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Landscapes of disaster: water, modernity, and urban fragmentation in Mumbai

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Abstract. The city of Mumbai is undergoing a complex social, economic, and political transition into an increasingly fragmentary and polarized metropolitan space. The tortuous flow of water through contemporary Mumbai presents one of the most striking indicators of persistent social inequalities within the postcolonial metropolis. We find that the city's dysfunctional water infrastructure has its roots within the colonial era but these incipient weaknesses have been exacerbated in recent years by rapid urban growth, authoritarian forms of political mobilization, and the dominance of middle-class interests within a denuded public realm. It is argued that the water and sanitation crisis facing Mumbai needs to be understood in relation to the particularities of capitalist urbanization and state formation in an Indian context.

Introduction

> "Cities like Bombay—now Mumbai—have no clear place in the stories told so far that link capitalism, globalization, post-Fordism, and the growing dematerialization of capital."
>
> Arjun Appadurai (2000, page 627)

> "The nature of the municipal tap is feudal and bureaucratic.... You left the tap open before you went to sleep. When the water sputtered and splattered at three, four or five a.m. and sometimes not at all, was when your day began."
>
> Kiran Nagarkar (1995, pages 69 – 70)

In a dusty office of the municipal buildings in B ward in downtown Mumbai there is a detailed map of the Paris water supply system placed under a sheet of thick glass on the desk of the chief engineer. This 'hydraulic decoration' acknowledges an attachment to a utopian vision of the perfect city: a striving towards a perfect synthesis of engineering science with urban modernity. The intricate arrangement of blue lines—varying in thickness and shading to depict the hierarchical structure of the city's water mains—is counterposed with the familiar bridges, boulevards, and radial subdivisions of the Parisian arrondissements. This striking cartographic representation of Paris is suggestive of a tension between the idea of the modern city as a visible manifestation of conscious design and the complex array of unseen networks extending beneath the city streets. Mumbai, like any other modern city, bears the imprint of successive generations of civil engineers and urban planners, yet its hydrological structure has never closely corresponded with a rationalized conception of urban space: time and again, ambitious plans and schemes have been only partially realized, leaving the material reality of the city far short of any technical ideal. In the case of water and sanitation Mumbai has never been able to provide the most basic services to all of its population, high infant mortality rates persist through poorer parts of the city and the rudimentary sewer system is regularly overwhelmed by heavy rains. In the record monsoon of 2005, for example, over 400 people lost their lives in the city as makeshift dwellings were washed away, buried in landslips, or simply inundated with rising floodwaters that could not disperse through blocked or absent drains. "The shanties of the poor",

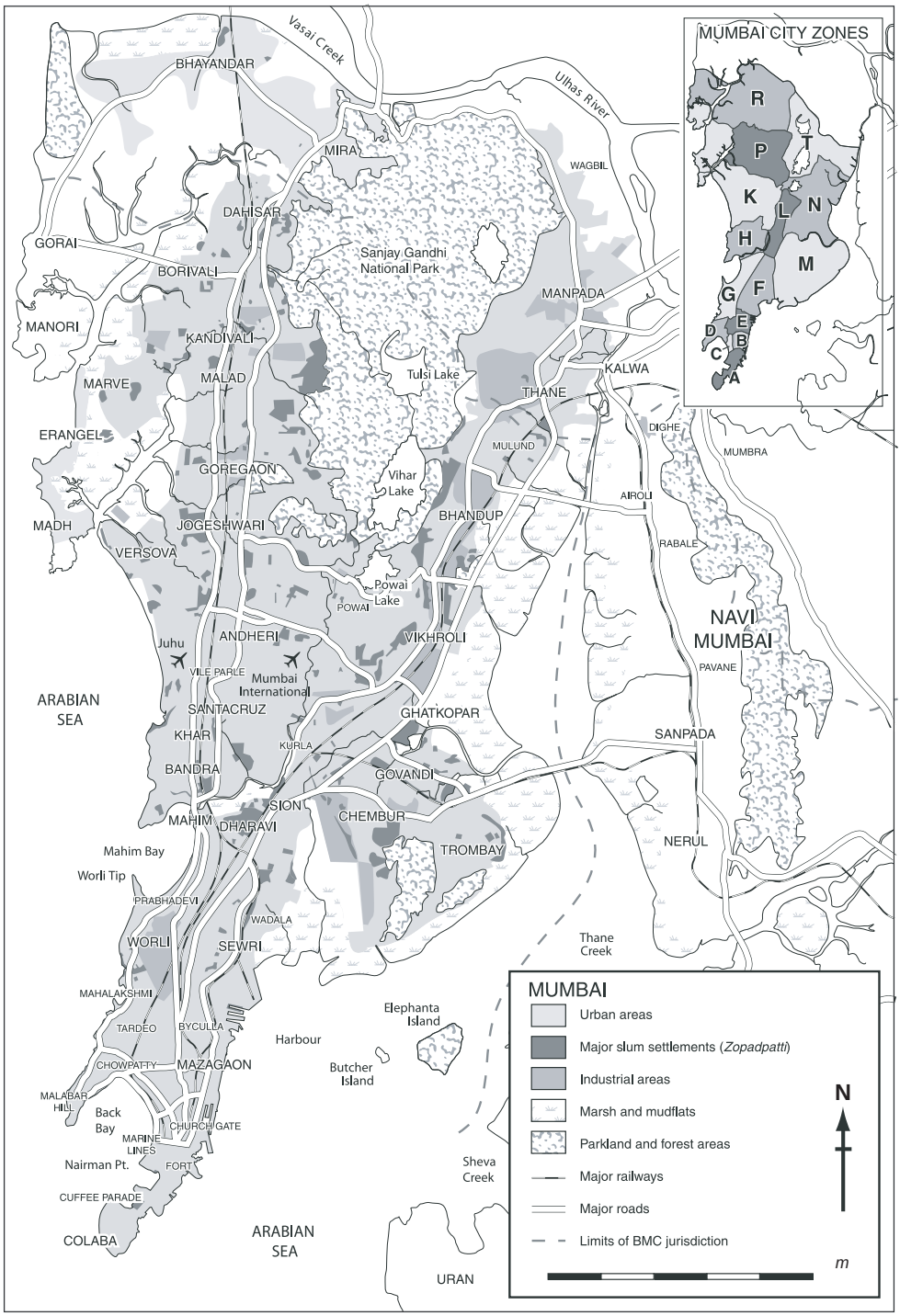

Figure 1. Mumbai: the contemporary city (source: data derived from the Eicher city map; cartography by Miles Irving).

writes Somini Sengupta (2005, page 17), "as well as the refuse of the rich blocked gutters and creeks". The increasing frequency and ferocity of these extreme weather events—probably connected with anthropogenic sources of climate change and certainly exacerbated by the concretization and destruction of the city's natural floodplain—add another facet to the city's seemingly intractable challenge to modernize its infrastructure.

Mumbai is a city of striking contrasts: the glittering towers and opulent hotels of Nariman Point, along with elite neighbourhoods such as Juhu, Worli, and Malabar Hill, are encircled by informal settlements and armies of pavement dwellers who form neat rows along the city streets at night. By some estimates, over half of the city's estimated 18 million people live in the *Zopadpatti* or slums which appear in city maps as amorphous grey areas clustered along roads, railways lines, and extending into some of the most polluted and insalubrious spaces next to creeks and the remnants of once lush mangrove forests (figure 1).[1] During the 19th century Bombay became the largest and most economically lucrative city in the British Empire and it remains the most important 'global city' in the Indian subcontinent with downtown property prices in the mid-1990s briefly exceeding those of Manhattan (see Nijman, 2002). Changes in the Indian economy since the 1980s associated with market deregulation and trade liberalization have contributed towards a growing national and international role for Mumbai, which now accounts for as much as 75% of India's stock exchange transactions and at least a third of Indian tax revenues. Over the last fifteen years the relative importance of established administrative and industrial centres such as Chennai (Madras) and Kolkatta (Calcutta) has declined in comparison with cities such as Bangalore, Hyderabad, and Mumbai at the leading edge of expanding economic sectors such as financial services, software, and microelectronics. A widening segregation in both income and lifestyles is emerging between new global elites and the urban poor, whose continuing marginality is underpinned by intensified efforts to reclaim Indian cities from "encroachers and polluters" (Chatterjee, 2003, page 178).

The inequalities and injustices that mark everyday life in contemporary Mumbai are exemplified by problems of access to water. The city's municipal water supply system is derived from six sources outside the city: Tansa, Modak Sagar, Upper Vaitarna, Bhatsa, Vehar, and Tulsi (figure 2). Yet, this vast transfer of nearly 3000 million litres of water a day from the jungles, lakes, and mountains of the state of Maharashtra does not meet the city's needs: many businesses and local communities rely on thousands of wells and boreholes scattered across the metropolitan region along with hundreds of private tankers and innumerable illegal connections. These modern means of storing and distributing water in the city are juxtaposed with complex patterns of water use originating in the precolonial era. A number of so-called 'tanks'—elaborate bodies of water surrounded by stone steps—still exist in the city but these are now mainly used for recreation or ceremonial bathing. Water is a dominant symbol in Hindu mythology: intricate distinctions and ritualized washing play a role in purification and social differentiation.[2] In many apartment blocks taps are separated by caste or religion and in times of shortage lower castes are routinely "shooed away from their taps" (Nagarkar, 1995, page 71). Although this 'caste-based apartheid' is now weakening in comparison with rural areas, it has not yet disappeared and provides an added

[1] The proportion of slum dwellers across the Mumbai metropolitan region now accounts for about half of the total population, but this population is concentrated in less than a tenth of the total housing area (see, for example, Jha, 1986; Mehta, 2004; Swaminathan, 2003).

[2] On water and Hindu mythology see, for example, Feldhaus (1995), Hoffmann (1997), and Mallebrein (2000).

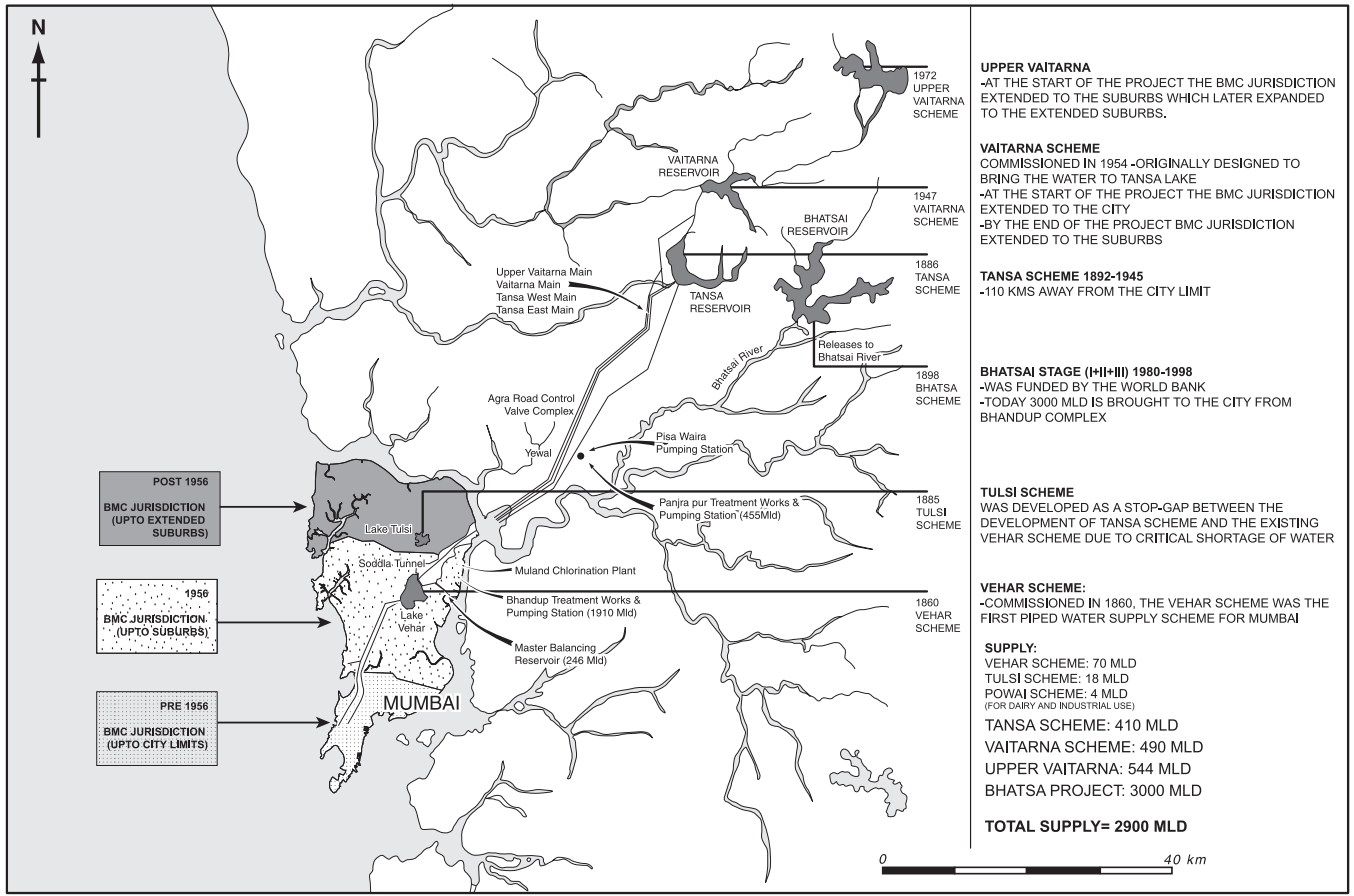

Figure 2. The development of the Mumbai water supply system (source: original concept by Nayan Parekh and Rachana Sheth; additional cartography by Miles Irving).

layer of social inequality to the religious, regional, and class-based tensions associated with the development of the modern city.

The paper begins by exploring the historical background to the development of the city's water infrastructure. We trace emerging tensions between a technical ideal derived from the rebuilding of European cities and the fiscal and ideological realities of colonial rule. Secondly, we consider the contemporary complexities of the city's water politics ranging from the dilapidation and neglect of existing technological networks to the political manipulation of slum communities in need of basic services. It is in these marginalized urban spaces where we find some of the most volatile interactions between local aspirations and different sources of power and authority. Finally, we examine aspects of contemporary political and economic change in Mumbai as part of the broader context for the city's infrastructure crisis. These developments, particularly in the wake of the 1992 riots, have placed existing structures of urban governance under intense strain and exposed the continuing limitations and fragility of the city's public realm.

Colonial and postcolonial antecedents

By the 1820s the city of Bombay had a population of 300 000, making it the sixth-largest city in the world. Yet, the island city's rapid growth—spurred significantly by the opium trade with China—had been accompanied by a steady deterioration in urban conditions. A particular concern, as in many other 19th-century cities, was the unreliability of water supplies, with frequent shortages experienced during summer months. In recognition of the parlous situation the Bombay Municipality appointed the city's first water commission in June 1845 to investigate alternative sources, and they recommended that a dam should be built to the north of the city at Vehar (figure 2). It was not until the severe droughts of 1854 and 1855, however, which necessitated the requisitioning of boats to bring in emergency supplies that any political agreement could be found to raise property rates to cover the costs of the proposed water works.[3] The necessity for sanitary reform was also given added political impetus by the Indian rebellion of 1857, which underpinned the ideological task of building a greater degree of loyalty to the colonial state. Yet, the improvement of urban infrastructure in Indian cities had to contend with two sets of political dynamics: first, reluctance on the part of the British government to invest in its overseas colonies, for which any 'internal improvements' had to be profitable (Prashad, 2001, page 116); and, second, emerging tensions between colonial administrators and the Indian majority over any increases in taxes or property rates, particularly if the benefits of infrastructure improvements appeared to accrue mainly to European enclaves (see Dossal, 1988; 1991). The political turbulence of the 1850s also added a sense of urgency to the more abstract and complex task of establishing a functional legal system and the extension of governmental interventions to hitherto neglected spheres such as the domestic arena as part of a more systematized attempt to challenge sources of social or cultural resistance to colonial authority (see Hansen, 2005).

When finally completed in 1860 the Vehar project was the first municipal water supply scheme in British India, but access remained highly uneven with only better-off households able to afford the smaller distribution pipes and taps within their homes (Dossal, 1988). By linking water supply with house rates, however, the Vehar project

[3] The political salience of public health in Bombay was also bolstered in 1848 with the first systematic data compiled on causes of death, though in the prebacteriological era these statistics were deployed in defence of environmental rather than contagionist explanations for differences in the prevalence of disease. For more detail on the Vehar works see Conybeare (1858) and Edwards (2001 [1910]).

soon became a key source of municipal revenue as the number of individual house connections leapt from just over 200 in 1860 to over 6000 in 1865 despite large increases in rates. The management of the new water system became part of a more complex set of municipal responsibilities and marked the emergence of a more technically oriented approach to handling the interrelated challenges of social and economic development.[4] In 1863, for example, the leading British civil engineer Robert Rawlinson called for a modern sewer system to be constructed in Bombay "according to true scientific principles" and in 1864 the first reliable census for Bombay was undertaken.[5] A stream of reports and expert recommendations now became part of the nexus of policy deliberation as engineers and public health advocates sought to promote the latest administrative and technical advances from Europe, yet this discourse of urban modernity increasingly conflicted with both the 'fiscal conservatism' of colonial authorities and a sharpening cultural and demographic differentiation between different segments of the urban population. This dilemma is illustrated by the publication of the influential report of Hector Tulloch (1872, page 215), who argued that the critical issue facing the city was how to extend the "borrowing capacity and powers of the Municipality". Like many other engineers, Tulloch simply assumed that if the technical and financial issues could be resolved then an integrated hydrological system of the type adopted in London or Paris could also be implemented in Bombay. By the 1880s, however, the earlier enthusiasm for the 'new science' of sanitation became modified by emerging discourses of cultural and racial difference to account for widening disparities in living conditions (see Prashad, 2001). In effect, the failures of technical modernization were increasingly ascribed to innate differences in sanitary practices or tolerance thresholds rather than the limitations to liberal conceptions of urban government exposed by the colonial metropolis.

Although the city's first modern water system provided 32 million litres a day, this quickly proved insufficient: in 1872 the Vehar system was more than doubled in size and the drought of 1879 forced the rapid completion of the Tulsi scheme (figure 2). A series of legislative changes in the 1870s and 1880s initiated a major reorganization of urban government with the creation of the Bombay Municipal Corporation: an administrative structure that emulated the administrative scope of a Victorian town hall yet never enjoyed the same degree of effectiveness or legitimacy in tackling problems such as inadequate housing or sanitation. In the light of the Tulloch Report of 1872 and a range of other expert advice the municipality decided in 1885 to proceed with the far more ambitious Tansa scheme. This "magnificent project", effused Sir William Hunter (1893, page 324), "will provide the city with an inexhaustible water-supply" that will "afford another splendid proof of the public spirit of the citizens of Bombay and the skill of English engineers." The completion of the first stage of the Tansa scheme in 1892 brought a further 77 million litres a day to the city, followed by the completion of further stages in 1915, 1925, and 1948, adding a further daily capacity of 331 million litres. At first, however, the Tansa scheme contributed towards a public health catastrophe:

[4] The city experienced rapid demographic and industrial expansion in the 1860s leading to intense overcrowding in districts such as Kumbharwada, Chakla, and Khara Talao. Contributory factors towards the city's rapid growth included the benefit to the Indian cotton trade caused by the global disruption to supplies during the American Civil War and the opening of the Suez Canal in 1869, which halved journey times to Europe.

[5] To Sir Charles Wood, Principal Secretary of State for India from Robert Rawlinson. Report on the proposed scheme of main sewerage and drainage submitted to the Municipal Commissioners of Bombay, dated April 1863. Maharashtra State Archives, Mumbai (see also Gostling, 1875; James, 1902; Jones, 1896; Sowerby, 1868). See also Gandy (2004; 2006a).

the improved water supply in the absence of adequate drainage in low-lying parts of the city left whole districts in a filthy waterlogged state. As a result of the deteriorating environmental conditions, a series of bubonic plague outbreaks began in 1896 which lasted until the First World War, with devastating social and economic consequences (see Klein, 1986; Ramanna, 2002).[6] The panicked exodus of half of the city's population during the worst episodes of disease led to emergency measures including the creation of the Bombay Improvement Trust, which set about acquiring land and demolishing slums. Yet these radical measures did not emerge out of any philanthropic concern with intolerable living conditions but "originated in the paranoid fear of the city's elites of pestilence and disease spreading to their bungalows from poorly ventilated and overcrowded slums" (Krishnan, 2005, page 2). The city's predicament at this time emerged out of a mix of laissez-faire economic doctrine, social indifference among the city's elites, and an administrative inability to coordinate processes of modernization for the benefit of the city as a whole: a dynamic that would play a significant role in spurring the development of nationalist political sentiments during the early decades of the 20th century.

At the time of India's independence in 1948, the city's total water supply stood at 494 million litres a day for a population of about 2 million, but there remained significant shortages and inequalities in access. Surveys in the 1950s found that the previous three decades had seen accelerating rates of growth with unprecedented levels of overcrowding through much of the city. And beyond the overcrowded tenements there were now extensive slums making up around 15% of the total population: an example given in the vicinity of Sewri comprised a cluster of shacks housing 850 people and only two taps (Lakdawala et al, 1959, page 1131). The anticipated demographic and commercial development of Bombay necessitated a further development of the city's water supply system, but this technical challenge also provoked a parallel discourse concerned with the containment of urban expansion: the implication being that technocratic approaches to urban policy making could be extended from civil engineering to the social arena (see, for example, Government of Bombay, 1961; Modak and Mayer, 1948). The first major water project for the city after independence, constructed between 1949 and 1957, involved the transfer of water from the more distant Vaitarna River and the construction of a vast reservoir named Modak Sagar after the city engineer Shri N V Modak. The so-called 'Vaitarna-cum-Tansa' project used the latest advances in engineering science and was the first water project to be completed using only Indian technical expertise, thereby exemplifying Jawaharlal Nehru's conception of a science-led Indian modernity within which hydraulic engineering would play a leading role. The development of engineering, especially in the immediate postindependence era, exhibited a sense of technocratic omnipotence before the 'overextension' of the state's capacities and aspirations had been widely recognized (Kaviraj, 2003; Prakash, 1999). The state, in other words, despite its colonial lineage and compromised legitimacy had become the container for an immense programme of national transformation in the context of a weak and fragmentary civil society. In the fields of civil engineering and urban planning we find that the Indian state adopted a form of 'imitative modernity', to use Sudipta Kaviraj's term, as the earlier technocratic vision of the colonial city was supplanted by a new kind of modernist synthesis between science, technology, and urban society. Over time, however, not only the technical

[6] For Ira Klein (1986), the experience of late-19th-century Bombay provides a unique insight into the complex relationship between imperialism, modernization, and demography: whilst waterborne diseases such as cholera declined, other diseases associated with overcrowding such as tuberculosis and bubonic plague increased. See also Mehta (1999) and Oldenburg (1989).

scope of this flawed vision but also the seemingly uncontrollable social and political dynamics of cities themselves threw into doubt the earlier certainties surrounding the search for a distinctive kind of Indian modernity.

By the mid-1960s Bombay's short-lived postindependence technocratic honeymoon had come to an end. Just as acute water shortages had forced the construction of the Tulsi project in 1879 ahead of the Tansa scheme, the failure of the monsoon in 1966 necessitated completion of the Ulhas River scheme in 1967 to divert additional water into the Tansa distribution network. In recognition of the growing scale and complexity of the city's water system a new municipal department was created in 1971—the Water Supply and Sewerage Department—which brought together a range of planning and operational functions for the first time but did not include storm water drainage or regional water resources management. The use of an integrated treatment system at source was to be the model adopted for the much larger Bombay I–III projects under construction between 1980 and 1997, which included the completion of South Asia's largest water treatment complex—the vast Bhandup plant in the north of the city (figure 2). The completion of the Bombay I–III projects marked a significant expansion in the city's reliance on bilateral loans from the World Bank, whose involvement in the financing of the city's water infrastructure dates from 1973, but these projects faced an array of technical and logistical challenges ranging from disputes over land acquisition to continuing shortages of key materials such as cement, sand, and steel.[7] By the late 1990s, however, these three projects combined had added more than 1300 million litres a day of capacity to the city's water supply system—but demographic pressures have left the city with a continuing inability to meet demand. Under 70% of the city's population currently have access to piped water within their homes (and then for only a few hours a day) whilst the rest of the city is dependent on shared standpipes, wells, tankers, and illegal connections (Swaminathan, 2003).[8] And the rich—partly out of fashion and partly out of fear—have begun to consume increasing quantities of bottled water as part of "a new glamorous world of beauty and wealth" that seeks disengagement from the "disconnected segments" of the city.[9]

The UN predicts that Mumbai will be the second-largest city in the world by 2015 (after Tokyo)—with a population of almost 22 million—and in anticipation of the city's inability to meet future needs there is a range of new projects that are either underway or at the planning stage (UN, 2006). The so-called Bhatsa (Mumbai IIIa) project is expected to be completed in 2010, yet the much larger Mumbai IV project has not yet started because of uncertainties over its funding in combination with technical complexities (the scheme is dependent on power-driven rather than gravity-fed distribution) and conflict with the Maharashtra state government over its environmental impact.[10]

[7] The second of Mumbai's water supply and sewerage projects funded by the World Bank, (BWSSP-II), initiated in 1978 and completed in 1990, was deemed 'unsatisfactory' under the Bank's Performance Audit Reports (World Bank, 2001). Shekhar Krishnan (2005, page 3) notes in the context of the 2005 floods that the planned upgrading of the city's drainage system under the so-called Brihanmumbai Storm Water Drainage Project has been delayed by over a decade because of the "state's inability to satisfy World Bank loan conditions".

[8] Although Mumbai faces formidable challenges it remains in a better position than many other Indian cities with respect to its physical infrastructure because of its relative wealth and its legacy of independent service provision: its electricity generation, for example, has been primarily handled by two private companies since the 1920s without any reliance on the Indian national grid (see Zérah, 2005).

[9] Interview with N Bhangar, rural water rights and education activist, Mumbai, 11 December 2002.

[10] Interview with V R Pednekar, executive engineer, Planning and Research, B-Ward, BMC, 2 December 2002. See also BMC (1963), BMRDA (1964), Government of Maharashtra (1994), Kandawalla (1979), and Vivesvaraya and Inglis (1944).

There are also longer term plans to link the city to the more distant parts of the Vaitarna and Ulhas river basins to create one of the largest and most technically complex water supply systems in the world.[11] The city is set to extend its 'ecological frontier' ever further into the mountains of Maharashtra state in the context of a sharply polarized post-Narmada dam era of hydrological politics. Although the technocratic paradigm of large-scale infrastructure development continues to dominate longer-term planning, the fiscal, managerial, and regulatory context is now in a state of extended flux. The politics of Mumbai's 'second nature'—the elaborate reworking of relations between nature and culture in the metropolitan arena—remains in a continuous state of contestation as new political formations seek to control the city. The rise of 'bourgeois environmentalism', for example, and the renewed assault on informal settlements led by middle-class interest groups, often working in partnership with the state or international agencies, is suggestive of an urban vision where the inadequacies of urban infrastructure are likely to be disguised rather than directly addressed (see Baviskar, 2002). If water infrastructure is to be conceptualized as a particular facet of the social production of nature then we need to explore how specific manifestations of this 'second nature' relate to the majority experience of the city as a space in which access to basic necessities is brutally circumscribed. The Indian experience of capitalist urbanization—through both the colonial and the postcolonial era—has been marked by a consistent ambivalence towards the modern city driven not only by material realities but also by the capacity of urban dysfunction to expose the limitations and weaknesses of nationalist aspirations to create a functional modernity. The large-scale water engineering projects that serve cities such as Mumbai are emblematic of the power of the Indian state to enforce its will on the regional hydrological cycle even though the dynamics of urban growth have long eluded the grasp of urban technocrats.

Hydrological dystopias

Contemporary Mumbai faces massive inequalities in access to water: whilst most downtown districts receive water for at least short periods every day there are outlying parts of the city that remain largely unconnected to the city's water distribution network. These disparities in access to water are etched into the urban landscape: some of the slums with the worst service provision are traversed by giant water pipes that have been transformed into precarious networks of elevated walkways. The spatial interstices of the city's water infrastructure form ribbons of extreme deprivation that connect some of the poorest communities in the city. The situation is most acute at the urban fringe in districts such as Bhayandar, Mira Road, and Thane, where rapid growth has not been accompanied by adequate improvements in basic infrastructure (see Rathod, 2002; Zérah, 2005). Unregulated construction activity and the provision of illegal water abstraction licences have created intolerable conditions for poor communities living in what the Mumbai-based film director Dev Benegal[12] terms 'landscapes of disaster'. Over the last ten years there has been growing political unrest in many of these marginal communities and a demand for access to better services. In March 1999, for example, in the district of Bhayandar on the city's northern edge, thousands of residents rioted for three days because of extended interruptions in their municipal water supply (Sovani and Lokhandwala, 1999). The city's 'water mafia' took advantage of the situation by raising their prices tenfold for tanker supplies and railway lines were blocked by hundreds of protesters to prevent commuter trains from

[11] Interview with U Divekar, senior hydraulic engineer, Bhandup Complex, Brihan Mumbai Mahanagar Palika, 18 December 2006.

[12] Interview, 12 June 2003.

entering the city. The roots of this popular unrest can be found in long-standing arrangements between local politicians and the tanker lobby to permanently delay the construction of new water infrastructure[13] (Lokhandwala and Namboodiri, 1999a; 1999b; Shrivastava, 1998). In October 2000 water shortages also led to unrest in the suburbs of Borivali, Andheri, and Chembur and to the spread of carnivalesque street blockades called *rasta roko* to parts of downtown Mumbai (Krishnakumar, 2004).

The city's urban fringe exemplifies the disjuncture between the postcolonial state as a formal set of institutional practices and its vernacular modification at a local level through complex interactions between different sources of power and authority (see Corbridge et al, 2005). Even where municipal authorities have tried to improve services they have faced problems of collusion between private water suppliers and corrupt local officials who seek to engage in rent-seeking activities by limiting access to piped water supplies for marginal communities. Yet, the term 'corruption'—a sine qua non of state failure in much of the governance literature—actually masks an array of different practices and needs to be more carefully differentiated: at a household level, for example, this tends to manifest in terms of 'speed money' to get repairs or new connections done more quickly, the falsification of bills or meter readings, and the provision (or overlooking) of illegal service connections (see Davis, 2004). At a 'mesolevel', however, the consequences become more complex and deleterious such as the formation of price-fixing cartels, the political allocation of contracts (where legislators may even become de facto contractors), and the stifling of access to capital (which affects all forms of investment). Over the last fifteen years, water provision has also become increasingly linked with criminalized networks as part of an intensification of political corruption in Mumbai associated with Shiv Sena control of public institutions[14] (Vora and Palshikar, 2003). The interrelated problems of corruption and political party funding in a context of weak state formation worsened after the 1970s with the spread of extensive 'pork barrelling' practices by local political elites: a trend underpinned by the decline in workplace forms of political organization and the electoral mobilization of different social constituencies along the lines of religious or caste-based forms of identification. The promise of better water and sanitation is vulnerable to both large-scale political manipulation, as evidenced by the populist agenda of the Shiv Sena in the 1990s, and extending webs of control within slum communities since "anyone can take charge of water and collect money" (Bapat and Agarwal, 2003, page 74).

The problems of water access at the urban fringe are also exacerbated by an unregulated scramble for available sources. In fast-growing suburbs such as Andheri, Goregaon, Kandivali, Kurla, Chembur, and Ghatkoper there is extensive illegal groundwater extraction including new boreholes for bottled-water sellers, hotels, and the construction industry. Speculative real estate companies even advertise lavish condominiums that resemble luxury apartments anywhere in the world in almost every detail except for one thing: they have no water. In order to circumvent limited supplies, many hotels and wealthy apartment blocks deploy illegal 'booster pumps' to enable them to suck more water out of the system so that existing inequalities in access become intensified at a local level. The city's urban fringe is also the focus of conflict over regional water diversion whereby marginalized farming and tribal communities in districts such as Thane have found that their water is being increasingly diverted to

[13] Interview with M V Mahtre, municipal corporator, Mira-Bhayander Corporation, 22 December 2006.

[14] Interviews with S Patel, director of Society for the Promotion of Area Resource Centres (SPARC), 4 December 2002 and with M-H Zérah, Institute of Research for Development and Centre de Sciences Humaines, New Delhi, 12 April 2003.

meet the needs of new urban developments. The city's water engineering strategy has consistently focused on the needs of the city above any emphasis on regional water use, yet the rural water crisis and escalating rural–urban tensions over access to water resources is a significant spur to new waves of migration to the city. Rural water resources have also been exploited by companies such as Coca Cola, who seek to sell their Kinley brand of 'packaged drinking water' in the city: their water abstraction operations at Wada, for example, undertaken in the face of lax or ineffectual regulation, are diverting groundwater reserves needed by nearby farms and villages.[15] Water politics in India is inextricably linked with the social and economic disintegration of rural communities and widening polarities in wealth between urban and rural areas: a dynamic that reaches its acme in the poisonous sectarian violence of the neighbouring Gujarat state, where the misappropriation of funds for water projects has been deliberately obscured by the organization of anti-Muslim pogroms by the ruling BJP (Bharatiya Janata Party) administration[16] (Upadhyaya, 2002).

The scramble to access groundwater resources because of the inadequacies of the city's water supply network has led to irreversible problems of saline incursion in boreholes and aquifers in coastal areas of the city. The municipal water system also suffers from periodic contamination, not from its rural and largely mountainous water sources but from the corrosion and dilapidation of the water distribution system itself, which foster the spread of bacteria within pipes and enable dirty water to enter the network through cracks and fissures. The city's official statistics suggest that a quarter of the city's water is currently lost through a combination of leakage and pilferage (principally through illegal connections) yet the real figures for 'unaccounted-for water' may be between 40% and 60% (World Bank, 2001). The city's poorly maintained network is dominated by old materials such as galvanized iron, and parts of the network in downtown Mumbai are over a hundred years old. The intermittent wet and dry conditions in combination with the effects of rising salinity, vibrations from road traffic, stray currents from rail networks, and road excavations by other utility companies have accelerated the rusting and disintegration of older pipes so that contaminated groundwater can seep into the water distribution system during interruptions in supply.[17] The city also cannot undertake large-scale repairs of trunk mains because there are no alternative water distribution tunnels available to temporarily divert water and avoid extensive disruption so that even minor problems can easily escalate into catastrophic system failures.[18]

These problems of dilapidated infrastructure are also reflected in the private spaces of the city. Crumbling tenements or *chawls* are characterized by rusting pipes, leaking taps, and filthy tanks for the storage of water necessitated by intermittent supplies—in a typical chawl at least fifteen families will share one tap for little more than two hours a day. Most rented housing has had extremely limited investment in repairs or improvements: a combination of rent controls and shadowy networks of ownership ensure that what Appadurai (2000) terms 'spectral housing' predominates through much of the city. Some 19 000 buildings in Mumbai are currently 'cessed' with rents frozen at 1947 levels and must rely on a municipal agency called the Maharashtra Housing and Area Development Authority to carry out minimal repairs that do little

[15] Interview with N Bhangar, 11 December 2002.

[16] Interview with N Bhangar, 11 April 2003.

[17] Interview with R B Hardas, assistant engineer, Water Works, K-West Ward, BMC, 25 November 2002.

[18] Problems with technical management are also matched by arcane tariff structures that facilitate profligate wastage of potable water by wealthy residents (Nayan Parekh, personal communication, 4 May 2006).

more than prop up these structures to prevent them from collapsing into the street (although more than 2000 of these dilapidated buildings have fallen down in the last decade) (Sharma, 2005; Sunderam, 1989). The extraordinary complexity of the city—in terms of both its morphology and its ownership—presents a chaotic array of technical, fiscal, and legal obstacles to improvements in water supply that extend from the large-scale reconstruction of the underground city to the plumbing of individual tenements.

The city's water system has been dominated by a supply-oriented engineering ethos since its inception in the middle decades of the 19th century. Apart from drought years such as 1992, water conservation efforts have been only a marginal concern. More recently, however, there has been an emphasis on measures such as rainwater harvesting as a rediscovery of traditional approaches to water management that contrasts with the 'gigantism' of established technomanagerialist paradigms in water engineering.[19] This emphasis on smaller scale technological responses to water scarcity such as rainwater harvesting has quickly emerged as a point of intersection between social, ecological, and architectural discourses concerned with both water management and the need for local government reform.[20] For the first time in its history the city's engineers have been engaged in educational outreach programmes to encourage changes in household water use and the introduction of water-saving technologies. At the same time, however, the spread of more profligate uses of water by the city's middle classes, exemplified by the construction of exclusive leisure complexes, reflects changing patterns of consumption that serve to undermine efforts at water conservation.

Critical within this emerging political dynamic is the role of grassroots campaigns to extend citizenship rights to marginalized communities through the actions of non-governmental organizations (NGOs) such as the SPARC, the National Slum Dwellers Federation (NSDF), and the women's organization Mahila Milan[21] (McFarlane, 2004). Schemes to construct new toilet blocks in some of the city's poorest communities have involved a complex partnership between the municipal BMC, the World Bank, and SPARC presaged on what Appadurai (2002, page 36) terms 'countergovernmentality'. The deployment of repertoires of local knowledge has allowed some of the poorest communities in the city to become visible for the first time, not just as objects of strategic intervention on behalf of the state but as legitimate social and political entities in their own right. These new developments involve not only a vertical dispersal of power from the state to the grassroots level but also the horizontal development of networks between cities: the NSDF, for example, whose membership includes at least a quarter of a million households in Mumbai, is now active in over fifty Indian cities (Burra et al, 2003). Examples of new governance structures emerging in Mumbai include the setting up of Local Area Citizen's Committees in each of the city's wards with the support of the state and influential NGOs such as Action for Good Governance and Networking in India. Yet, the local urban environmental concerns encompassed by these new patterns of public participation remain only tangentially linked to strategic agendas evolving at a regional level. The floods of 2005, for example, not only reveal the full extent of the city's infrastructure crisis but also raise complex fiscal and political issues that cannot be handled on an ad hoc local basis. Equally, the expansion in local initiatives to improve access to sanitation must be set alongside the gathering impetus to eradicate informal settlements throughout the city. As a consequence, the expansion of community-based forms of governance remains vulnerable to the innate weakness of the state to effect urban change and the fragile intersection between different sources of power and authority within the city. An emerging emphasis on

[19] Interview with N Bhangar, 11 December 2002.

[20] Interview with A Gokhale, environmental consultant, Natural Solutions, 15 December 2006.

[21] Interview with S Patel, 4 December 2002.

'knowledge capital' involves a far greater fluidity in localized initiatives through the focus on experimentation and sharing of information, yet the role of the state remains highly ambiguous as evidenced by the recent attempts of political and economic elites to capture strategic policy agendas and stymie the perceived electoral threat of the poor. The growing emphasis on what Darshini Mahadevia (2003, page 374) terms the 'enterprise state' has involved a far greater focus on individualized or small-scale forms of public participation whilst broader strategic agendas elude public scrutiny. We can discern a conceptual tension emerging between a more upbeat and extensively improvised urban vision rooted in the generation of new forms of cultural capital (see Appadurai, 2002) and a more wary interpretation of the fragility and volatility of recent urban political mobilization (see Chatterjee, 2004). The contemporary politics of infrastructure provision in Indian cities is inseparable from the shifting legal, demographic, and territorial definition of the 'slum city' and its ambiguous relationship with discourses of modernity, progress, and the reconstruction of civil society (see Rao, 2006). New forms of political activism have been necessitated by the glaring disjuncture between formal rights—as set out in constitutional and legalistic frameworks—and the material realities of social injustice experienced by the urban poor (see Holston, 1999; Kaviraj, 1997). This tension between a universalist conception of citizenship, derived from the European experience, and the reality of extreme and multiple forms of social stratification has led some scholars such as Partha Chatterjee to make an explicit distinction between 'civil society' and 'political society' in an Indian context. The relationship between governance, democracy, and the public realm, for example, is scarcely addressed in the recent elision between neoliberal reform and the imposition of 'good governance' that has characterized much recent writing on the policy dilemmas facing the cities of the global South (see, for example, Corbridge et al, 2005). Whilst the emphasis on 'citizen engagement' in providing and managing basic services has had some impact in specific fields such as the provision of toilet blocks and other small-scale structures, the emphasis on a more radical diminution of the role of the state in some of the governance literature (see, for example, Oström, 1996; Reuben, 2002) holds far more complex implications for long-term investment in the public realm whether this be the maintenance of existing technological networks or the construction of major new infrastructure projects such as storm water sewers, sewage treatment plants, or the extension of trunk mains to outlying parts of the city. The extension of NGO activity into former areas of municipal responsibility should not be confused with greater public accountability since these organizations are themselves embedded in social power structures and cannot be removed by electoral means if they fail to fulfil grassroots expectations: state structures, however flawed, have a continuity that is not shared by NGOs, which can be dependent on the input and commitment of a relatively small number of highly motivated or powerful individuals whose absence can have deleterious or unpredictable consequences.

During the last decade there has been a growing emphasis on attempts to secure greater cost recovery for water services through the introduction of metering, revised tariff structures, and higher charges (which have risen sharply since the 1990s). Part of the pretext for these changes is the recognition that current charges amount to less than a quarter of the actual costs of water provision (see Ruet et al, 2002).[22] The city faces a major dilemma over the financing of its water infrastructure: there are now attempts to disentangle the city from its reliance on bilateral loans from the World Bank and other international lenders, but the linking of local capital markets to infrastructure investment

[22] Interview with M-H Zérah, 12 April 2003.

would require a range of complex institutional and regulatory reforms.[23] The scale of institutional change needed for municipal bonds, for example, contrasts with the higher rates of return (and punitive water charges) that would be demanded by a reliance on private equity.[24] Insufficient levels of investment in the existing system have been used as an ideological pretext to push for the divestment of the entire system to the private sector: a degraded public realm is thereby portrayed as evidence of state failure juxtaposed with sophisticated lobbying activities from international water companies.[25] Since the mid-1990s there have been external pressures from the World Bank, working alongside European water companies, to pursue privatization, but the city is resisting calls to sell off its water system.[26] The privatization of water services is being planned for the wealthy K-East ward, and the French company Castalia has been invited to carry out a feasibility study with the support of the World Bank (Kendra, 2006). Yet, leading municipal engineers raise concerns that the imposition of a simplistic privatization model ignores the complexities of ground-level realities and the immense spatial differences across the metropolitan region.[27] These worries have also been heightened by a spate of privatization failures across the global South that have in some cases led to violent protests and bitter recriminations[28] (see also Bakker, 2003; Chinai, 2002). The shifting political context is also illustrated by the recent abandonment of many planned schemes including a major project for Delhi funded by the World Bank. Many private sector water suppliers now recognize that there are few if any profits to be made in extending water services to urban slums and are actively seeking to reduce their exposure to financial risk.[29]

Zones and enclaves: delineating a globalizing metropolis

The absence of a fully functional water and sewer network in contemporary Mumbai can be attributed to a number of factors. The first issue is the extent to which the Indian state has been 'captured' by the middle classes so that its political agenda has been consistently diverted from the universal provision of basic services. The middle classes have long been the principal beneficiaries of the municipal water supply system and they exert little pressure on the state to extend services to the poor (see Chaplin, 1999; D'Souza, 1999). Where there are deficiencies in the municipal system, wealthier households also engage in a variety of 'opt out' strategies by investing in pumps, storage tanks, and purification devices so that any cohesive political response to governmental failure is countered by a myriad of individual responses. Despite the constitutional amendment of 1992 to widen political representation by women and scheduled castes, the political strength of the urban middle classes in India appears to be growing as part of a new discourse of 'environmental improvement'. Recent campaigns to clean up Indian cities have been framed through the appropriation of public spaces for the use of 'respectable citizens', with a growing intolerance for the

[23] Interview with R Bhatia, deputy municipal commissioner, Special Engineering, BMC, 9 April 2003.

[24] In 2003, for example, the Reserve Bank of India announced a number of significant changes to its risk assessment of large projects that may facilitate the use of bonds rather than bilateral loans for infrastructure finance (Times News Network, 2003). On the history of infrastructure investment in India see also Bagchi (1972) and Roy (2002).

[25] Interview with N Bhangar, 11 December 2002.

[26] Interview with S Patel, 4 December 2002.

[27] Interview with R Bhatia, 9 April 2003.

[28] Interview with S Dhar, water activitist, Vikas Adhyayan Kendra, 16 December 2006.

[29] Leading global water companies such as SAUR, Suez, and Veolia (formerly Vivendi) are now trying to disentangle themselves from complex and loss-making commitments.

proliferation of informal markets, makeshift structures, and the spatial and cultural practices of the urban poor (Chatterjee, 2003; Kaviraj, 1997). In tandem with this embourgeoisement of existing public spaces there has been a parallel political manoeuvre to capture "empty" or marginal spaces such as former industrial areas for speculative urban development. At an ideological level, this new middle-class self-confidence with regard to the city has been emboldened through the recovery of a cultural and architectural legacy within which significant parts of the urban experience have been effectively erased (see Hoskote, 2000; Yeoh, 2005). The reconstruction of urban space is occurring within a weak civil society where the practice of citizenship has been deeply coded by moralistic social distinctions rather than by any clearly articulated conception of human rights. We now find that burgeoning middle-class intolerance towards the poor as impostors within the city is being driven by public interest litigation that had once afforded a degree of protection to the most vulnerable sections of the urban poor such as pavement dwellers (see Hosbet, 2000).

A further dynamic behind persistent inequalities in access to water and sanitation in Indian cities is that apart from dramatic exceptions such as the Surat plague of 1994 or the resurgence of the deadly *falciparum* strain of malaria during the 1990s, the public health crisis facing slum dwellers does not directly endanger middle-class residents (Bunsha, 1998a; Chaterjee, 2002; Lal, 2001). Many cities face a paradoxical combination of increasing wealth and deteriorating public health through the disruptive effects of social and economic upheaval[30] (see Szreter, 1997). Severe disparities in public health can persist because of the array of technological, scientific, and architectural innovations that enable wealthy households to insulate themselves from the environmental conditions of the poor. The recent history of Mumbai has militated against the kind of progressive political movements that galvanized processes of sanitary reform in, for example, European cities during the second half of the 19th century and the early decades of the 20th century: though similar technical discourses of spatial rationalization existed, as we have seen, the concomitant political and institutional structures to implement these sanitary ideals have been largely absent. The persistence of inequalities in the distribution of basic services in Indian cities is integrally related to the long-standing weakness of working-class organizations within the urban political arena (see, for example, Chakrabarty, 1989; Chandavarkar, 1994; Hasan et al, 1999). The circulation of capital involved in the construction of water infrastructure networks reveals the intersection between the urbanization of nature and the exercise of social power (see Gandy, 2004; 2005; Swyngedouw, 2004). The middle-class monopoly of public service provision in Indian cities stems from the successful capture of the postcolonial state apparatus by the middle classes and their perpetuation of colonial dualities in urban governance. Yet, the weakness of the state, particularly beyond middle-class enclaves, necessitates an expanded definition of power to account for the daily practices through which resources such as land, water, and shelter rights are actually allocated. The urbanization of nature and the concomitant development of elaborate technological networks have involved an intersection between established sources of state authority such as the municipal corporation and a plethora of other actors. We can usefully elaborate the concept of 'social power' to encompass not just the historical and legislative lineage of state formation but also the coexistence of other sources of power lying beyond formal institutional structures associated with the state (see Gandy, 2006b; 2006c). The city has been simultaneously shaped by officially acknowledged forms of state intervention in combination with an expanding zone of local negotiations to produce a "shadow state" (Harriss-White, 2003, page 77)

[30] Interview with S Dhar, 16 December 2006.

where the boundaries between different loci of political authority and legitimacy become extensively blurred. Like other Indian cities, contemporary Mumbai is characterized by three primary and overlapping sources of authority encompassing the state, the community, and networks of powerful individuals capable of enacting a mix of "terror and generosity" (Hansen, 2005, page 171).

Economic restructuring in combination with the intensification of religious difference present a markedly different context for political mobilization in comparison with the more homogeneous urban proletariats of late-19th-century or early-20th-century Europe. The decline of Mumbai as an industrial city since the 1970s has been a critical factor in its political realignment of the last thirty years: the proportion of manufacturing employment in the city fell from 36% in 1980 to under 29% in 1990 whilst employment in the 'informal sector' grew from 55% to 66% over the same period (see Swaminathan, 2003). The Bombay Textile strike of 1981 – 82, for example, and the subsequent closure of fifty-eight mills contributed towards a weakening of working-class politics within the city and the disengagement of industrialization from nationalist aspirations. Deindustrialization and economic liberalization have fostered a vast growth in the informal economy and the spread of poverty and unemployment to previously relatively prosperous communities.[31] A combination of economic restructuring and political realignment has precipitated a breakdown in established patterns of urban public life with a diminution in the political and economic power of the Parsi, Muslim, and Jewish communities as the Hindu nationalist Shiv Sena movement shifted its ire from migrant labour towards the much larger Muslim population within the city. In the wake of the devastating anti-Muslim riots of 1992 the Shiv Sena steadily increased its political control of the city, transforming what Christopher de Bellaigue (2000, page 35) describes as "a liberal city called Bombay" into "an ugly, disturbing shrine city called Mumbai".[32] The 'rebranding' of the city as Mumbai in 1995—all traces of the former name were to be erased from official language—marks the symbolic capture of the city by this new political formation. Although the Shiv Sena, in alliance with the Hindu nationalist BJP, only gained political control of the Maharashtra state government between 1995 and 1999, it has continued to exert extensive influence through business deals and local networks.[33] The Shiv Sena and its allies have promoted a distinctive form of 'saffron capitalism' through their combination of nativist Marathi politics with a tactical alliance with corporate global giants in fields such as energy and telecommunications. Yet, the Shiv Sena's embrace of global capital can be contrasted with its failure to fulfil electoral promises to improve living conditions for the poor. The Shiv Sena came to power in 1995 on the back of grandiose promises to provide 'free housing' for four million slum dwellers, yet by 1999 fewer than eighty apartment blocks had been completed amidst confusion, recrimination, and political disarray. High-profile defections, bitter internecine feuding, and the erosion of support from women, the working poor, and other vulnerable groups have added to a sense of disorientation in Hindu nationalist politics (Bidwai, 2005; Das, 2003).

[31] See, for example Banerjee-Guha (2002), Breman (1996), D'Monte (2002), and Pendse (1995).

[32] On the devastating impact of the 1992 Bombay riots see, for example, Appadurai (1997), Datta (2003), Hansen (1999; 2001), Lele (1995), Masselos (1995), and Padgaonkar (1993).

[33] The decision of the Indian Supreme Court in March 2005, for example, to allow extensive parts of the former mill lands in Lower Parel to be sold off for private developers in a context of extensive slum clearances elsewhere in the city is suggestive of an increasingly market-driven emphasis in urban policy that transcends both the Shiv Sena administration of the mid-1990s and its Congress Party successors.

The susceptibility of the Indian state to capture by authoritarian political movements is illustrative of the intersection between wealth redistribution and 'electoral mobilization' in the context of a degraded or largely absent civil society (Chatterjee, 2003, page 174). It also underlies the degree to which teleological readings of the evolution of the modern city have failed to appreciate the fundamental fluidity and instability of the postcolonial urban arena. The secular alliances of the postindependence era have weakened to produce a more fragmentary urban political constellation, yet this instability in the cohesion of civil society stems in large part from the peculiar circumstances of state formation under Indian modernity. As Chatterjee and other scholars have shown there has been not only a persistence of historic injustices under even the more reformist Nehruvian conceptions of the postcolonial state but also a continuity in conceptions of the public realm as a 'colonized outside' to be spurned in preference to the apparent authenticity of the community or domestic arena. Though modern political practices emerged through a combination of colonialism, liberalism, and capitalism, there has been a consistent countercurrent of antipathy towards governmental forms of sovereignty reflected in the defence of social norms that are inscribed within fixed or cosmological belief systems whose provenance lies outside the modern state (see Bayly, 1999; Dirks, 2001; Kaviraj, 2003). The urbanization of nature, and of water in particular, is inscribed with these different modes of social differentiation and rival sources of political legitimacy: a fragile secular modernity must contend with powerful ideological conceptions of nature and culture as essentially fixed and nonnegotiable entities so that the power of nature within Indian modernity is deeply contradictory. The marketization of water, for example, does not just evoke opposition on grounds of social justice as articulated within a modern public sphere but also threatens traditional understandings of use, entitlement, and social organization.

Mumbai's municipal government has been undergoing a protracted process of 'hollowing out' through the dispersal of responsibilities towards new institutional structures. Existing structures of urban administration have come under sustained pressure since the 1980s through the growing strength of Maharashtra state and the creation of a new agency called the Mumbai Metropolitan Region Development Authority (MMRDA) in 1975 to coordinate the planning of large infrastructure projects as an institutional precondition from the World Bank for expanding bilateral sources of finance. A hiatus has opened up between a corporate agenda led by a strengthened MMRDA and various forms of 'grassroots globalization' with links to international campaigns around sanitation, shelter rights, and other issues. The MMRDA, which is independent of municipal jurisdiction, has been given a range of strategic planning powers for roads, bridges, and also slum clearance. This new planning agency represents the imposition of a different kind of governmental paradigm that conforms to the technocratic demands of the World Bank and signifies a weakening of municipal authority in relation to the planning and financial management of large-scale infrastructure projects for the city. The complexity of institutional structures involved in providing water and sanitation infrastructure ranging from the scale of individual homes or informal settlements to the coordination of large-scale investment programmes raises different sets of issues in comparison with other urban technological networks such as power, transport, or telecommunications (see Zérah, 2005). For the urban poor, however, state failure encompasses not just processes of deliberate exclusion from basic services but also a continual uncertainty over the use of violence to bring 'invisible spaces' into the capitalist land market. In Anand Patwardhan's award-winning documentary *Bombay: Our City* (1985),[34] for example,

[34] For further details see http://www.patwardhan.com/films/bombayourcity.htm.

the terrified inhabitants of a slum try to prevent the feared 'municipality' from entering their settlement and destroying their homes. Tellingly, the clearance itself is undertaken by men employed from another slum area of the city at the behest of the municipal authorities. The ambiguous relationship between slum dwellers and the state is a key dimension to the urban infrastructure crisis because it illuminates the limited extent to which citizenship rights have been extended to participants within the urban labour market.

Over the last thirty years we can identify three distinct phases in political discourse surrounding the provision of basic infrastructure for the poor. First, there was an intensified or exaggerated form of 'authoritarian governmentality' in the wake of Indira Gandhi's declared 'state of emergency' from 1975 to 1977, which resulted in the brutal removal of many settlements in combination with programmes of forcible sterilization. The political repression of this time involved an extensive assault on the power of trade unions and working-class political movements: a development which would yet have repercussions for the emergence of authoritarian populism in the 1990s. Second, there has been a liberal interregnum since the mid-1980s with greater emphasis on the ad hoc upgrading of basic services, tenure rights, and the extension of the political franchise but with a highly uneven impact on urban morphology and social inclusion. This uncoordinated, incremental, and 'paralegal' extension of basic services operated within a structural tension between the illegitimacy of slum dwellers and their organizational threat to property rights and the need to accommodate cheap labour within the metropolitan economy. The Mumbai slums have emerged as a microsphere of negotiation between state agencies and "discrete elements of the heterogeneous social" (Chatterjee, 2003, page 177), which culminated in an agreement in 2000 to provide greater security of tenure and additional municipal standpipes for settlements that have been in existence before 1995.[35] And, third, there has been a more recent reversion to a renewed mode of authoritarian governmentality driven by the recapitalization of the Mumbai land market. This latest phase forms part of a wider strategy to integrate the city more effectively within the global economy and marks a movement away from nationally orientated governmental paradigms whether linked to the elimination or upgrading of informal settlements. In recent years there have been intensified attempts to eradicate slum settlements in lucrative locations through the denial of basic services and various forms of harassment (Bunsha, 1998b). Since 2004 a more violent politics of 'spatial elimination' has reemerged in order to reclaim much larger areas of commercially valuable land such as the vast Dharavi settlement south of Mahim Creek (figure 1). In the wake of the McKinsey/Bombay First report *Vision Mumbai* (2003)—which sets out a strategy to boost Mumbai's credentials as a global city—there has been a wave of slum demolitions leaving at least 350 000 people homeless (Bunsha, 2005b; Ramesh, 2005). This report, commissioned by the powerful corporate coalition Bombay First, sets out a neo-Haussmannite agenda of 'urban boosterism' to forcibly transform Mumbai into a 'world class city' on a par with Shanghai and other newly emerging South Asian citadels of economic prosperity.[36]

[35] Legislative initiatives such as the Urban Land Ceiling Act, which seek to bring idle land into the public domain and ensure the construction of low-income housing, have never been effectively implemented (Bunsha, 2005a).

[36] In the field of water and sanitation this neoliberal emphasis was exemplified by the Indo-Dutch corporate event entitled Water for the Future, held at the Taj Mahal Hotel in November 2002. The promotional film used to inaugurate the occasion was festooned with the slogan "Globalization, trade liberalization and economic restructuring will benefit everyone, including the poor."

Conclusions

Mumbai's elites have long desired to transform the city into something else: the current preoccupation with Shanghai can be likened to the earlier aspirations of Rajiv Gandhi to reclaim the metropolis under the guise of 'urban beautification' or Sharad Pawar's plan to create a 'new Singapore'. It is revealing that one of the most substantial improvements to the city's physical infrastructure in recent years has been the construction of a new elevated highway providing speedier connections between the international airport and the rest of the city. The attempted 'Shanghai-ization' of the city through the subservience of urban political discourse to a globalized set of economic interests may improve the connectivity of 'premium spaces', but the majority of the population may find themselves marginalized just as 19th-century engineers increasingly ignored the 'inferior' communities living beyond European enclaves. Contemporary Mumbai lies caught between the Nehruvian technocratic vision of the immediate postindependence era and a newly emerging urban discourse rooted in the spread of wireless technologies and the increasing political and economic power of the urban middle classes. Indeed, the very idea of the modern city has for much of the postcolonial era played an ambiguous role within Indian conceptions of national identity with its deep ideological attachment to rural life (see Khilnani, 1997; Prakash, 2002). The desire to emulate aspects of Chinese urbanization by the city's most powerful political and economic strata marks the adoption of a new 'urban imaginary' or global archetype within which certain Indian cities—notably Bangalore, Hyderabad, and Mumbai—appear to be playing a leading role.[37]

Although generations of architects, planners, and engineers sought to transform colonial Bombay into a modern metropolis—a modernist impulse exemplified by the abundance of Art Deco buildings clustered along Marine Drive and other prestigious locations—the gritty reality was always better represented in the overcrowded chawls, tenements, and makeshift dwellings that increasingly characterized the majority experience of the city. Foreign-trained engineers marvelled at the sanitary revolution that had been achieved in the cities of Europe, but the fiscal and political realities of the colonial and postcolonial city consistently militated against a comprehensive modernization of the metropolis. The episodic nature of the hydrological cycle in India—epitomized by the monsoon—also thwarted the imposition of an engineering model derived from the European experience in which a universalist impulse occluded any close engagement with the cultural, political, and also biophysical complexities of other urban contexts.[38] The Western model of the 'bacteriological city', with its universal water and sewerage systems, rests on the assumption that urban space is both relatively homogeneous and spatially coherent, which is at odds with the extreme forms of social polarization and spatial fragmentation experienced in the cities of the global South.

In the immediate postindependence era, we find a new kind of technomanagerialist modernity in which the scale and complexity of water engineering became emblematic of a national self-confidence associated with a distinctive form of authoritarian governmentality. In the 1950s, for example, engineers and planners suggested using roadblocks to prevent further rural–urban migration, and the bifurcated strategies of colonial governance were reworked to produce a new geography of citizens and noncitizens. This governmental duality has persisted in subsequent decades so that

[37] Whether such a strategy may prove successful is by no means certain as evidenced by the relatively sluggish economic performance of Mumbai since the late 1990s in comparison with many other Indian cities: extreme congestion, high land prices, poor infrastructure, and Byzantine regulatory and tax regimes have all combined to thwart any simplistic transition towards a more dynamic or efficient urban form.

[38] Interview with R Srivastava, codirector of PUKAR, Mumbai, 12 April 2003.

division, inequality, and injustice have become defining features of the postcolonial city: the cosmopolitan elites who ruled postindependence Bombay were merely supplanted by an unstable postsecular *hindutva*-dominated political constellation. The current neo-Haussmannite impetus towards the physical reconstruction of Mumbai and other Indian cities marks only the latest phase in the struggle to capture governmental institutions and alter the dynamics of capitalist urbanization.

Alternative hydrological visions to dominant technomanagerialist or neoliberal paradigms have struggled to free themselves from either an idealized rurality or various forms of 'ecological thrift' rooted in a reworking of precolonial forms of water management. The Indian environmental movement has tended to draw its ideological sustenance from ecological or cultural metaphors rather than engaging with issues of social justice within the urban arena. A rural bias within much Indian environmental thought has served to obscure latent tensions between the urban poor and new forms of what Amita Baviskar terms "bourgeois environmentalism". An emerging middle-class militancy towards aesthetic and quality-of-life issues threatens to disrupt politically inclusive responses to the urban infrastructure crisis and perpetuate many of the inequalities associated with the colonial city.

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