of history for the present rather than doing history for history's sake, a reader could ascribe two shortcomings to this work. First, the charge that one encounters an instrumentalized applied historiography in these pages is justified. But at the same time, I would add that I resort to an applied orientation not to reduce history to an instrument but instead to realize it as a pedagogy that can better inform contemporary issues. I am guided by Robert Kelley's foundational work in public history where he exhorts fellow historians to delve into the "practical value of history" (Kelley 1978, 17). A second charge that could be leveled against the periodization presented here is the analytical neatness of this historicization, which is largely indifferent to the contingencies and messiness that accompany human actions when examined up close. Despite being guided by Collingwood's (1994) notion of the "historical imagination," the narrative presented in this chapter is arguably too immaculate and appears to be overly determined. A reason for this could be the broad stroke of periodization attempted here. With periods of multiple decades in length that often span entire human lifetimes, I am inspired by Guldi and Armitage's (2014) recent call for an "alternate history" manifesto where they argue for taking seriously the call for a public future of the past that "*longue-durée* history allows us to ... ask about the rise of long-term complexes over many decades. ... Only by scaling of inquiries over such durations, can we explain and understand the genesis of contemporary global discontents" (Armitage and Guldi 2015, 222). The reengagement of history with the *longue durée*, they posit, is an ethical imperative in the face of the existential crisis prompted by the dawn of the Anthropocene.

25. In the process, I confine in one sweep all the richness and effects of about four hundred years of Bengaluru's history to little more than a minor note in the history of congestion.

26. *Congestion* is a complicated word with differing connotations depending on whether it is used in everyday parlance or in specialized fields of learning. In everyday parlance, congestion is associated with the phenomenon of overcrowding any given space by humans or by their vehicles. In medicine, it is commonly understood as a blockage (sometimes caused by excess mucus) that prevents normal function (say, of the nose in the example of nasal congestion). In engineering, *congestion* refers to the suboptimal functioning of a network, road, or pipe on account of excess material or data flow. In economics, congestion in public goods arises from the excess demand for a commodity, reducing its utility for all users. For early urban historians such as Lewis Mumford, as I have mentioned in the book's Introduction, congestion was not only symptomatic of overcrowding by humans and vehicles; it also unambiguously evoked a dystopic existence.

27. One of the earliest records of major irrigation works using tanks in South India reaches back to the seventh century. This period coincides with the "wider utilization and management of hydraulic technology" (Gurukkal 1986, 155).

28. Marshaled as a conquest state, the monarch of the Vijayanagara empire exercised ritual suzerainty over a vast region in southern India through a hierarchy of regional kingdoms (*nayakas*) and local chieftains (*palegars*). By accepting the overlordship of the Vijayanagara monarch, the local chieftains were able to retain a nominal degree of control in their region (Stein 1987, 72).

29. Even now one encounters the residues of precolonial spatial organization in the names of localities in the *peté* region of the city. Thus, one finds names such as *Arlepet* or the cotton market, *Akkipet*, or the rice market, and *Ganigarpet* or the oilers' market, even though land use in these locations does not necessarily correspond to their names.

30. Pani and others mention that such isolation was reinforced by a deliberate policy to economically isolate the *peté* from the cantonment and restrict traders and merchants of the *peté* from trading in the cantonment (Pani, Anand, and Vyasulu 1985).

31. *Bungalow*, as a term and as a building style that refers to a single-storey independent house, has its origins in the British colonial experience in India. Britishers, according to King (1984), appropriated native Bengali styles of house construction for housing their administrative and military elite in the newly developed cantonments. As King describes eloquently, the particular form that the bungalow took as a single-storey house with surrounding verandahs was closely related to the social and political context of European contact with the native Indians.

32. The East India Company managed British interests in India until the Indians rebelled against the yoke of company rule in 1857. Following this, the British crown assumed direct control over its Indian possessions.

33. Hettne mentions that the transition to direct colonial rule by the British after 1831 was motivated by their desire to forge a Western-oriented administrative society in Mysore: "Behind this political action was another change in British imperial policy. In the 1820s a liberal colonial school was gaining ground... and the new policy implied the westernization of Indian society" (Hettne 1978, 33). Similarly, M. Rao (1936, 43) notes that by 1881, "the whole population [of Mysore] has become accustomed to be governed under principles that were universally admitted to be essential. ...Justice was dispensed by regular courts, the assessment and collection of revenue were made under permanent rules, and generally the administration was carried on upon the same method... which prevailed throughout the British territory."

34. Hasan has pointed out that one of the first acts of C. M. Lushington, junior commissioner of the newly established British Commission in Bengaluru, was to relocate the office establishment to Tipu Sultan's palace in the fort because it was the only building available in the city providing sufficient accommodation (Hasan 1970, 139).

35. Hasan observes perspicaciously that "with this move [of administrative office buildings from the fort] began a long history of searching for more and more

accommodation for the ever-increasing Public Offices of the Mysore Government” (Hasan 1970, 139).

36. The *peté* became known as the Bangalore City municipality or just the city, while the cantonment became known as the Bangalore civil and military station municipality after 1881 (Government of Karnataka 1990, 646). The early constitution of these municipal entities was governed by Act 26 of 1850 and then subsequently by the Municipal Regulations Act of 1871, which brought their functioning directly under the colonial government’s supervision. Each of these entities was governed by their respective municipal committees. Although Indians dominated the city committee, Europeans dominated the civil and military station committee (Srinivas 2010, 5).

37. The transfer was governed by a one-sided instrument of transfer (which placed a series of conditions for Mysore to retain percent of the kingdom’s revenue) the kingdom of Mysore had to pay the colonial government of India (Hettne 1978, 56). The sense of insecurity created by these inequitable relations, although intense in the early years, gradually eased after the 1920s as a host of political circumstances, not least the rise of pan-Indian national movement, altered the balance of relations between the colonial government and Mysore. From the 1920s, therefore, one finds a new stridency in the tenor of Mysore’s communication with the colonial government as it sought on multiple occasions to renegotiate the conditions of transfer in its favor (Hettne 1978, 64). Moreover, by then, Mysore’s position as a “model state” that was addressing the task of “improving” its native population had received widespread recognition from the colonial government (C. Gowda 2007). This had not only further consolidated the position of Mysore’s elites and their autonomy of agency but also the development machine in the province had acquired a critical momentum.

38. H. Shama Rao, an early historian of modern Mysore, states that “the first condition was that the body of laws and rules made for the transaction of public affairs approved by the Government of India up to the time of transfer were to remain in force. ... Any material deviation from the administrative system thus settled required the concurrence of the Government of India” (M. S. Rao 1936, 45).

39. In 1891, Bengaluru’s population was 180,366: 100,081 lived in the civil and military station and 80,285 in the city (Rice 1897, 41).

40. In 1905, Bengaluru became the first city in India to receive electric power for municipal purposes (Heitzman 2004, 33).

41. Despite its proactive policy initiatives and the presence of some private investment, the degree of success achieved by the government in catalyzing industrial take-off was rather sporadic (Baldwin 1959, 47).

42. College education in the arts and sciences experienced a parallel evolution and began in Bengaluru with Central College in 1875. With the founding of the University of Mysore in 1917, affiliated colleges were established in quick succession:

Intermediate College in 1927 and Maharani's College for Women in 1938 run by the government and Vijaya College in 1942 National College in 1945, SJR College in 1945, and Mount Carmel College in 1948 run by private educational trusts (Government of Karnataka 1990, 710).

43. So much so, that by the 1950s many referred to this region as the administrative center of the city (Venkatarayappa 1957, 84).

44. Although initiated as a chamber with a restricted membership open to landholders and merchants, where the *dewan* highlighted current achievements and future objectives of governance (C. H. Rao 1930, 2980), with the lowering of the property criterion for membership over time, the inclusion of women, and the introduction of communal representation through the Representative Assembly regulation of 1923, the assembly became more representative. These changes were accompanied by the gradual expansion in its role with regard to intervening in all taxation, budget, and legislative measures (Rao 1930, 3056). The legislative council, was similarly strengthened to be able to direct, to an extent, legislative and budget initiatives (Rao 1930, 3056). As a result of these initiatives, these chambers became sites for the articulation of a rational discourse on the kingdom's affairs.

45. The conference provided a venue for reflection on subjects intimately related to advancing the economic standing of Mysore and its citizenry: education, industry, and agriculture.

46. Gandy, in his seminal paper, "Bacteriological City and Its Discontents," argues that "the term 'bacteriological city' is deployed to denote ... a distinctive set of developments from science and technology to new forms of municipal administration" (Gandy 2006, 15). Speaking about nineteenth-century Europe, the bacteriological city, Gandy suggests, is an urban epoch arising from the alignment of scientifically testable notions of disease epidemiology (such as contagion theory) with innovative models of municipal financing, policy instruments, and new technical and managerial expertise (see also Gandy 2004).

47. This was certainly true of the typhoid epidemic of 1869, which was said to have originated in the native village of Ulsoor adjoining the Civil and Military Station (Secretary of State for India in Council 1870, 30): *Report on Measures Adopted for Sanitary Improvements in India from June 1869 to June 1870*. The Indian cholera epidemic of 1867–1868 and the epidemic of 1875 were particularly severe in the *peté* (Government of Karnataka 1990).

48. See Srinivas (2013b) for details about Bengaluru's early sanitary condition.

49. Arnold proposes that the successive cholera epidemics Bengaluru endured was one reason for the colonial government to institute the system of sanitary commissioners in each of the three presidencies (Arnold 1986, 145). Describing the history of public health in colonial South India, Gayathri (2010, 135) traces the origin of

commissioners of public health to 1863. She suggests that the colonial government, under the rubric of sanitation, sought to administer a number of competing things—epidemiology and disease control, as well as sanitary engineering. While a medical practitioner usually managed the former, an engineer administered the latter. Ronald Ross, the discoverer of the role mosquitos play in the transmission of malaria, was deputed in 1895 to the Bangalore Civil and Military Station and wrote a report that attempted to redress both aspects of sanitation: sanitary work and cholera preparedness (Ross 1923, 179–186).

50. Given the caste-based transgressions involved in granting entry to the municipal sweeper (predominantly from a Dalit caste) into the home to clean latrines on a daily basis, residents of the municipality protested against this law. Srinivas informs us that bearing these prejudices in mind, the municipality requested “the head of families...not to obstruct the work of overseers who may visit their premises” (Srinivas 2013b). So great were these prejudices that Ross records his heartfelt indignation at not being allowed to disinfect wells during an incidence of cholera outbreak in 1895 in the native Blackpally locality of the civil and military station, largely because the native rules would not allow a European near the well (Ross 1923, 183).

51. In chapter 6, we shall confront the residues of this shift in the case of flooding along the Vrishabhavathy River (commonly referred to as a sanitary water drain) and how it impinges on the rhythms of automobile flows in the city.

52. A second bout of plague occurred between 1902 and 1903, followed by an influenza epidemic in 1914.

53. Thriveni documents a string of curative measures Mysore organized in response to the epidemic, including the establishment of a special bureaucracy led by the plague commissioner, the creation of special plague hospitals, the trapping of rats and other rodents, and the founding of a vaccine institute and a biomedical laboratory (Thriveni 2013, 2–3).

54. See also Subramanian (1985) for the constitution and spread of piped water supply from a protected water source that parallels the sanitizing of Bengaluru in this period.

55. Although the first extensions to the city, such as Chamarajpet and Sheshadripuram in 1892, and to the civil and military station, such as Cleveland Town and Benson Town in 1883, predate the plague, the multiple overlapping social, spatial, and biomedical motivations to decongest urban habitation, improve sanitation, and offer well-ventilated and well-drained locations are a legacy of the plague infestation.

56. Shobha (2012), however, presents a history suggesting that the interest to plan Malleshwaram (and Basavangudi) predate the epidemic.

57. Stephens was speaking in the context of Fraser Town, the extension planned by the civil and military station in 1906 in response to multiple waves of plague

infestation. But it applies in equal measure to extensions such as Basavangudi and Malleshwaram.

58. Jawaharlal Nehru (1882–1964) was the first prime minister of independent India. His contributions to the institutionalization of science, democratic socialism, and industrial planning, in addition to several spheres of domestic and foreign policy, were so profound that they provided a doctrinal foundation for the nation (Parekh 1991; see also Sharma 2014 for facets of Nehruvian ideology and Arnold 2013).

59. After 1947, the kingdom of Mysore became the state of Mysore with an elected chief minister serving as the executive head. On November 1, 1956, Mysore and other Kannada-speaking districts in neighboring states were reorganized into Mysore state and then renamed (on November 1, 1973) into the present state of Karnataka. Through all these changes, Bengaluru has retained its position as the administrative capital and largest city.

60. One of BCIT's most lasting contributions was the inauguration of Rajajinagar as an industrial suburb spread over 377 acres to house industries and provide housing for industrial workers (Singh 1964, 112).

61. The reason Bengaluru emerged as a choice hub for an industrial agglomeration has been a subject of some interest. Most ascribe this choice to a long tradition of state support for industrial development (by pioneering potentially unviable manufacturing enterprises, providing avenues for joint ventures with private investors, and extending financial and technical assistance to enterprises) and the easy availability of various factors of production—capital extended by private financiers, labor given the extensive hinterland spanning multiple southern Indian states, electricity, and educational establishments (Venkatarayappa 1957, 56, 64).

62. Despite the importance of mega-PSU, formal manufacturing in the textile sector remained the largest source of employment in this period (Heitzman 1999, 2001). Nevertheless, employment in the informal sector—a range of productive work done in household or street-side settings through legal or semilegal arrangements—overwhelmingly overshadowed formal industrial employment. Reflecting a trend toward growing informalization of labor throughout this period, employment in the informal sector, according to Heitzman, rose from 50 percent in 1971 to almost 75 percent by 1991 (Heitzman 2001).

63. Between 1941 and 1991, Bengaluru city's population was increasing at a steady pace showing a decadal increase of between 30 and 40 percent. But two spurts are especially noticeable—between 1941 and 1951, the population of the city nearly doubled, from 406,760 to 778, 977, and between 1971 and 1981, the population rose by 60 percent, from 1.5 million to 2.47 million (Government of Karnataka 1990, 137).

64. Given the largely ad hoc arrangements for land development and urban expansion in the 1940s, some earlier efforts were made to regulate growth through a coordinated planning process. The 1952 master plan proposed by BMP's Bangaloro

Development Committee was an early response but lacked sufficient legal standing to accomplish its aims (R. K. S. Gowda 1972, 102).

65. In the period after independence, the objective of administering and planning the city gifted it with multiple overlapping jurisdictions. For example, in 1981, BMP had jurisdiction over 151 square kilometers. The urban agglomeration (defined by the 1981 Census of India), which included seventeen towns and seventy-nine outgrowths, had a footprint of 365.65 square kilometers. The metropolitan planning area covered an area of 1,279 square kilometers (Ravindra 1996, 57). In 1985, the creation of the Bangalore Regional Metropolitan Area provided an even bigger jurisdictional whorl of 8,000 square kilometers. Service and infrastructure providers for water supply, public transport, and electricity operate through their own jurisdictional areas that often only imperfectly overlap. The thicket of administrative agencies and their overlapping jurisdictional domains inserts, as we shall see, a pervasive element of congestion in the city.

66. The ODP is a preliminary step that culminates in the preparation of the CDP. The ODP “affords general guidance in regulating the development of land” (Gowda 1972, 103). The CDP, as the name suggests, is an extensive document that “formulates in detail the long-term needs and potentialities of the area” (Ravindra 1996, 93). The KTCP mandates Bengaluru’s planning authority to produce a revised CDP every ten years. Accordingly, revised CDPs were produced in 1995 and 2005 (Bangalore Development Authority n.d., 2).

67. A World Bank team that examined the Cauvery water supply scheme also suggested that the Mysore government institute an autonomous board for implementing and operating the project. In response, the state government constituted the Bangalore Water Supply and Sewerage Board under an act of the state legislature (BWSSB 2014).

68. Professionalization of public management and the founding of what came to be called “new public management” (Dunleavy and Hood 1994) was deeply influenced by the parentage of “business-type managerialism” and new institutional economics-inspired doctrines (Hood 1991, 5).

69. A green belt, as a growth boundary for the city, has been a pervasive presence in generations of planning documents beginning with the master plan of 1952. It finds mention as the “rural tract”—a 235 square kilometer girdle in the ODP of 1972, or the considerably expanded 839 square kilometer green belt in the CDP of 1985 (Ravindra 1996, 94). Similarly, the idea of satellite cities or growth poles has a long history in Bengaluru’s planning practice, going as far back as the master plan of 1952 that speaks of industrial townships on the peripheries adjacent to existing public sector units (Singh 1964, 116). The structure plans of 1995 and 2005 for the metropolitan region, prepared by the Bangalore Metropolitan Region Development Authority (BMRDA), also similarly speak of seeking to balance decentralization and containment through push and pull factors (Government of Karnataka 2006, 26).

70. Acknowledging the pervasive illegality, in 2010, Karnataka state introduced the *Akrama Sakrama* scheme (*which translates into illegal-legal*) to regularize an expected 700,000 instances of land use and construction activity in violation of planning laws (Nair 2013, 46). This coupled dynamic of illegality and regularization is a defining facet of master-planned land use in the city.

71. Although some vital events that color the manifestation of flow congestion may have preceded 1991, the year itself has acquired enormous significance in fields of inquiry into the reform of contemporary Indian political economy (Bardhan 1998; Jenkins 1999). Many scholars see a deliberate shift in India's political economy in 1991 away from the earlier paradigm of dirigiste (state-permitted and state-regulated) industrialization to an economically liberalized one grounded on largely unfettered private accumulation.

72. These same policy frameworks that were key to promoting the growth of the software-driven IT industry in India acted to disincentivize and suppress growth in computer hardware manufacturing (Mascarenhas 2010, 100; see also C. R. Subramanian 1992).

73. Dijk (2003) presents a detailed analysis of factors that have promoted the clustering of ICT enterprises in Bengaluru. The comparison with Silicon Valley, though, may not be quite as founded as projected on at least two counts. First, the internal dynamics of the ecosystem of the IT industry in Bengaluru are qualitatively different from those in Silicon Valley (Parthasarathy 2004, 674). Second, Bengaluru is not quite the undisputed hub of the software industry in India (Heitzman 2004, 198).

74. Heitzman proposes a different explanation. He suggests that the presence of the IT industry in public spheres such as urban governance and infrastructure development stems from an existential angst to ensure that Bengaluru remains a competitive location (Heitzman 1999, PE-10).

75. While the liberalization of India's economy in 1991 brought with it significant social, economic, and political shifts, a notable shift has been away from the original developmentalist imaginary of the nation toward a consumerist one. Implicated centrally within this consumerist vision are India's "new middle classes" (Fernandes 2006), who, although highly differentiated internally, are united in the consumptive basis underlying their lifestyles, their urban aesthetics, and even their environmentalism (Baviskar 2002).

76. Empirical investigation into the cultural preferences of the new middle classes, however, paints a more nuanced picture with lifestyle choices persistently informed by old middle-class values rooted in culture and context (Upadhyaya 2008).

77. The BATF owes its existence to S. M. Krishna, chief minister of the state from 1999 to 2004, and was co-terminus with Krishna's tenure. Although often characterized as an icon of reform, Krishna's reform strategy largely centered around iconic projects, personalities, and BATF-like initiatives (Pani 2006).

78. The focus on visibility was significant on three counts. First, it furthered the IT industry's preoccupation with a global or international image for the city. Second, this focus allowed the industry to address infrastructures in a superficial fashion because the bulk of infrastructures (pipes, cables and conduits) are underground and invisible to passersby. Third, and most important, visible infrastructure redesign was key because they could contribute to creating legitimacy for their efforts to transform infrastructure (Gopakumar 2009).

79. "Karnataka to Put Bangalore Infrastructure on Fast Track—IT.in Boycott Decision to Be Reconsidered," *Hindu Business Line*, September 9, 2005.

80. Ramesh Ramanathan and his domestic partner, Swati Ramanathan, founded Janaagraha the Centre for Citizenship and Democracy (Janaagraha for short) in 2001 to "work with citizens to catalyse active citizenship in city neighborhoods" (Janaagraha 2018). Prior to this, Ramesh was a financial manager with Citibank in New York. Ramesh and Janaagraha have been particularly successful in mobilizing people (predominantly from the new middle classes, businesses, and the IT industry) around the cause of reforming urban governance in order to run Bengaluru efficiently like a corporate entity. Ramesh was a member of both BATF and ABIDE. Janaagraha has been the prime mover in numerous campaigns on the city's political and administrative landscape that seek to reinvent processes of local democracy and governance through a predominantly middle-class, issue-based prism. As an instance, Janaagraha's Jaagte Raho campaign organized a series of events in the run-up to the 2010 municipal elections, including a discussion on the party manifestos, know-your-candidate drive, and a pledge-to-vote campaign. A far more intrusive effort was the role Janaagraha adopted to mobilize and monitor financial participation in infrastructure projects (Coelho, Kamath, and Vijayabaskar 2011; Dasgupta 2012).

81. Chapter 4 describes the evolution of Tender SURE in some detail.

82. Among other things, BMP implemented the Mysore Road and Double Road flyovers, as well as the Mekhri grade separator, through this scheme. The BDA used funds from this scheme to construct several grade separators on the outer ring road (KUIDFC 2006, 3–4). The two flyovers became iconic representations of the world-class image of the city.

83. The development plan for each city comprises an overarching vision statement with more specific mission statements for different urban infrastructure, economic, and social sectors. In addition, the plan contains strategies for transforming different sectors with specific interventions to achieve this end.

84. This shift is evident in the efforts to experiment with multiple institutional innovations, such as borrowing from capital markets, public-private partnerships, privatization, and community participation (Kundu 2002), that seek to enhance financial accountability for infrastructure projects.

85. Three examples of special-purpose vehicles for elevated tollways radiating out from Bengaluru on national highways are the Bangalore Elevated Tollway Limited operational since 2010, the Navayuga Bengalooru Tollway Limited operational since 2010, and the Navayuga Devanahalli Tollway Limited operational since 2012.

86. Land use planning and development within these dedicated infrastructure corridors have been tasked to specialized parastatal bodies, such as the Bangalore International Airport Planning Authority (governing a humongous 792 square kilometers), the Bangalore-Mysore Infrastructure Corridor Planning Authority (governing 702 square kilometers), and the IT Corridor Planning Authority.

Chapter 3

1. Other actors too were active in protesting the government's decision. The Citizen Action Forum mounted a legal challenge against the flyover by filing a case in the National Green Tribunal against its implementation. Another of the initial opponents of the flyover was the Namma Bengaluru Foundation, an organization founded by Rajeev Chandrashekhar, member of Parliament and leader of the ABIDE task force (Nagarajan 2017).

2. "Bengaluru Celebs Throw Their Weight against Steel Flyover," *New Indian Express*, October 16, 2016; "Steel Flyover—#beda #beku Trends in Online Media," *Bangalore Mirror*, October 26, 2016; "From Beda to Beku: Anti-Steel Flyover Activists Want Commuter Rail," *Hindu*, December 10, 2016.

3. I do not imply intentionality when I suggest that the regime's politics are unambiguous. If anything, a regime disperses agency across the entities constituting the regime, thereby preventing a clear assignment of responsibility or intentionality for its actions to any one actor.

4. This colonially derived distinction in the nineteenth century regarding how and for what purpose urban interventions were constructed marks a notably different point of departure for comprehending the historicity of urban infrastructure provision in Indian cities. Thus, while contemporaneous Western cities and associated regimes of infrastructure provision were imprinted with the universal infrastructural ideal (Graham and Marvin 2001) and the creation of the networked city (Tarr and Dupuy 1988), Indian cities in the colonial city were fragmented along racial and class lines (Balbo 1993).

5. As Goldman and Longhofer (2009) have noted, world cities are imagined to be key sites of ingenuity and energy in a globalizing world economy. However, making world-class cities requires, in their words, that "the local city must be upended ... lead[ing] to mass displacement [of people who live in places where new world-class projects are located] and mounting inequality" (33).

6. Joerges (1999) has pointed out that Winner's story of Robert Moses is most likely apocryphal. A closer look at the facts surrounding this story of parkway design, he suggests, does not reveal clear discriminatory intention on Moses's part. Be that as it is, this story does serve the purpose of illustrating the role that technological design plays in structuring societal outcomes.
7. For Hommels (2005), the question of change in sociotechnical orders, especially in the urban context, is particularly vexatious because once inserted into places, urban structures become resistant to change, thus continuing to shape urban processes. She demonstrates that urban obduracy manifests itself in the interaction between mental models of different social actors, the endurance of cultural traditions, or (most relevant to this work) the embeddedness of technologies within a heterogeneous ensemble.
8. For instance, in some Indian languages, the word for defecating is "going outside," indicating that until recently, norms of ritual purity prevented Indians from even conceiving the possibility of expelling wastes within the confines of the home.
9. Anjaria, in his study of street hawkers in Mumbai, has observed that when the state apparatus has repeatedly preyed on and extorted from hawkers in the absence of a defined regulatory process, they have suffered financial, mental, and physical hardship (Anjaria 2006).
10. See also Anand (2006) for how pedestrian fencing and impenetrable traffic dividers have become an inseparable component of road improvement projects and have thus impeded the free circulation of pedestrians on the road.
11. These phases are offered here for analytical distinction and convenience. Through these phases, I suggest that the predominant articulation of the regime of congestion underwent a shift in 2010. This distinction does not indicate that there was absolutely no overlap in strategies across the phases. Although efforts such as flyovers have been designed and constructed even after 2010, I believe the overarching thrust of these phases still holds.
12. "Causes of Traffic Congestion—Poor Roads No. 1 Cause of Traffic Congestion: ToI Survey," *Times of India*, March 19, 2008.
13. "Infrastructure Gets a Raw Deal," *New Indian Express*, December 24, 2006. See also "Lost in Transit," *New Indian Express*, June 20, 2009; "No Bang for the Buck," *India Today*, December 13, 2004; and "Narayana Murthy's Appeals to Leaders," *Hindu*, October 16, 2005.
14. Private financing of infrastructure projects was a major plank for reforming urban development in India, more often than not initiated by multilateral or bilateral international institutions. One major example was the USAID-supported Financial Institutions Reform and Expansion—Debt Market Component or FIRE(D) project.
15. ₹ is the international symbol for Indian rupees. In the Indian numbering system, 1 crore is equivalent to 100 million.

16. "Focus on Infrastructure," *New Indian Express*, May 1, 2006.
17. The total population of vehicles registered in the city increased from 1.45 million in 2000 to 2.47 million (2005), 3.69 million (2010), and 5.95 million (2015) (RITES 2011, KRTO 2015).
18. "More Vehicles Bring More Woes," *New Indian Express*, November 1, 2008; "City Has One Vehicle for Every Two People," *Hindu*, February 24, 2013; "'Alarming' Shift towards Private Vehicles," *Hindu*, July 14, 2015.
19. "Government Keen on Monorail for the City: Minister," *Hindu*, January 22, 2014; "Leaders Fret over Congestion," *Hindu*, February 4, 2016.
20. Details of subsidized bus routes are available at [https://www.mybmtc.com/en/service/timings/spl/Special percent20Services/ats](https://www.mybmtc.com/en/service/timings/spl/Special%20Services/ats) (accessed September 12, 2017).

Chapter 4

1. The notion that films carry powerful social messages was widely realized in (South) Indian cinema to the extent that films have acquired significance in the practice of democratic politics. Indeed, careers in film have paved the way for popular film stars to play an active role in regional politics (Prasad 1999; Dickey 1993). In Kannada cinema too, an iconic figure like Dr. Rajkumar acquired significant political stature with his public support for the cause of Kannada-language primacy during the Gokak agitation of the early 1980s (Prasad 2004).
2. "Flyover Fails to Resolve Traffic Woes," *New Indian Express*, May 16, 2011.
3. ₹ is the international symbol for Indian rupees. In the Indian numbering system, 1 crore is equivalent to 100 million.
4. Sadoway et al. (2018) describe consultants as one of JNNURM's most vital legacies.
5. See Gore and Gopakumar (2015) for more details regarding the political consequences of the metropolitan expansion of Bengaluru.
6. Janaagraha is a citizen group based in Bengaluru that actively seeks to catalyze change in the quality of citizenship and urban services in the city (see note 80, chapter 2).
7. Indeed, *landscape* refers to the "various components that make up the visual appearance of a place, including natural geomorphology, elements of cultivation, such as trees, flowers, crops, gardens, and parks, and the built environment of buildings, roads, paths, monuments and so on" (Jones et al. 2004, 116).
8. As a sociotechnical assemblage, an infrastructurescape has important parallels with Actor-Network Theory (ANT; Latour 2005). These parallels are evident in the heterogeneity of construction materials that are employed and the heterogeneous engineering (Law 1987) used to assemble both actor networks and

infrastructurescapes. Where they diverge is in the explicit perspectival and spatial orientation of infrastructurescapes. Such an orientation in infrastructurescapes makes it an invaluable concept to understand fluid phenomena such as congestion and decongestion.

9. The use of the Kannada language in referring to the scape is a deliberate move. This use is not only an index of the rootedness of the scape in social and political organizations arising from local particularities but also reflects the high degree of introspection of the gaze that focuses on Bengaluru and Karnataka to the exclusion of other considerations. Thus, although Sarkarada Bengaluru literally means “official Bengaluru,” it could also mean the government (of Karnataka’s) Bengaluru where the root word *sarkar* refers to the government, specifically the government of Karnataka. Here, the implication is that the Sarkarada Bengaluru scape manifests the authorship and political calculus of the government of Karnataka in reimagining the city. Similarly, Namma Bengaluru literally means “our Bengaluru,” but the use of the Kannada word *namma* implies the rootedness of the scape in the terrain of grassroots organizations that seek to imagine a city hospitable to the urban subaltern—poor and marginalized sections of society who rarely figure in official reports or actions.

10. It is worth noting that the infrastructurescape is mobilized by the Karnataka *Sarkar* (government of Karnataka) rather than the city government of Bengaluru (the Bruhath Bengaluru Mahanagara Palike, BBMP). Customarily, city governments across India have been subsidiary political formations, constituted with a limited role in policy production or infrastructure development. Consistent with this trend, key directions regarding infrastructure are proposed by the *Sarkar* rather than BBMP.

11. As described in chapter 2, parastatal bodies are state-owned corporations instituted after the 1960s to bring technical expertise into public management. Parastatal bodies, such as the Bangalore Development Authority (BDA), Bangalore Water Supply and Sewerage Board (BWSSB), Bangalore Metropolitan Transport Corporation (BMTTC), and Bangalore Metropolitan Land Transport Authority (BMLTA), manage most major infrastructure domains in the city.

12. In a city where infrastructure projects tend to drag on for years, this was a massive development. “Infrastructure Leap—Wow! Three Days, Seven Underpasses,” *New Indian Express*, November 30, 2007. Although the underpasses took several days longer than planned, the construction of these underpasses became controversial, with media reporting on both procedural violations and inadequate study prior to the start of construction: “Palike Bungles on Underpass Projects,” *New Indian Express*, January 19, 2008; “BBMP Buried All Rules under Cauvery Underpass,” *New Indian Express*, November 26, 2008.

13. “Expressway Ready, Fly to KIA in 20 Minutes,” *Times of India*, January 3, 2014.

14. NICE projects along the Bangalore Mysore Infrastructure Corridor, of which the peripheral ring road is only one component, have been embroiled in numerous

controversies that relate to the enormous area of environmentally sensitive and agriculturally productive land that has been transferred by the Karnataka government to NICE (Ranganathan 2006; Goldman 2011).

15. The task force consisted of senior bureaucrats (including principal secretaries of finance, public works department, urban development, and infrastructure in the state government), commissioners of city government and Bengaluru police, executive officers of city parastatal bodies, Bengaluru International airport, and representatives of industry associations (“Infrastructure Leap—Wow!”).

16. “Bangalore Needs a Vision Reboot,” *Economic Times*, May 10, 2011.

17. BCCF is an experimental collaborative platform between the Confederation of Indian Industry (CII, an industry association) and Janaagraha. Since then, the idea of creating a collaborative platform catalyzed by business interests with civil society and governments has spread to a generalized venture, City Connect (City Connect 2011), which has established chapters in five cities, including Bengaluru.

18. See Sami (2014) for a comparison between the BATF and ABIDE task forces. Despite their important differences in objectives and interventions, similarities stem from the core group in both cases where the similarities are seen to be drawn almost solely from an elite segment of society who possess vast technomanagerial and corporate governance connections, and from the opportunities this platform provides for this group to direct their knowledge into policy and planning processes.

19. India Urban Space Foundation was launched in 2007 and has since been renamed Jana Urban Space Foundation (JUSP). A constituent of the Jana group—“a clutch of social enterprises aimed at urban transformation in India” (Jana Urban Space Foundation 2018a)—JUSP, along with its sister concern, Janaagraha, was cofounded by Swati Ramanathan, an urban design professional and Ramesh Ramanathan’s domestic partner. According to its website, JUSP’s goal is to “catalyze a more thoughtful transition for a rapidly urbanizing India through three streams of activities that involve practice and policy: Urban Planning, Urban Design, and Policies for Planning and Design” (Jana Urban Space Foundation 2018b).

20. “Will It Be Third Time Lucky for Tender SURE Roads?” *Deccan Herald*, July 13, 2013.

21. ABIDE was established in October 2008 by the chief minister of Karnataka, B. Yediyurappa, as a predominantly planning- and governance-oriented task force. The task force sought to intervene in four key areas in Bengaluru: governance, road traffic management and transportation, the urban poor, and public security (Sami 2014, 133).

22. The Big10 arterial roads are the ten major arterial roads radiating from the city center—Mysore Road, Kanakapura Road, Bannerghatta Road, Hosur Road, Sarjapur Road, Old Airport Road, Old Madras Road, Bellary Road, Tumkur Road, and Magadi Road. These roads, named after the town (or city) the roads travel toward, carry a major share of vehicular traffic flowing into and out of the city.

23. "Traffic Cure Finds Direction," *New Indian Express*, February 20, 2009.
24. Bengaluru Bus Prayankira Vedike (Bengaluru Bus Commuters Forum) is a platform for several community-based organizations and nonprofit organizations that strive for an affordable, accessible, and just bus service in Bengaluru.
25. The presence of multiple groups with their own limited agendas of action, compounded by the inability of these groups to articulate an inclusive ideological platform to bring multiple groups together, is a weakness common to recent new social movements in Karnataka (Assadi 2004).
26. The regressive evolution of the Kannada language movement is a much-lamented phenomenon among social observers (Srinivasaraju 2008; Murthy 2006). However, others, like Janaki Nair, an astute observer of politics and culture in Bengaluru, notes that despite the undemocratic (and increasingly exclusionary) resolutions of (often) legitimate linguistic anxieties of Kannada nationalism, the process of change in the Kannada language movement and emerging strategies and modes of mobilization need to be linked to particular sociospatial and political-economic structures that Bengaluru and Karnataka are embroiled within (Nair 2000).
27. Although the function held on March 15, 2010, to release the People's Manifesto was supported by several well-established voluntary organizations in the city, it was not well attended, which prompted questions regarding the representative nature of these efforts. "Power to the People Runs into Apathy," *DNA*, March 16, 2010. This highlights challenges of popular legitimacy that groups in the NB scape face.
28. Although Rao (2013) notes that HU's core group consists of eight members, an email in the HU Yahoo group (no. 15862, May 18, 2012, HU email archive) lists a larger core group of twenty-five members who meet regularly and have specialized roles in member recruitment and mobilization.
29. This expansion in HU's spheres of emphasis has been ongoing. While in 2008 and 2009, an overarching effort was the Campaign to Reclaim Bangalore's Commons (A. Rao 2014), by 2012, the HU's core group was self-identifying as addressing the areas of streets, mobility, and commons (no. 15862, May 18, 2012, HU email archive).
30. A good example is the *Pedestrians in Bangalore—Walking a Tightrope* report that came out of HU's Come, Cross the Road campaign in July 2011. Part of the reason for this shift in organizational focus has been, according to Rao (2014, 139), the onset of protest fatigue due to the nonachievement of goals.
31. Misgivings about Praja and its activities become clear in some email conversations (archived by HU's Yahoo group account) between key members of the HU and Praja networks (no. 6871, May 15, 2009; no. 15797, May 1, 2012; and no. 19446, November 12, 2014).

Chapter 5

1. In the face of the enormous global circulation of people, money, information and goods, formal regimes of citizenship have begun mutating, prompting scholars to theorize emerging architectures of membership as emphasizing a “weak citizenship” composed of “plural, layered, and mercurial conception(s) of belonging” (Aneesh 2016, 196).

2. Actor-Network Theory lies at the core of an intellectual project asserting that the impregnation of the material and /artifactual within the collective human experience or the “missing masses” is something that has been consistently ignored by the social sciences, with the result that “the society they [sociologists] try to recompose with bodies and norms constantly crumbles” (Latour 1992, 152). Latour proposes instead an alternate “sociology of associations” that is “limited to the tracing of new associations and the designing of assemblages” (Latour 2005, 7) composed of heterogeneous (material, nonhuman, and artifactual) ties. Indeed, terming it “relational materiality,” Law and Mol have suggested that it is the heterogeneity of material relations that actually makes the social (or for that matter, any material entity) stable (Law and Mol 1995).

3. Although recent developments in environmental law demonstrate a paradigmatic shift toward posthumanistic ecocentrism. Indeed, legal scholars have noted the shift away from anthropocentric utilitarian legal instruments toward instruments linked with the intrinsic values of nature separate from any human use value (Emmenegger and Tschentscher 1994; see also Bruckerhoff 2008 on how the intrinsic value of nature could be incorporated within legal jurisprudence by expanding notions of environmental health and environmental rights). These legal developments parallel critiques of anthropocentrism emanating from fields as diverse as political theory, environmental ethics, and cultural studies (Dobson 2012; Rae 2016).

4. Indeed, some have suggested that the material backdrop is not just passively constitutive of political engagement but that devices and technologies have been invested with specific political and moral capacities to actively shape our existence in preferable directions (Marres and Lezaun 2011). A good example is everyday carbon accounting tools such as the “Augmented Teapot” and associated Tea Light. The Augmented Teapot visually informs the consumer through the Tea Light when it is a good (less energy intensive) time to prepare tea (for more, see Marres 2016). Through the visual intimation, the teapot is nudging humans to behave as responsible energy consumers. Thus, the teapot in this example is delegated with a specific moral agency.

5. Often characterized as the deficit model of science communication, the existing nature of the relation between scientific experts and lay citizens was rooted in the enlightenment project of science and modernity, which cast citizens as essentially technologically illiterate and the role of experts was to continually enhance the public understanding of science.

6. Indeed some have argued that the close identification of technoscience with the modern Indian state arises from its role as the epistemological engine of national development (Raina 1997).

7. Following Sheller and Urry (2003), I use the term *auto-mobility* to refer to the mobility achieved by relying on automobiles and to differentiate it from the technopolitical constellation of automobility.

8. Translated from the Kannada original by the author. “Signal free” refers to roads that employ grade separators to ensure that traffic flow along the corridor is junction free and thus not regulated by traffic lights.

9. The interchange includes two sets of flyovers. One along outer ring road that spans Mysore Road was inaugurated in October 2012; the second flyover (inaugurated in March 2015) along Mysore Road leaps over the outer ring road flyover. “Nayandahalli Flyover to Finally Open This Month,” *Times of India*, February 12, 2015.

10. In order to make room for the flyover, Bangalore Development Authority (the builder) acquired and demolished several houses in the immediate neighborhood. “25 Houses Razed in Nayandahalli for Flyover,” *Deccan Herald*, July 1, 2014.

11. “Twitter Traffic,” *Hindu*, December 8, 2015. While several road intersections now possess dedicated Twitter handles, only a few, such as @Silk_Board, @SonyWorldJn, and @Jayadeva_Flyover, have attracted a steady following. Twitter handles for intersections or flyovers become sites for spontaneous humor to lighten the tortuous experience of driving through these traffic-choked junctions. Handles such as @WFRising employed by neighborhood groups such as Whitefield Rising purport to represent specific neighborhoods but more often than not represent specific agendas of transportation and congestion.

12. For instance, in May 2017, the official Twitter handles of the deputy commissioner of traffic police for east Bengaluru had about 83,500 followers, the additional commissioner of traffic police for Bengaluru had more than 50,000 followers, and the Bengaluru city traffic police had 345,000 followers. In comparison, the official handle for the chief minister for the entire state of Karnataka only had about 120,000 followers.

13. Bengaluru city traffic police sees social media platforms as a vital piece of their public accountability and complaint redressal mechanism. In pursuing this, the organization has been a pioneer in setting up a Twitter dashboard that not only allows public complaints to be automatically redirected to appropriate jurisdictions but also allows monitoring of response to complaints. “Bengaluru Police Get a Twitter Dashboard for Real-Time Monitoring of Complaints,” *Economic Times*, March 23, 2016.

14. The “I Change my City” initiative has developed its own app that allows Bengaluru’s residents to record, transmit, and follow up on any instance of everyday governance problems—for example, uncollected garbage or malfunctioning streetlights.

I Change my City is described as “Janaagraha’s path-breaking initiative to cultivate and nurture the spirit of active citizenship” (ichangemycity 2019).

15. “With Just 1 Percent Usage, Skywalks a Dismal Failure,” *Deccan Herald*, May 6, 2017.

16. “Skywalks Push Pedestrians onto the Road,” *Hindu*, April 29, 2017.

17. “Parking in Bangalore: It Is Hell Out There on Weekends,” *Times of India*, August 13, 2014;

18. “The Parking Nightmare,” *Deccan Herald*, July 6, 2013.

19. According to the CCTR report, India’s Supreme Court expanded the constitutionally guaranteed right to life to include the right to movement and the right to livelihood through two landmark cases—*Frank Coralie v. Union Territory of Delhi and Others* ([1981] 1 SCC 608), as well as *Olga Tellis v. Bombay Municipal Corporation* (AIR 1986 SC 180) (Hasiru Usiru 2013, 36–37).

Chapter 6

1. Project documents prepared by the Indian Urban Space Foundation (IUSF) suggest that the roads were chosen for redesign based on “the need to demonstrate the impact of intelligent design on rejuvenating/enhancing central areas and to show the long-term financial benefit with lower life-cycle costs” (Indian Urban Space Foundation 2012, ii).

2. “New Year Will See Bangalore’s 7 Central Business District Roads Upgraded,” *DNA*, January 3, 2013.

3. “What Tender SURE? St Marks Road Dug Up Four Times in Two Years,” *Deccan Herald*, March 24, 2017; “Tender SURE Road Dug Up to Keep Vidhan Soudha Aglow,” *Times of India*, March 23, 2017; “No Digging for 20 Years, Tender SURE? BWSSB Digs Up St Marks,” *Deccan Chronicle*, May 26, 2015.

4. “Residents Want a Say in the Redesign of Madivala Market,” *Hindu*, March 24, 2017.

5. Hilgartner’s (2000) *Science on the Stage* is yet another work that has employed an explicit performative metaphor. It seeks to understand the role that scientific advisers play in the presentation and reception of science on the public stage of the American politico-institutional landscape.

6. Indeed, Pickering announces that “the performative idiom that I seek to develop subverts the black and white distinctions of humanism/antihumanism and moves into a posthumanist space, a space in which human actors are still there but are now inextricably entangled with the nonhuman” (Pickering 1995, 26).

7. Elaborating on this, Orlikowski (2007), speaking to organizational studies, diagnoses that the widespread disregard for materiality has resulted in an inability to

fathom how organizational practices are incredibly entangled within the sociomaterialities of the workplace.

8. The relational element at the core of the concept of affordance is a novel conceptualization because it marks the attention in the design process not just to the capabilities of the agent (the social dimension) or the properties of the object (the material dimension) but to sociomaterial ties. Such a conceptualization marks the point of departure for a renewed interest in design as a generative arena where nascent entanglements of the material with the social are forged (Yaneva 2009; Storni 2012).

9. Indeed, according to Badami, the vital essence that animates the field of transport planning has been to overcome the problem of the “friction of distance” (Badami 2009, 50). The notion of friction of distance hinges on the idea that traversing distance requires an expenditure of time that could be put to more productive use in other domains if it is avoided. Thus, minimizing the friction of distance, and therefore the time of travel, has emerged as the holy grail of the field. Motorized movement, with its potential to maximize time savings, is particularly attractive.

10. The problem of localized flooding of the Vrishabhavathi River has also been exacerbated by major infrastructural works, such as flyovers and underpasses that block natural hydrological channels that drain the stormwater in many parts of the city. See “Flyover Blamed for Temple Flooding,” *Bangalore Mirror*, August 17, 2011.

11. “They’ve Had It Up to Their Ears,” *Hindu*, August 17, 2011.

12. “Gali Anjaneya Temple,” *Hindu*, March 8, 2012. Some other accounts place the origins of the temple in the twelfth century—for example, “A Temple Surrounded by Serenity,” *Deccan Herald*, May 3, 2004.

13. Blogs written by the faithful mention that this temple was one of the Anjaneya temples founded by Vyasaraja Tirtha, an important fifteenth-century prelate of the Madhva school of Hinduism. Accounts also mention that Anjaneya’s unique visage and posture in this temple make him a *shantha-swaroopi* (a peaceful form ready to grant the wishes of those who seek him (see <http://vayusutha.in/vs4/temple41.html>)).

14. Metropolitan expansion in Bengaluru was engineered by incorporating seven city municipal councils (Rajarajeshwarinagar, Dasarahalli, Bommanahalli, Mahadevapura, Krishnarajapuram, Byatrayanapura, and Yelahanka), the Kengeri town municipal council, and 111 villages.

15. The contractor or the third-party quality monitor had not foreseen that already-completed work would have to be demolished because of social and political complications. With the project running almost three years late, in an effort to cut costs, the demolition was carried out informally or “unscientifically,” as newspapers reported. BBMP sought to initiate legal action against the contractor and the third-party quality monitor: “BBMP to Issue Notices to Consultant over Shoddy Construction,” *Hindu*, November 16, 2010; “A Clogged Drain and a Shaky Flyover along Mysore Road,” *DNA*, November 16, 2010.

16. Independent review and monitoring of the project, as mandated by JNNURM, in its review of the progress in construction, made a note of this in its report (NCPE Infrastructures India 2013, 20).

17. "Gali Anjaneya Road over Drain Thrown Open to Traffic," *Hindu*, March 5, 2013.

18. "Tough Day for Motorists as Stretch of Mysore Road Is Made One-Way," *Hindu*, March 5, 2013.

19. "Mysore Road to Become Motorable by May 31," *DNA*, May 23, 2016.

20. The kingship of the kings of the Mysore kingdom was deployed through the hybrid concept of *rajadharma* that combined the European concept of improvement with *dharmā*—the Hindu concept of maintaining the cosmic order (Ikegame 2007). It is the moral might of *rajadharma* that political leaders of postcolonial Karnataka have sought to embrace.

21. The auditor of the national government, the comptroller and auditor general, notes in his report that there were several irregularities in the initial stages of the construction process with regard to land acquisition, tendering, and utility shifting (Comptroller and Auditor General 2013), and he attributes project delays to these irregularities. The narrative presented here does not deny these controversies, but these serve to highlight the messy and contentious process inherent in buoying up automobility in the city.

22. JNNURM was conceived as a reform-driven exercise (self-identified as a mission) that attempts to fashion a uniform basis for how (major) cities in India are governed and how they conduct their project execution. With this aim in mind, JNNURM marshaled an array of strategies, techniques, and processes as technologies of governance (Gopakumar 2015), as well as organizational signatures (Sadoway et al. 2018), such as reliance on legal reforms and management consultants. The proliferation of consultants scripting compliance with a range of strategies and techniques is a defining attribute of JNNURM. For the VRER, the project's project management consultant, STUP, authored its DPR.

Chapter 7

1. "Karnataka Drops Bengaluru Steel Flyover Project," *Hindu*, March 2, 2017.

2. The very recent proposal of the government of Karnataka to revive and execute a plan for a network of elevated corridors criss-crossing Bengaluru without even a shred of public consultation would appear to foreclose as premature any notion that a transformative juncture in how the city moves is at hand. See "More #Beku Than #Beda," *Hindu*, March 17, 2019; "Elevated Corridor: CM Promises 'Detailed Discussions' Soon after Elections," *Hindu*, March 19, 2019.

3. Here it bears paying attention to what Kathryn Furlong (2014) specifies as the need to move beyond the Western "modern infrastructure ideal" of single,

standardized, and universal infrastructure systems and instead incorporate the dynamics of coexistence with multiple modalities of infrastructure systems.

4. Such an inclusive orientation is contingent on articulating a composite pedestrianism that comprises pedestrianism as embodied practice (Lee and Ingold 2006); as politics (Middleton 2011) but also as a form of rationality (Patton 2007); and as a method of inquiry into the urban (Srinivas 2015).