Imperial Water, Urban Crisis

A Political Ecology of Colonial State Formation in Bombay, 1850–90

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Urbanization on a global scale has accompanied acute environmental struggles and crises as well as changing regimes of ecological governance. One of the most critical issues facing many cities of the Global South is the urban poor's lack of access to clean, sufficient, and affordable water supplies and sanitation infrastructure. In cities like Mumbai (formerly known as Bombay), many low-income residents living in informal "slum" settlements face a daily struggle of waiting in long lines, at inconvenient hours for water from public and/or illegally tapped resources. Others who are excluded from municipal supplies are forced to purchase expensive water from private tankers. Narratives of crisis, resource scarcity, government inefficiency, and population pressure have captivated international discourses on urban water, resulting in polarized (and often misguided) debates about water rights and the benefits and dangers of water privatization. Missing from mainstream discussions is an understanding of how social struggles over volatile political economic processes shape urban governance and metabolism (Bakker 2013; Swyngedouw 2004). If, as Jason Moore has argued, capitalism's recurrent waves of expansion and crisis can be understood as environmental history (2011), then the water ecology of cities today is deeply imbricated with sedimented and contested social processes of global accumulation and dispossession. This article offers a long, historical, ecological perspective on recent struggles over urban water and sanitation in the Global South by focusing on the mutually constitutive processes of colonial rule, political economy, cultural politics, and hydro-ecology in nineteenth century Mumbai. Water woes of postcolonial Mumbai can be traced back to key moments of political ecological crisis and transformation occurring between 1850 and 1890. During this

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critical period, Bombay witnessed the establishment of both a modern water supply system and a local state apparatus. The local state played a vital role not only in securing the flow of goods and resources in a key colonial port-city, but also in addressing the ecological crises and social conflicts engendered through the extractive British-led world-economy.

Bombay's water story provides a unique lens on British-led capitalism in the nineteenth century by focusing on its political and ecological underpinnings in one of the empire's key port-cities. The nineteenth century (particularly its latter half) was a formative period for urban growth and governance elsewhere in India and around the world. Bombay was founded upon the commercial imperatives of the British East India Company, which required political autonomy, labor, port and transport facilities, and other urban amenities on the western shore of India. Encouraging the settlement of Indian merchants who could tap into the trade networks was central to securing and expanding British trade profits. As the city grew, the colonial administration demanded that the city generate its own revenues to support its reproductive needs. This requirement was met through the establishment of capitalist property relations in the city, which provided a mechanism for taxation. Bombay's merchant families had relatively little involvement in agricultural production. In this way, they differed markedly from Indian elites in other capital cities such as those in Calcutta, for example, who were rural *zaminadars*—landlords of a feudal state. Because Bombay's native elites were more entrenched in trade, urban property development, and textiles industries and thus represented an important source of municipal revenues, they had a much greater influence in the local municipal state apparatus.

Water supply and sanitation provision efforts were greatly influenced by this relationship between Indian trading families and British administrators, and in turn urban hydro-ecology was key to the formation of the local state in Bombay, and reflected the contours and contradictions of the colonial political economy. British engineers and officials embarked on water and sanitation projects to avert urban ecological crises in the face of drought, population growth, and uneven development thereby supporting the social reproductive needs of a critical colonial port-city. However imperial economic and ecological requirements were not secured automatically; as the ine-

qualities and exploitations of colonial extraction and techno-scientific rule emerged, native subjects contested and negotiated projects. Expensive, debt-financed water infrastructure and sanitary projects advanced by the British technocratic regime were subject to vigorous debates on state intervention, reform, and representation. Such urban political ecological struggles elucidate both the power and fragility of colonial rule. By studying the politics of urban water supply and sanitation, I challenge the idea that colonial domination was a top-down project of economic, military, and cultural conquest.

This article charts the long transition in Mumbai's political ecology from 1850 to 1890, examining the uneven and negotiated practices of infrastructure development, debt, taxation, and municipal reform through which colonial rule was painstakingly consolidated in the city. During this time, uneven development, water supply, and sanitation were deeply imbricated in contentious local colonial state formation processes that ultimately consolidated the tenuous hegemony of British-led world economy in Mumbai. This article begins with a discussion of the early political economy of colonial Bombay, patterns of uneven development in the port-city, ethno-class formation processes among native populations, and the power of elite Indian property-owning merchant families. It elucidates how drought and extractive uneven development led to an urban water crisis in 1855, which launched a new sanitary movement among the rulers of the city. The next section explores the colonial administration's response to crisis in the city, focusing on efforts to implement the city's first centralized water supply system, the Vihar works, between the mid-1850s and the mid-1860s. During this period, Bombay witnessed the emergence of a new British techno-scientific elite whose racially inflected understanding of sanitation problems legitimized colonial hierarchies and inaugurated a legacy of pursuing limited technical and infrastructural solutions for crises rooted in social and political inequality. The article then returns to a discussion of how boom and bust cycles in the cotton economy instigated new urban crises, prompting the establishment of a centralized municipal governing body. The remaining sections of the article examine the formation of the hegemonic state apparatus through struggles over three Municipal Acts from 1865 to 1888. State formation processes congealed struggles among class factions over water and sanitation, taxation, and representation and entrenched unequal urban water supply and

governance practices that continue to be salient in the slums and sky-scrapers of twenty-first-century Mumbai. Before delving into this history, a brief foray into my theoretical approach will illuminate how urban water politics becomes central to the formation of a hegemonic local state apparatus with long lasting legacies.

THEORIZING URBAN ECOLOGICAL CRISIS, COLONIAL HEGEMONY, AND STATE FORMATION

Municipal state formation hinged on two mutually constitutive aspects of nineteenth-century colonialism: 1) socio-spatial processes of accumulation through extractive agricultural commodity trade, and 2) interventions to address the political and ecological contradictions and crises resulting from this political economy. Investigating the politics of urban water supply offers a useful lens into this dialectic by illuminating not just the functions and outcomes of state power, but also the thorny processes of sustaining hegemonic rule under conditions of crisis and contestation. I suggest the framework of an "imperial urban water complex" to analyze the conjuncture of symbolic and material processes linking colonial rule with the political ecology of water politics. A heuristic device rather than an ideal type, this metaphor of the complex enables analytical connections between seemingly disparate arenas of political life that were crucial to the shift from ecological crisis to hegemonic rule (and vice versa). This framework allows for an understanding of the state not simply as an institutional infrastructure with the function of sustaining colonial political economy, but also as a set of meanings and practices that combine consent and force in order to forge a hegemonic order.

Four interrelated facets comprise Bombay's imperial urban water complex. The first facet consists of fragmented formation of class relations linked to a British-dominated extractive, colonial, political economy, kinship based trade networks, and concentrated urban land ownership. Racial and ethno-caste differentiation among class groups was a critical factor in how struggles over water provision and finance influenced municipal reform and state formation. The second facet is the unequal socio-spatial organization of the city's built environment and water supply distribution system, which materially and symbolically reflected class and race relations. The third facet refers to the emergence and deployment of scientific and techno-

rational discourses and practices in the development of Bombay's water supply system. The provision of water to the city came under the control of British engineers and health professionals who were deeply influenced by their contemporaries in the European sanitary movement. These experts framed the resolution of water problems in terms of resource scarcity (rather than distribution), and racialized discourses that opposed inferior "Oriental" superstition and pollution to superior western sanitary science and fiscal management. Water supply projects offered technical solutions to these perceived problems without addressing underlying socio-spatial inequalities. The fourth facet of the imperial urban water complex is the arena of formal governmental institutions and public legislation. Innovations and transformations in local state practice in Bombay became formalized through legislation that affected how water was harnessed, paid for, and distributed. Water works were among the most expensive projects to be undertaken, and the central colonial government insisted that they be financed by tax revenues. This mandate required new laws and an institutional structure for enforcement purposes, which entailed a number of municipal reform battles sparked by conflicts over water and sanitation finance. I demonstrate how the socially negotiated evolution of the Municipal Corporation engendered a governmental structure dominated by landowner and colonial interests, which were, in turn, central to the perpetuation of an uneven distribution of water and other amenities. Analytically bringing together these four facets, the imperial urban water complex sheds a revealing light on how the social and ecological contradictions of the British Empire were experienced, challenged, and uneasily resolved through new institutions and practices of rule.

Although a thorough literary review of urban water and state practice is outside of the scope of this article, I will briefly highlight three key works that have been useful for framing the politics of water supply in colonial Mumbai. One is a study of the transformation of urban nature in New York City by Matthew Gandy (2002), who traces the history of water supply as a crucial facet of capitalist urbanization. The formation of a centralized water supply system in New York City was part of a convergence between the modernizing ideologies of engineers and the political-economic logic of investing in infrastructure and reorganizing urban space for capital accumulation. Gandy's account reveals the power of the state in harnessing a resource so central to the survival and capitalist expansion of the city. His analysis of

modernist ideology, public health discourses, expert engineering capacity, and finance opportunities parallels similar political economic and colonial techno-rule in Bombay. Erik Swyngedouw provides another empirically and theoretically rich account that connects processes of capitalist urbanization with the domestication and commodification of water in the Third World context of Guayaquil, Ecuador (2004). Bombay and Guayaquil have parallel political ecologies in several ways. Swyngedouw's account locates water and sanitation development in the context of cacao development, while in Bombay the cotton political economy was a key influence. Also similar to Bombay is the way that leaders developed water supply and sanitation to support accumulation processes, while denying adequate access to the city's poor. While both of these studies usefully reveal the mutual constitution of ecology, economy, and rule, each tends to treat 'the state' in functionalist terms, as a facilitator of accumulation and an apparatus for weathering crisis. The socio-cultural formations and contestations that fundamentally constitute uneven political ecologies of development remain obscured. If we take seriously Polanyi's assertion that the road to the market society is paved by variegated state interventions, then water development is not simply a natural outcome of capital accumulation but one forged through meaningful, significant, and often unexpected political processes. The Bombay case demonstrates that while the political economy of cotton was, indeed, a central aspect of the city's water history, the development of a centralized water supply system engendered contradictions on many different levels. Attaining state hegemony required a restive resolution of these contradictions.

Patrick Joyce takes a different, Foucauldian approach to urban water politics, by conceiving of state water management practices as a form of governmental logic that he terms the "rule of freedom" (2003). Focusing on nineteenth-century British cities, Joyce explains that municipal governments ironically took on greater power in the everyday lives of people through their role in the promotion of the ideal of freedom. As liberal state techniques of rule came to be based on a discursive "naturalization" of the city as an organic body, the promotion of the free circulation of water was an important site of governmental intervention. Joyce compellingly recounts the specific power-laden techniques and discourse through which water came to be managed by health professionals and engineers as "the doctors" of the city who saw parallels in curing the ills of the body and the city.

There is very little in Joyce's narrative, however, by way of the social relations embodied in the local state. Important aspects of political economy and how they function through the state practices he investigates are also underplayed. Here, state practice in the management of water becomes relegated to a typology of rule instead of a dynamic, historically negotiated, and contested social process. Joyce's formulation thus lacks an adequate theory of resistance, negotiation, and historical change for explaining the dynamics of Bombay's water history.

An important contribution made by my study, is to highlight these frequently ignored aspects of local state formation operating through the contradictory, contested, and negotiated state practices of water supply. This approach does not make an environmentally deterministic argument of state rule arising from the need to manage and harness water under the conditions of scarcity. Rather, I have attempted to focus on water as social process, underpinned by complex, changing, and unequal relationships among groups—relationships that influenced and were shaped by political economic structures and environmental constraints. This analysis follows from a working definition of the state as the site of ethno-racial and class struggles over hegemony, one that incorporates but moves beyond formal institutions to illuminate the role of cultural meaning in shaping political ecological processes. The following sections demonstrate how Bombay's imperial urban water complex influenced colonial state formation in the nineteenth century.

PRODUCING CRISIS: UNEVEN DEVELOPMENT AND ETHNO-RACIAL-CLASS FORMATION UNTIL 1855

The long period of growth and expansion over the first half of the nineteenth-century was punctuated by an urban crisis in the 1850s, the resolution of which would mark the beginnings of an important era of transformation in Bombay's history. The first half of the 1850s was characterized by an expansion of the cotton trade, which supplied Britain with raw materials necessary for its industrial revolution and enriched both the colonial and native elite based in the city. By 1855, the population of Bombay had reached 690,000 (from 254,000 in 1833), the increase consisting largely of workers, traders, and others seeking opportunities in the city's expanding international trade, support services, petty commerce, and public

works projects (Conybeare 1855b). During this time of rapid urban growth, the drought of 1854–57 caused severe water shortages that seriously threatened Bombay's viability as an imperial commercial capital. Though lack of clean and sufficient water supplies strained the entire city, the city's working classes—mostly dock workers, service workers, and small-scale vendors who lived in crowded, underserved, and shoddy housing—suffered the most from water-related disease and distress. The following socio-spatial history of Bombay's development will situate these crises with the interventions that shaped urban space and structured governance for over a century.

SEVENTEENTH AND EARLY-EIGHTEENTH CENTURY
POLITICAL ECONOMY AND URBAN SPATIAL SEGREGATION

Bombay's transformation from a small trading post to a significant colonial port-city began when the British East India Company (EIC) took control by Royal Charter in 1667, and shifted its trading center to the island from the Gujarati western city of Surat. The move to Bombay City enabled the Company to create a more profitable new trading center with limited competition from other European merchants and Mughal customs duties and control (Kosambi 1986). During the late seventeenth century, Governor Aungier began providing incentives for Indian traders to settle in Bombay and serve as intermediary merchants, bankers, and brokers. Concerted efforts to promote the settlement of merchants arose in part from the desire to entrench trade relations in Bombay by forging new connections to various parts of the hinterland. For example, Subramanian has shown how the Gujarati Banias (merchant castes) were central to the imperial military conquest of Western India because they liquidated timely loans during Company battles with the regional princely province ruled by the Marathas (1995). This "Anglo-Bania" alliance was crucial in helping to establish a stable trading climate in Bombay for the trade of cotton, opium, and other goods with China, enriching the British agency houses and Indian traders alike.

These hierarchical social relations that facilitated colonial world economic interests also strongly influenced Bombay's socio-spatial organization. As merchants, workers, and Company officials began to settle in separate enclaves throughout the island, Bombay began to demonstrate a sharp residential segregation between colonizer and

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colonized populations, with Europeans residing in the southern "Fort" area of the island and in suburbs separate from the "native town." There was also a significant migration of laborers, mostly from the Marathi speaking rural areas, who had come to work in various temporary occupations in the docks. As trade activities expanded, the Company needed educated clerks, accountants, and interpreters; these positions were filled in large part by Marathi-speaking Brahman castes who settled in still separate sections of the city. During the latter part of the eighteenth century, socio-spatial segregation was reproduced within the Fort area (Kosambi 1986). As the Indian population grew in the early nineteenth century, newcomers began to settle just outside of the Fort area. Fort became more thoroughly Europeanized after a fire destroyed many Indian residences. Most of the affected populations were relocated to the northern parts of the island, while the damaged Fort areas were rebuilt for European administrative, residential, and recreational purposes (Dossal 1991).

In his discussion of the spatial organization of colonial cities, Anthony King has argued that segregation between Native and European quarters was key to the representation and maintenance of imperial power. Bombay was no exception. The segregation of the "White" areas of Bombay from the "Black" or "Native" quarters symbolized and inscribed colonial hierarchies in urban space. European areas stood in stark contrast to the majority of native neighborhoods, which were denser and had access to fewer resources and facilities. The planning exercises of the British depended on representations of space as distinctly "White" or "Black" to impose order. Furthermore as Cohn (1996) and others have argued, colonial efforts at fixing, codifying, and categorizing social groups within the Indian population bolstered imperial claims of the necessity of providing a liberal-minded rule, ostensibly to prevent social tyranny and strife among the country's many conflicting social interests. As the contradictions of socio-spatial inequalities became evident through the emergence of disease and distress in the Native town, the uneven construction and spatial distribution of sanitary works (drainage, trash collection, and water supply) deepened socio-spatial inequalities. Ideals of rational and scientific progress served as a key political mechanism for extending colonial control while simultaneously de-politicizing those interventions. Ethno-caste-class relations among the Indian populations also significantly shaped spatial practices of urban development, ecology, and rule.

INDIAN ETHNO-CASTE-CLASS FORMATIONS IN THE EIGHTEENTH AND NINETEENTH CENTURY

From the late eighteenth through the early nineteenth century, European trading houses and Gujarati-speaking Indian elites based in Bombay and its hinterland—including *Parsis* (Zoroastrians), *Banias* (merchant caste Hindus and Jains), and *Bohras* (Muslims)— began to accumulate wealth and spearhead changes in urban social fabric and built environment. As agents, provisioners of supplies, and shipbuilders, the *Parsi shetias* (merchant princes) worked especially closely in the highly lucrative China trade in cotton and opium with the British East India Company and other European agencies. Farooqui has argued that this trade with China played a crucial role in Bombay's development, ultimately leading to the Parsi community's later dominance in real estate and textiles (1996). The Bombay Government regularly consulted *Parsi* families such as the Jijibhais, Wadias, Banajis, and Readymoneys in its major endeavors, despite the fact that they had very little official role in government (Dobbin 1972). Jain and Hindu *Banias,* and *Bohra* and *Khoja* Muslims who had been actively engaged in providing hinterland brokerage and credit services to the Company in the eighteenth century, continued to do so in Bombay while also amassing wealth through wholesale in-country cotton and textiles trade (Kosambi 1986). These communities conducted their commercial activities through caste networks and hierarchies such as *panchayats* (caste governing bodies), and *mahajans* (commercial guilds) (Dobbin 1972). These groups were also given ownership of vast tracts of property in the native sections of Bombay. Thus the period of the eighteenth and nineteenth centuries saw not only the growth and enrichment of a class of European and Indian merchant capitalists, but also a native landlord class in the city. These ethno-caste inflected property relations would lead to complexities in relation to urban development and colonial class struggles in the city.

The largest majority of inhabitants were *Marathi* casual laborers attracted to the city for employment in the docks and construction projects. These workers came mostly from the rural hinterland and suffered periods of indebtedness due to multiple pressures, including having to pay colonial land revenues, crop failures caused by periodic droughts, and the vulnerabilities of entering into the "cash nexus" of producing commodity crops and purchasing food (Davis 2001). Their numbers increased as trade and building in the city

flourished into the mid-nineteenth century. The city's population also included petty merchants from a variety of caste, religious, and linguistic communities, in addition to less wealthy *Gujarati* and *Konkani* coastal immigrants. Minority groups included "untouchable" *halalkhore* castes of waste workers (known as *dalits* today), *Konkani* Jews, and Muslims from Western India (Dobbin 1972). The early to mid-nineteenth century also saw the emergence of an intellectual class of mostly Marathi Hindu Brahmins, and (to a lesser extent) middle class Parsis who rose in status through British education. These groups began to take advantage of educational opportunities provided by the British to earn a living in low-ranking civil service jobs. However, these jobs were considerably underpaid compared to the profits to be made engaging in commerce. Thus, despite the government's intention that education would be the preserve of the "wealthier classes," the "upper classes" and the "educated classes" ended up being different entities (Dobbin 1970). The bitterness engendered among the intelligentsia—due to the low level of professional mobility and remuneration despite their superior education and the dominance of landlord interests in municipal affairs—prompted vigorous efforts to promote liberal municipal reform in the mid-1800s. Each of these class formations shaped urban politics in relation to the circulation of capital in trade, banking, commerce, and urban real estate yielding new environments, crises, and modalities of rule.

URBAN DEVELOPMENT, WATER, AND CRISIS IN THE MID-NINETEENTH CENTURY

In his treatise on the "urban process under capitalism," David Harvey links capital accumulation with long waves of investment and transformation in the built environment that cause and respond to the political and economic crises of capitalism (2002: 117). Similarly, colonial trade and resource extraction led to significant changes in Bombay's built environment. To maximize profits from the cotton trade in Bombay, merchant capital required investment in railways, docks, roads, land reclamations, and port and administrative infrastructure, as well as water, drainage, and housing construction. The British-controlled Bombay Presidency and joint stock companies spearheaded these developments. In 1853, the first of the railway projects linked the center of Bombay City to the hinterland at Thana, 20

miles away. Railways were accompanied by extensive road construction projects that linked road networks constructed by the princely state of the Marathas to the new commercial and administrative center in Bombay (Kosambi 1986). Simultaneously, the colonial government began to invest more extensively in administrative buildings in the southern Fort area of town. These construction and trade activities required significant amounts of labor and encouraged a large influx of dock workers and construction workers, resulting in severe pressure on the city's housing stock and resources. *Ryots* (smallholder farmers) from the rural hinterland migrated to the city for supplemental income to support insecure and debt-ridden agricultural households. Increasing demands for housing resulted in an explosion in real estate values. Housing profit motives prompted Indian *shetia* elites of the city to accelerate housing construction in an often dangerously haphazard manner with little regard for the health and well-being of inhabitants. In the 1840s and 1850s, the living conditions of the poor in Bombay had begun to show clear signs of deterioration. High residential density, low wages, and inadequate services and resources caused severe difficulties for many residents. When compared to residential densities in London in 1841—during the height of the industrial revolution—Bombay's density is striking; London's density was 115 square yards per person, whereas the average in the Indian sections of Bombay was 9.5 square yards per person or 1/13 of the British average (Conybeare 1855a). Another survey in 1849 revealed an average of 43 people per house in many areas of the Native town (Dossal 1991).

Contamination and shortage of water supplies for many of the working classes exacerbated the effects of haphazard housing development, and established water supply systems became insufficient. Prior to the 1850s, Bombay's water supply had been decentralized and consisted mostly of public and private tanks and wells. Wealthy merchants would open their private tanks and wells for public use during times of shortage. The most prominent of the commercial elite, the unofficial leader of the Parsi community, Sir Jamshedji Jijibhai, also often engaged in philanthropic construction of public tanks (Dwivedi and Mehrotra 2001). But as population in many parts of the Indian town grew and commercial and municipal water use increased, so did the pressures on neighborhood water supplies. Shortages during dry spells often translated into crisis. Throughout the 1840s and especially the mid-1850s, repeated bouts of drought

and scarcity caused severe distress in Indian residential quarters. In June 1854, all but 37 of the city's 136 public wells were dry, and among them only eight contained clean water. Insufficient water also threatened important business districts facing fire risk. The Bombay Government began to fear that the insecure supply of water in the city would cause trade ships to seek other ports (Edwardes 1909).

Accordingly, water supply management emerged as a key arena of political ecological intervention. At the height of the 1854 "water-famine," the city spent significant amounts of money transporting water from the mainland by rail and boat (Edwardes 1909). The government also created a temporary Water Committee that moved entire populations (a highly contested process) outside of the city core and took extensive control over private wells and water usage more broadly. Conflicts between Indian regiments were especially worrisome to the administration, so they were moved to Salsette Island, along with milkmen, washers, and dyers. Construction projects were also halted for periods of time (Dossal 1991). By the early 1850s, the Bombay government concluded that these measures were insufficient and began to consider options for a large-scale, centralized water supply system.

As the structurally rooted urban crisis of mid-nineteenth-century Bombay led to a desire for expansion and increasing control over the water supply, water became the focus of enormous public interest and debate. This is because interventions in the city's water supply system were necessary not only for direct colonial profits, but also for the social reproduction of the city, particularly its more vulnerable classes. This dual purpose complicated the politics of water supply and infrastructure investment and development. While the justification of colonial rule by the British Raj was grounded in the liberal ideal of bringing order and progress to India, the socio-ecological crisis unfolding in Bombay blatantly contradicted this discourse. Urban crises, in turn, exposed the Raj to myriad political vulnerabilities requiring constant renegotiation, as acute difficulties of maintaining colonial hegemony emerged due to extractive political economy and illiberal rule. Such contradictions reached a pinnacle during the 1850 drought crisis when the administration began to more actively engage in water supply management and infrastructure development. The politics of water and sanitation in Bombay thus provides a useful lens into the contested material and symbolic practices at the core of capital accumulation and urbanization. Colonial scientific

professionals, who came to dominate emerging practices and discourses of urban planning and public works, began to focus their efforts on resolving Bombay's urban crisis through technical solution of addressing pure-water scarcity. Examining sanitary and infrastructural interventions in the city's built environment during the 1850s reveals how water supply intervention emerged as a specific kind of political fix to colonial urban crises, one that instilled deeper material and symbolic contradictions.

SANITARY BOMBAY: THE ANTI-POLITICS OF COLONIAL
SCIENCE AND WATER INFRASTRUCTURE

> In every district in which fever returns frequently, and prevails extensively, there is uniformly bad sewage, a bad supply of water, a consequent accumulation of filth . . . if you trace down the fever districts on a map, and then compare that map with the map of the Commissioner of Sewers, you will find that wherever the Commissioners of Sewers have been, there fever is comparatively absent (Thomas Southwood Smith, cited by Conybeare 1855a: 10).

Bombay witnessed the emergence of a new set of local state practices and discourses as city leaders set out to resolve the mid-nineteenth-century urban crisis. A group of British-trained civil engineers and doctors took on the role of planning and managing human and environmental stresses. This section addresses the contours and political implications of techno-rational problem framings and interventions of the sanitary movement. Preventing death and disease and promoting progress came to be seen as a matter for expert science, and these professionals linked modern water supply, sanitation, and the scientific management of the city to progress, health, and colonial moral duty. Their depoliticized scientific approach belied major controversies that would soon emerge over the administration's new water projects. They not only furthered the development of technologies, practices, and infrastructure, but also became deeply involved in the discursive production of new colonial subjects. As in the contemporary British cities, Bombay's new technical elite concentrated on the lack of sanitation as the underlying cause of disease rather than conditions of work, poverty, diet, or other social and economic

factors affecting the poor and working classes (Joyce 2003). This was because Bombay's planning, sanitation, and health professionals were greatly influenced by their contemporaries in Britain, including Edwin Chadwick, the famed leader of the public health movement, and Thomas Southwood Smith, an influential advocate for sanitary reform. Like their counterparts in Europe, they believed that social ills could be managed through improvements in the physical environment (Melosi 2000), and that Indian cities could only progress through the importation of European, scientific city planning and public works. Henry Conybeare and Arthur Crawford, two of the most important engineers in Bombay at the time, planned and implemented large-scale water, drainage, and sewage projects that transformed life in the city. The leading public health official, Dr. Andrew H. Leith, collected large amounts of mortuary data in an influential publication, *Deaths in Bombay*. In *The Sanitary State of the Island of Bombay*, Leith wrote extensively on the causes of death and disease in Bombay and advocated a number of public health and infrastructure development measures. These publications complemented Conybeare's *Report on the Sanitary State and Sanitary Requirements of Bombay*, which expounded on the need to develop the city's water supply and drainage systems. Though subsequent public works projects more overtly supported the expansion of commerce and industry, the sanitary works of the 1840s, 1850s, and 1860s—especially in water supply and drainage—were not only considered essential for the proper functioning of the city, they also commanded great moral weight. At the same time, sanitary projects leveraged new techniques of rule that discursively depoliticized the problems of the city.

Significant scholarly work has been written about nineteenth-century urban physical and social reforms associated with the rise of the public health movement and the sanitary idea in European and North American cities. Particularly relevant is Joyce's analysis of the emergence of "freedom"—a related but broader concept than liberalism—as a mode of rule in mid-nineteenth-century Manchester and London. Joyce argues that liberal governmentality is characterized by "the gradual but increasingly emphatic and positive embrace of freedom as the central principle of state rule" (2003: 15). Liberal techniques in the management and control of water required a process of naturalization: the city came to be understood as an organic body and a site of "free circulation" and interaction between organisms

and their environments. The scientific management of the city's fluids—water and sewage—became an important site of intervention for the proper management of the corporate body. Engineers came to be seen as doctors for the city and, "the care of the city and the care of the body became as one just as the health of the city and the health of the body were one" (Joyce 2003: 65). In reframing political problems of the city (low wages, inadequate housing and amenities, and so on) in terms of technical solutions, these discourses effectively depoliticized structural inequalities and enabled the practice of good government through technical means. Through the Chadwickian revolution, water engineering became a central mode of governmental intervention in Bombay.

A recurring element in the chief engineer Henry Conybeare's report was an ardent plea for sanitary reform as a means of reducing "preventable deaths" from "removable causes of disease" in Bombay. These sentiments were very much consistent with British sanitary reformers' obsession with removing aspects of the environment that caused disease, as opposed to the social-structural poverty that was often at the root of disease. Conybeare reasoned,

> It is, indeed, unreasonable to expect that the general state of health and longevity of the poor can be raised as high as that of those in more comfortable circumstances, by any, even the best, sanitary arrangements; but I think the evidence here adduced distinctly shows that the rate of mortality among the poor . . . is unnaturally high, from the operation of removeable cause of disease (Conybeare 1855a: 16).

The lack of concern over issues of poverty was also reflected in the emphasis placed on certain diseases over others. For instance, cholera and small pox came in epidemic waves while dysentery, influenza, and malaria were chronic in Bombay's population and affected even colonial administrators, who would often retreat to highland resorts to recover. Such epidemics were distinguished from everyday diseases and other threats to health and life. This process of categorization weighted the epidemic diseases more heavily and strengthened the case for certain forms of intervention over others (Klein 1986). Beyond the moral weight of death reduction, Conybeare argued that disease and death were also enemies of productivity, an important concern among the implementers of colonial public works. This argument counterbalanced Malthusian concerns with

population pressures. Conybeare also shared Thomas Southwood Smith's view of the connections between sanitation and crime and declared sanitary reform "in itself a police improvement" (Conybeare 1855a: 22).

Racialized discourses of diseased and contagious bodies were explicit in much of Hewlett's and Leith's writings on the subject. For example, many Indian religious institutions were designated "high risk" areas because of the large concentrations of people. Hewlett concluded that cholera was generated by Hindu "fanatics" (pilgrims) and spread through the "superstition" of Muslim Haj pilgrims (Dossal 1991). Hewlett and other colonial administrators expressed anxiety that disease would spread to the more "civilized quarters of the globe" (as quoted by Dossal 1991: 45). Leith appealed for the extensive "education" of natives so that they might embrace "the ways of cleanliness" and sanitary reform (Leith 1864: 42). He nonetheless reasoned that despite the presence of "an educated class of natives," sanitary inspectors should be European for "the better detection of what is contrary to approved ideas of cleanliness" (Leith 1864: 37). The fact that the Indian Town had a higher incidence of disease due to a number of interrelated factors such as overcrowding, inadequate drains, malnourishment, and unclean water supplies, reinforced racialized understandings of native spaces as prone to disease. As in Delhi (see Palaniappan 2000 and Prashad 2001), much of the concern over the spread of diseases originated in the fact that illness had taken a heavy toll on imperial troops and threatened British administrators. Disease also caused concern due to delays and difficulties in the completion of public works, as laborers consistently fell victim to bouts of dysentery and fever (Dossal 1991). Working on the Tulsi water project, one health official complained of delays caused by the fact that 948 workers had fallen ill: "coolies ... have a great prejudice against our English treatment and medicine" (Tulloch 1871: 21).

The water supply problem emerged as key target for addressing these health concerns, especially after the drought of the mid-1850s. Henry Conybeare eventually assumed the central position in water supply and drainage projects under Lord Elphinstone's administration. Conybeare's writings exhibit a discursive link between civic works and social reform as well as a colonial imperative for easing the suffering of imperial subjects in India. Conybeare was by far the most ardent advocate of improving the city's water supply and drainage. During his tenure as the Superintendent of Repairs to the Board of

Conservancy (a governmental precursor to the Municipal Corporation), Conybeare developed some of the most meticulous plans for public works conducted in the city to date (Wacha 1913). Though he was most actively involved in the development of the Vihar Water Works, Conybeare also insisted on a complementary drainage system to channel the increasing water supplies out of the city, and prevent contamination and the formation of disease-ridden cesspools (1855b). In considering the validity of engineers' analyses, Klein argues that there was indeed a strong correlation between mortality and class in Bombay during the latter half of the nineteenth century, attributable in part to water shortages. But she claims the mortality-class relation was most strongly linked to a combination of factors—overcrowding, insufficient environmental services, and malnutrition—not solely absolute quantities of water supply. "[M]isguided health policies sometimes furthered environmental ruin, systematically expanding water supplies (in the mistaken belief that most major diseases were water-borne) at the expense of eliminating terrible slums or improving drainage" (1986: 727). Nonetheless the techno-rational solution of expanding water supply took hold as the main strategy for addressing the sanitary problem in the 1850s.
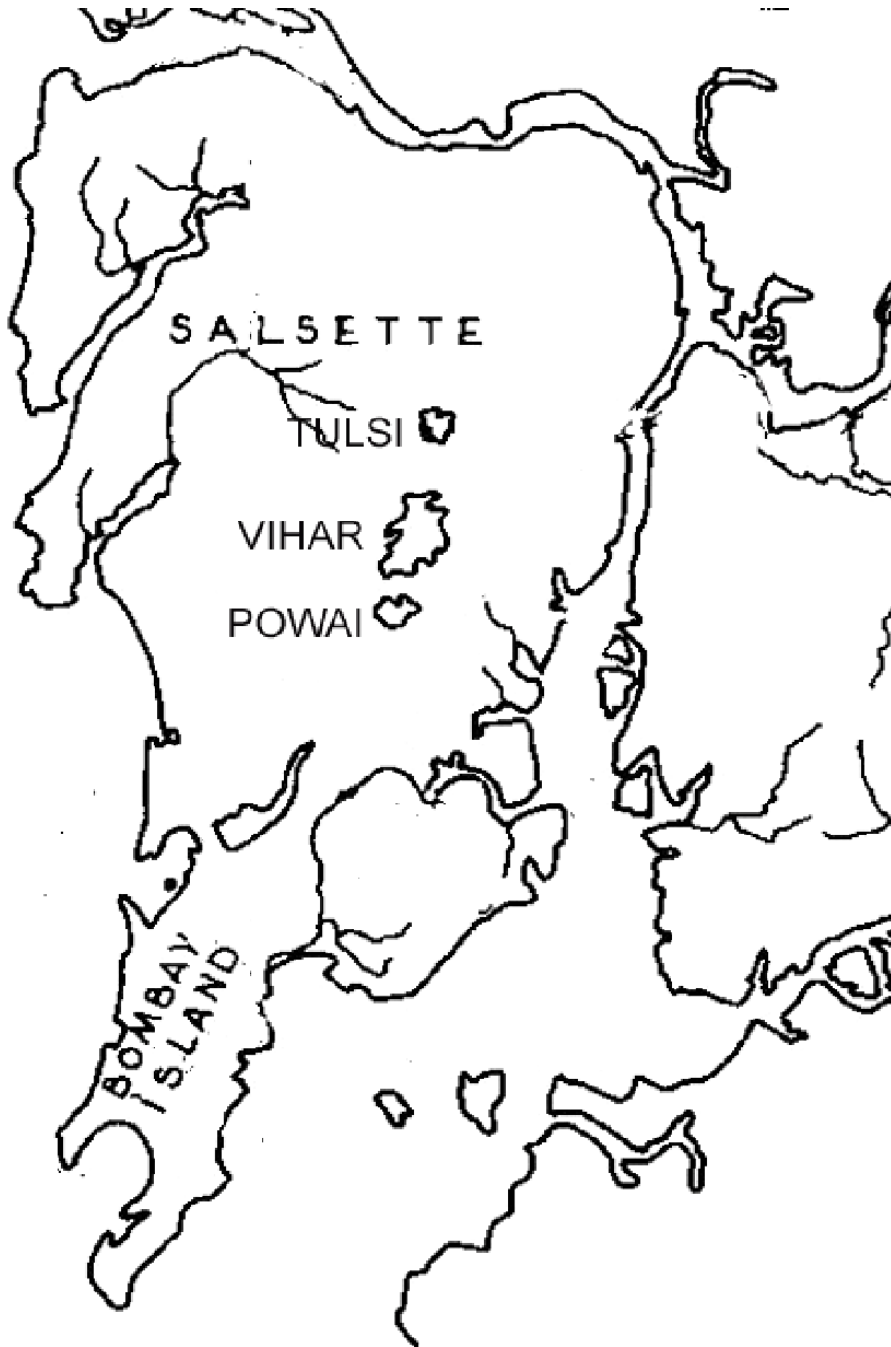
The rise in influence of scientific professionals coincided with a symbolic and physical opening of the city underpinned by a notion of liberal, rational progress and modernity. Colonial technical professionals maintained control and framed a particular form of understanding of Bombay's urban crisis, limiting solutions to be deemed acceptable. Waterworks with minimal investment in distribution, drainage, and sewerage for the poor were favored over interventions that would improve sanitary conditions and adequately meet water requirements and other social reproduction needs of the poorer classes. The convergence of crisis and scientific solutions, along with the needs of colonial powers, made large-scale water works and drainage projects an increasingly compelling endeavor. Project implementation required techniques of legibility including mapping and censuses. Implicit in these techniques was a racialized formulation of the Indian subject as backward and contributing to their own bad health. In this way, both imperial investments and ruling practices were always founded upon socially constructed notions of difference. Contradictions inherent in British notions of sanitary progress were to surface in several areas where the technical elite held limited power,

as the road to a centralized water supply system in Bombay was not always smooth.

THE VIHAR WORKS: CRISIS, FINANCE, AND CONSTRUCTION POLITICS

The colonial administration first demonstrated its interest in investing in the construction of a centralized water supply system when it commissioned the Municipal Engineer, Henry Conybeare, to draw up a proposal in 1852. Conybeare's plans were impressive by contemporary standards and were based on the latest water technologies and systems from Europe, as well as an extensive survey of Bombay's geography and supply sources. The plan centered on harnessing water from the Vihar Lake located on Salsette Island, fifteen miles outside the city's central Fort area (see Map). Conybeare's survey suggested the construction of a sixty-foot dam, which could supply Bombay with twenty gallons of water per person per day, the standard water requirement for European towns. Conybeare argued that this water supply system, in conjunction with the appropriate sewage and drainage systems, would greatly advance the sanitary conditions of the city (Dossal 1991). The Bombay Presidency administration under Lord Falkland was impressed and commissioned Conybeare to expand on his plans. Conybeare further developed his designs by travelling to England in 1855 to investigate the latest technological innovations, materials, and contracting options in British towns (Edwardes 1909), while the administration explored avenues of financing.

Though European traders and the Raj benefited from water and sanitation works for their own needs and for the maintenance of the labor force, the use of customs and other imperial revenues for financing were strictly prohibited because of the designation of sanitation as a "local" need for which local citizens must be made responsible. The *laissez-faire* ideology of the time further bolstered this finance

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prohibition through the idea that taxing large-scale commerce would inhibit economic growth and the free flow of trade. Although the water works project was undemocratically launched by the colonial administration, it was to be financed through the taxation of Indians, which would cause significant political unrest. Despite the promised boon to the city, many of the city's Indian elite strongly opposed the Vihar project, on the grounds that the increase in general house rates for such costly infrastructure and maintenance was unjust and unnecessary. Some of the wealthiest and most vocal merchants and land owners including Sir Jamshedji Jijibhai also questioned the closed nature of the decision-making process. Jijibhai argued, "very few persons seem to know anything at all about it beyond this, that it is intended to bring a very large supply of water, and that it will cost a very great amount of money . . . the great masses of Natives being wholly ignorant on the subject" (cited by Dossal 1991: 103). As an alternative, native elites advocated for the municipality to improve and expand upon the distribution of existing spring water resources and construct additional storage tanks.

The stringency of the central government in releasing funds, combined with the taxation protests of the Indian elite, posed significant obstacles to implementing Conybeare's proposal. However, as the droughts of 1854–57 took hold in Bombay, the lack of water, spread of disease, social unrest, and fires, in addition to the threat of commerce moving to other ports, instilled a sense of urgency in the administration. This urgency sped up the financing and contracting of the works in a manner which had important political implications. The government remained fixed on a permanent and large-scale expansion of the city's water supply and continued with the project despite the protests of the *shetias* over taxation. In 1855 the Bombay government began to rapidly move forward with the water works project. The presidential government recalled Conybeare from England in October 1855, after he had spent less than six months studying European water supply technologies. Conybeare insisted on postponing the works until he modified his drawings based on important new information he uncovered while studying water works projects in Scotland. However, Lord Elphinstone's administration was intent on starting construction as rapidly as possible. Despite the difficulties of implementing Conybeare's incomplete plans, the government hired Henry West, Conybeare's former assistant, to begin work on the project immediately (Dossal 1991).

Conybeare's original intention was to contract the works to a British firm, which he considered more skilled in the ironworks, earthworks, and masonry necessary for a quality project. However, officials and engineers in the Bombay government argued that Indian workmen under local British supervision could accomplish the task in a less expensive, quicker, and still satisfactory manner. The government hurriedly proceeded to hire Indian workers for the job, while Conybeare continued drafting new plans based on Scottish water works innovations, and contracting the job out to British firms. Such miscommunications were to cause costly difficulties over the course of the project. Conybeare found these hasty actions imprudent, and in July 1856, resigned in frustration. The Court of Directors in England appointed William Walker, who arrived in Bombay in October 1856, to replace Conybeare. In August 1856, a Glasgow-based contractor arrived in India to take Henry West's place in leading the construction. Subsequently, a number of severe problems stemming from low quality and damaged materials sent from Britain, high rates charged by the Scottish contractor, and physical difficulties at the Vihar site began to surface. As these problems multiplied, so too did the expenses and conflicts (Dossal 1991).

VIHAR'S CRITICS AND CONTINUING WATER CHALLENGES

These mishaps came to be construed as a blatantly irresponsible use of rate-payer money. "[I]t seemed that ducks and drakes were made with public money, and the scandal in connection with the Vehar Works was for a long time a by-word of reproach" (Wacha 1913: 71). While construction of the Vihar Water Works project officially commenced in 1856 and water began to be piped into the city in 1860, various difficulties required an additional four years to finish installing the networks of pipes and feeders throughout the city. When the water did finally arrive, Vihar provided some immediate relief to Bombay's residents and helped bring down the cholera rate from 5,000 in 1864 to 300 two years later (Klein 1986). Although government establishments were provided with free water taps, individual residences and businesses had to pay for connections. Consequently, individual connections were unaffordable for poorer residents, who had to rely on water piped into public tanks and wells. Vihar water taken directly

from taps was relatively safe, while water available through public dipping wells became contaminated from overuse and seepage of sewage-filled wastewater from surrounding areas (Klein 1986). Thus Vihar's water was contaminated by a number of sources by the time it reached most residents, and differential modes of access meant that the poorest residents were the ones most exposed to contamination.

As water usage intensified in the city, Vihar supplies quickly became insufficient. One historian claims that Vihar was typical of subsequent water works: "the history of Bombay's water supply, up to and including today, is the history of perpetual works undertaken to provide further supplies which by the time they arrive, never prove adequate for the perpetually increasing demand" (Tindall 1982: 158). This inadequacy, however, is probably more the result of distribution and usage practices than population pressures per se. Vihar provided extensive quantities of water to mills of the newly expanding cotton industry and other commercial needs, but provided an average of only five gallons per person per day (1/4 of Conybeare's projection) for the 750,000 residents of the city (Leith 1864). This glaring insufficiency, combined with high project costs, caused Bombay's rate paying elites to cast serious doubt on the undemocratic and extravagant manner in which the water works project was undertaken (Dobbin 1970). Still, the necessity of the works in supporting the growth of the city was evidenced clearly by the eager consumption of Vihar water supplies. "The Vihar works had changed civic paradigms, and there was no looking back" (Dossal 1991: 117). The practices and precedents established with the Vihar works provided a framework for implementing new water works, including the much larger Tulsi and Tansa projects. Though numerous struggles emerged over taxation and liberal municipal reform, the administration continued to take on more expensive works over the next three decades. The politics and governance of urban water works and sanitation was shaped in large part by the boom and bust cycle of the cotton economy.

COTTON BOOM AND BUST: ACCUMULATION, INEQUALITY, AND THE NEW TEXTILES INDUSTRY

Conflicts engendered by the Vihar Water Works project were initially mitigated, and then later exacerbated, by key political economic processes in the first half of the 1860s. Between 1861 and 1864, the

halt in cotton supplies from the U.S. South to Manchester due to the American Civil War shifted a high volume of demand for cotton to India, resulting in huge profits to European agency houses doing business in Bombay (Mehta 1954). Correspondingly, the city experienced an upsurge in investments in the built environment, including land reclamations, docks, and railways schemes undertaken primarily by the colonial administration and British companies, with some investment from Indian elites. Like the waterworks projects, railways, docks, and reclamation initiatives depended heavily on British construction materials and expertise. While projects and profits exploded for most at the top of Bombay's economic hierarchy, the 1861–64 cotton boom belied a trend of declining profit shares for Indian cotton traders. In the late 1850s and 1860s, *Parsis, Banias,* and *Bhatias* began to face stiff competition from British and other large European agency houses that slowly lost the need for Indian trade intermediaries (Dobbin 1972: 154). After 1870, Indian merchants lost their foothold in the cotton trade as a greater percentage of profits shifted to large European agency houses. Furthermore, a number of factors caused the elimination of the consignment system, which had earlier enabled smaller scale Indian merchants to provide cotton to large European agency houses. These included telegraphic communication, the emergence of steam shipping, and the opening of the Suez Canal, which decreased transport and communications costs and favored large firms that could take advantage of economies of scale.

Within India, expansions in transport infrastructure during the 1860s, which could have benefited all traders, favored larger European producers who used new railways to cut out middlemen and go directly into the cotton-producing hinterland to purchase, gin, and press their own supplies on site (Vicziany 1979). The increasingly high capital requirements of engaging in cotton trade innovations enabled large traders to "deploy their stock of cotton according to its optimal short-term use, adjust their operations to the uncertainties of the market, and adapt to severe competition in both trade and manufacture" (Chandavarkar 1998: 54). Some Indian traders were able to maintain their Chinese and Japanese markets for coarser varieties of cotton textiles, which they tapped into for export opportunities after the onset of industrialization in Bombay (Vicziany 1979). Indian merchants also increasingly turned to in-country cotton trade

to meet the demand for cheaper varieties of cotton that had increased with the rise of the Indian textiles industry. Thus, while Indian merchants were losing their relative market share, cotton demands during the early 1860s were high enough to enrich many members of the indigenous elite as well as Europeans.

The cotton boom did not, however, benefit the poorer, non-commercial classes who instead felt a decline in real wages due to increasing prices. Workers, petty merchants, and low-level civil servants felt the burdens of skyrocketing rents, which had doubled since 1850, as well as a surge in food prices caused by the replacement of food production with cotton cultivation in the hinterland (Davis 2001). With the large migration of workers into the city, living conditions began to worsen, and the in 1860s Bombay experienced a second cholera epidemic. Food and rent hikes also combined with the burden of town duties on consumption goods to cause severe distress for those on fixed incomes. These pressures were a significant stimulus for the postal workers' and customs employees' strike for wage increases in October 1864 (Dobbin 1970). These and other social pressures would converge into new state formations and struggles as the cotton economy entered a slump in the latter half of the decade.

In 1865, when the American Civil War ended and American cotton supplies returned to England, the fall in demand for cotton resulted in deep losses for many of the Bombay elite who had speculated in stocks. During the crash of 1865, several banks, including the Bank of Bombay, were forced to close. Many of the city's most prominent *shetias* suffered ruinous losses. The area's most powerful banker, Premchand Raichand, lost virtually everything (Wacha 1913). Several land reclamation and construction companies also went under with the sharp decline in share prices. The dominance of large European agency houses in the cotton trade was now completely exposed, and Indian traders had even slimmer opportunities for profits.

Some of Bombay's indigenous elite families did manage to insert themselves into a new profitable niche by investing in the nascent Bombay textiles industry. The *shetias*—especially *Parsis*—who had made a fortune in trading and urban rents, began to reinvest this wealth by taking advantage of the joint-stock principle to set up Bombay's cotton mills. The first cotton mill was established in 1854 by the *Parsi* merchant, Kavasji Nanabhai Davar. Subsequently, several other mills were established by groups of merchants. By 1865 there were

ten mills in the city (Mehta 1954). Misra (1961) has argued that the emergence of this industry can be attributed to the expansion of Britain's imperial market in China and Japan, the cheapness of labor, and proximity to supplies in the Presidency *mofussil* (rural districts). Thus the crash of 1865 marked a significant shift in wealth and commercial activities between indigenous and foreign traders and among the Bombay elite (Dobbin 1972). The crash also exposed the intensified economic pressures felt by lower level clerks, merchants, and working classes. It was within this context that the Municipal Act of 1865 came into being, the first of a series of municipal reforms emerging out of contestations over taxation, representation, and who would benefit from and bear the costs of urban improvements.

MUNICIPAL REFORM POLITICS: CRISIS, CONTENTION
AND THE BIRTH OF THE LOCAL STATE

This section discusses the crucial period of 1864–88, focusing on how the political contradictions of Bombay's water and sanitary improvements shaped the formation of a hegemonic local state. During this period, one component of the colonial state apparatus—the Municipal Corporation—emerged as a formally cohesive and codified set of new practices and institutions. This era of state formation included the establishment of new taxation policies, administrative and technocratic hierarchy, liberalizing systems of representation, and mechanisms for undertaking and financing investments in the built environment. The development of a centralized water supply system was deeply imbricated in these emerging governing practices, which reflected crucial changes in state-society relations and enabled imperial control over urban socio-nature. However, these processes were characterized not by a simple linear progression towards more efficient liberal institutions; rather, they were wrought with political struggles over urban governance that revealed the interconnected contradictions of colonialism and capitalism. New governmental institutions and practices produced new sets of power relations, while also entrenching older inequalities. The contested and uneven formation of the centralized water supply and sanitation system demonstrates how the local state became implicated in uneven development

and social dispossession in the city. A brief overview of four key polit-ical contradictions and contentions in relation to the water works im-plementation will situate local state formation processes and politics.

First, while British elites intended to resolve the water and sani-tary crisis of the 1850s through centralized techno-rational control, colonial financial administration mandates required water works to be paid for by property-owning Indians through land revenues which triggered dissent. Secondly, western educated Indian elites, who were politically cultivated to be friendly to colonial rule and notions of lib-eral progress, began to resent and contest the lack of real opportuni-ties for power within the administration. Protests over water and other works by the native landed elite, who paid for but had very little say in the expensive projects, entailed a legitimate crisis for the Raj. New taxation practices thus required negotiations and concessions between the colonizers and Indian elites, processes that transformed the local state into an apparatus for furthering the interests of both landholders and colonial rulers. Thirdly, the racialized spatial segre-gation of the city between "Natives" and "Europeans," intensified by Indian elite-dominated property relations, created dangerous over-crowding and disease, which threatened the maintenance of the la-bor force and incited fear within the colonial government. Further-ing imperial economic interests necessitated workers in the docks and public works; however, extractive mandates of colonial political economy did not adequately support the reproduction of the labor force—sanitation, housing, water, etc. Ironically, the colonial exi-gency for municipal service needs like water and sanitation to "pay for themselves" through land revenues—despite the fact that the pro-jects would help maintain the workers who provided crucial labor for commerce and public works—was a major cause for the deficiency of safe water supplies for the working classes. Thus water and other in-frastructure projects stimulated new divisions, alliances, and dis-courses regarding the role of the state and taxation policies, leading to pressures to reform the municipal government in the twenty-four-year period between 1864 and 1888. Resulting formations of power exacerbated the skewed distribution of resources among powerful in-terests in the city, leading to the entrenchment of an uneven water supply and sanitation system that continues to exist today. Thus nine-teenth-century urban politics of water fundamentally shaped the structure of the city's present Municipal Corporation. Struggles lead-ing to, and resulting from, three major municipal reform legislations

in 1865, 1872, and 1888 provide a lens into the political ecology of state formation in Bombay.

BOMBAY MUNICIPAL ACT OF 1865: AUTHORITARIANISM, IMPROVEMENTS, AND TAXATION STRUGGLES

By the early 1860s, it became clear that managing urban growth, crisis, and sanitary infrastructure projects in the port-city required the establishment and reform of the municipal governing system in two major areas: municipal taxation and administrative decision-making power. Act I of 1865 directly addressed the lack of specific function, decision-making capacity, and accountability of the Triumvirate system (established in 1858), and inaugurated the first municipal constitution of Bombay. One of the major tax reforms of the 1865 Act abolished town duties on basic goods, to address the unbearable burden of price increases on non-elites. Municipal revenues were thus to be derived primarily from a general house rate, variable water rates, house occupancy tax (to support police services), lighting, transport tax, fines, licenses, and *halalkhore cess* (taxes on street sweeping and feces removal by untouchable castes) (Edwardes 1909). Water rates covered the maintenance expenses for the Vihar works and were to be paid by the property owners (Wacha 1913). Property tax was the greatest source of municipal revenue, since customs duties on cotton never touched the city but were designated as imperial revenues and diverted to the central government. Thus, landlords, including mostly Native elites, covered the bulk of tax burden for municipal conservancy and sanitary improvements. Landlords consistently worked to shift this responsibility, by pressuring for lower property rates and increases in other taxes such as licensing fees. A brief history of taxation is necessary to situate the reforms of the 1860s and 1870s.

TAXES AND THE COLONIAL POLITICS OF "LOCAL" COST RECOVERY

Revenues collected in nineteenth-century Bombay were divided into two categories: imperial and municipal. Imperial revenues were exacted primarily in the form of customs duties on cotton and

opium. These were reserved for the central government, and were distributed to each presidency for irrigation works, cotton roads, water and drainage, and the military. Municipal revenues came from property taxes, duties on basic consumption goods, and local fees, which supported city conservancy needs (Dossal 1991). This taxation policy demonstrates a central ruling philosophy of the Raj: that "local" needs were to be paid by "locals," mostly native inhabitants of Bombay. From 1827 to 1850, municipal revenues were derived principally from the shop and stall tax, which charged a fixed sum to all merchants equally. By the 1850s, this system came under severe pressure from Indian merchants, who argued that the lowest-income vendors were suffering a burdensome injustice, while property owners freely collected enormous rents due to exploding urban land values.

Two significant, though perhaps not mutually exclusive, lobbies emerged to influence the outcome of the shop and stall tax issue: the landlord and merchant lobbies. Both claimed a higher tax burden and lower relative ability to pay taxes. Property owners had been traditionally more influential under colonial administration through their membership on the Bench of Justices, but adamant protests around the injustices of the tax for petty merchants were beginning to gain strength (Dossal 1991). While the shop and stall tax was eventually repealed, the legacy of the struggle between the two lobbies entailed a compromise that appeased landlords. The government instituted an occupancy rate for tenants, which transferred some of the tax burden that landlords would have had to shoulder onto lower income renters. Furthermore, the Bombay government instated town duties on basic goods including ghee, meat, grain, and fuel (Wacha 1913). These disputes and their resolutions left a legacy of negotiation that secured the interests of the property-owning elite with respect to their contribution toward repayment of public works.

In addition to tax reforms, the Municipal Act of 1865 also consolidated the municipal government's executive functions and power into the hands of a single Commissioner with the Executive Engineer, Health Officer, and Controller as three immediately subordinate positions. The Bench of Justices, whose members were appointed by the Presidency Government, included a significant number of native landowning representatives who had to approve all budget decisions (Edwardes 1909). The real power and participation of the Justices of the Peace, however, was limited to a few official meetings per year (conducted in English) with very low attendance

by representatives of the Indian elite. The native elite had little opportunity for political participation in the Municipal Corporation at this time. With this act, municipal power became even more centralized in the role of the Commissioner with very little check on city planning and policy decisions and expenditures (Wacha 1913). This centralization of power became the subject of controversy in the late 1860s and early 1870s, as Bombay's first Commissioner, Arthur Crawford, took power. Bombay's elites (in)famously referred to Crawford as "our local Haussman," for resembling the French dictator whose ambitious urban projects dramatically transformed Paris. Crawford undertook a number of expensive public works at a time when Bombay's finances were most precarious (Wacha 1913: 95). Both praised for improving the sanitary state of the city and reviled for fiscal irresponsibility and strong-handed tax collection, Crawford made a significant mark on the city and sparked major social conflicts.

"OUR LOCAL HAUSMANN": SANITARY NEEDS,
EXPENDITURES, AND CONFLICTS OF
THE CRAWFORD REGIME

With newly acquired powers in the Municipal Corporation, Arthur Crawford set out to transform Bombay city by implementing ideals of town planning and sanitation that he had developed throughout his career as an engineer. Crawford considered sanitary reform paramount for lifting Bombay to the status of other major world cities, and was especially concerned with the high death toll from cholera in the 1860s. Crawford's biggest and most costly project was to expand and modernize the city's drainage system. Other major projects of the administration included a reorganized *halalkhore* system (street sweeping and feces collection by untouchable castes), new sanitary markets (including the expensive Crawford Market), a new Health Department, expanded waste removal systems, extended water service, road construction, and the relocation of slaughter houses and other "dangerous trades" outside of the city center. The implementation and tax-based financing of these projects led to serious conflicts among various groups of native residents, and squeezed the most marginalized of Bombay's workers.

Crawford major target, the city's antiquated drainage system, was to blame for cholera outbreaks, according to Bombay's leading

health officials and engineers. The city's main drain, constructed at the end of the eighteenth century, was dangerously exposing residents to the overflow of storm water and sewage that lingered in open cesspools throughout the city. Furthermore, fresh water from the new Vihar works dispensed into open wells and tanks became contaminated due to this lack of drainage (Klein 1986). Although Leith and Conybeare had expounded on the need for adequate drainage to reduce the city's high level of morbidity in the late 1840s and 1850s (Edwardes 1909), a number of obstacles delayed significant projects until Crawford's regime in the latter half of the 1860s. First, Bombay's physical geography, with lands below sea level and a monsoon climate, posed significant engineering challenges for drainage. Secondly, the significant debt and public scrutiny around the Vihar Water Works made the prospect of another high-priced civic improvement scheme unpopular among elites and officials. Landlords and reclamation companies also feared that implementation of drainage schemes would mean property loss or decreasing land values. Furthermore, the Rebellion of 1857 made security interests paramount, and the Imperial Government ordered significant financial support from all of the Presidencies for military needs (Dossal 1991). This insufficiency in public funds, coupled with the inadequacies of the municipal government structure, had made it difficult to expand on the city's sanitary goals in the early 1860s, which Crawford sought to correct. With the powers of a more centralized local government structure, Crawford took on the fiscally unpopular projects and by 1870 the municipal debt increased by an additional Rs. 3,800,000 (Manshardt 1935).

Crawford addressed these financial problems by increasing taxes and squeezing expenditures on one of the most exploited and marginalized groups of civic laborers, the *halalkhore* sanitation workers. The problems and conflicts around feces removal policies during the Crawford administration is particularly relevant, not only for the critical link between sewage disposal and water supply contamination, but also because of the inherent contradiction that lay in the colonial administration's modern sanitary project, which ironically depended on a reconfiguration of traditional hierarchical labor practices. As the population expanded, the health of the city increasingly depended on the *halalkhore* (untouchable castes) for regular removal of "night-soil" (feces). However, the *halalkhore's* increased duties were

not sufficiently matched by wage raises. The *halalkhore* used this position to organize a strike for wage increases, causing a dangerous buildup of waste.

Native and colonial elites launched vicious discursive and material attacks on the *halalkhore,* and praised the Crawford administration for efforts to squash their struggle. The *halalkhore* were blamed for dumping waste into the city drains, which came to be seen as a major cause of cholera and other diseases. This concern bolstered the case for Municipal expenditure on drains, water works, and other sanitary measures. One prominent Bombay resident wrote, "Mr. Crawford bravely strove to put an end to these menial monopolists once and for all" (Wacha 1913: 168). Such discourses of disease, violence, and backwardness were commonly deployed by Indian elites and colonial administrators to manipulate the labor force. Chandavarkar has argued, "representations of the urban poor may be taken historically to reflect the aspiration of Indian elites to subordinate and control labour and, in the long run, cheapen its cost. Colonial rule enabled Indian elites to realize this aspiration" (1998: 15). The government broke the *halalkhore* strike by bringing several hundred sweepers from adjacent rural areas into the city. Nonetheless, municipal expenditures on drainage and sanitation multiplied, leading to unpopular tax increases. Because there were no separate taxes to fund drainage works maintenance and expansion, a 3% increase in the *halalkhore cess* levied on houses and properties covered maintenance and construction costs for the drainage system, and wages for feces removal and street sweeping. Crawford also reinstated town duties on basic consumption goods in 1869 which further squeezed the working classes (Edwardes 1909).

Though Bombay's working classes bore the brunt of Crawford's tax and fiscal tightening measures, landlords were especially critical of the increasing municipal debt as well. Ratepayers considered the Crawford administration both authoritarian and highly irresponsible, in light of the city's financial difficulties after the crash of 1865. Many thought that Crawford deemed the Bench of Justices "a mere court in which he may register his decrees . . . as if he were the master and they were the servants" (Michael, cited in Dossal 1991: 214). In defending his tax increases, Crawford argued that these complaints were unfounded, since such taxes as water rates and *halalkhore cess* were not taxes but payment for services rendered (Wacha 1913). He also stepped up efforts to enforce tax payments and lower arrears by

commissioning an extensive land-revenue survey to pin down default-ers. This information also aided the municipality in fixing rates for water and drains in the Native Town (Dossal 1991). As "an army of tax collectors let loose" on the citizens of Bombay, the Crawford administration came under severe criticism (Wacha 1913: 102) Anger over expenditure and taxation culminated in the famed "Rate-payers Agitation" of 1871. Taxpayers of varying social and economic backgrounds participated in the protests with different and sometimes conflicting goals. The following sections investigate the layers of conflicts and negotiations that led to the reforms of 1872 and the corollary entrenchment of landlord power in the local state.

THE RATEPAYERS AGITATION, NEW CLASS FORMATIONS, AND THE MUNICIPAL ACT II OF 1872

As conflicts around the finances of the Vihar Water Works intensified under Crawford's administration, the contradictions of colonial liberalism became increasingly evident to Bombay's native residents. A critique emerged against efforts to improve water supply and sanitation that were dominated by the colonial administration but paid for by native residents. Protests against "taxation without representation" began to surface, especially among the British-educated elite and "ratepayer" community (Wacha 1913). Because the debt accrued to construct the water supply system was to be repaid through water rates charged to users, as well as an increase in property taxes, the landlord lobby launched forceful protests against what it considered unjust rate increases. While municipal revenues came from variety of sources including property/house taxes, town duties on certain food items, liquor license fees, and fines (Edwardes 1909), it was large-scale property owners who came to dominate municipal reform struggles due to conflicts over taxation (Dobbin 1974). These financial conflicts among colonial administrators, elite and petty merchants, and property owners were central to subsequent changes in Municipal Corporation governing systems. The differing reactions to the Crawford administration's unchecked expenditures, debt accumulation, and taxation reveal many of the social cleavages in Bombay during the latter half of the 1860s.

Different factions of Bombay's elite—the intelligentsia, Indian landlords, and Indian and British merchants—began to engage in

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municipal reform negotiations and debates and later led the infamous Ratepayer's Agitation. Protests came from different angles, due to the specific nature of class formation in Bombay. However, certain families whose kinship networks had strong links to the imperial government and access to lucrative commercial activities maintained a privileged position of influence. Among these families, there was a further divide between the commercial elite and the intellectual elite. While landowners were most concerned about increasing house rates, the non-propertied intelligentsia became active in the liberal reform movement and criticized the "landlord tyranny" in local government. Leaders were primarily low-level civil servants of the poorer Marathi Brahman castes who had been educated in Bombay's British university system, but who had become frustrated with the lack of economic and professional mobility in the civil service. They unleashed fervent critiques of the power of the *shetias* (the few top landowning, trading, and industrial families) within the municipal government. They argued that the *shetias* who formed the influential Bombay Association were unfit for governing the city, because they were only concerned with their own commercial interests (Dobbin 1972). Furthermore, they argued that landlords were uneducated and therefore not qualified to influence municipal government. In 1865, less than half of the Bench of Justices were Indian landowning *shetias*, who were more concerned with their own taxes than representative municipal reform. The intelligentsia-based leaders of the reform movement argued that the municipality's financial crises were thus attributable to insufficient representation of educated natives in government (Dobbin 1970).

By the late 1860s and early 1870s, however, the thrust of the reform movement began to shift. As some of the sons of the *shetias* began to take up university education, the new wealthier members of the intelligentsia picked up the liberal discourse of representation to further the interests of the *shetias*, who had previously taken minimal interest in liberal reform. By the 1870s, an emerging group of lawyers and other British-educated elite began to invest in banking and commerce, and formed an important link between the intelligentsia and the *shetias*. These included several active municipal reform leaders such as P. M. Mehta, E. D. Wacha, Dadabhai Noaroji, S. S. Bengali, and K. T. Telang (Masselos 1974). Galvanized by the municipal debt accrued from water works and sanitary expenditures in the late 1850s

and mid-1860s, these elite groups pushed for reform to existing municipal structure, function, and taxation practices. A young British-educated Parsi lawyer, P. M. Mehta became one of the most prominent and influential Indian reformers in Municipal politics from 1869 to 1910. Though Mehta admitted the need for a strong municipal commissioner with centralized authority, he persistently lobbied for greater fiscal accountability through an independent controller and an elected representative body of rate-payers (Dobbin 1970). Along with other reform leaders, Mehta advocated procedural changes in government, including checks and balances on expenditure processes. In response to the charge that Indians were not culturally adapted to democratic representation, Mehta made the following argument: "We are apt to forget that in this country when we talk of preparing people in the East by education, and all that sort of thing, for Municipal Government and Parliamentary Government, that the East is the parent of Municipalities. Local self-Government, in the widest application of the term is as old as the East itself" (quoted by Wacha 1913: 176).

However, Mehta soon alienated the lower-income intelligentsia who had spearheaded the reform movement by aligning with and furthering *shetia* interests. This alliance was most evident in Mehta's decision to support the measure to limit ratepayer participation in government to those who paid a minimum of Rs. 50 in taxes annually. Indeed, Mehta strengthened his ties to the main *shetias* over the span of his life and became a solid pillar of upholding their interests in the municipality. Despite the dominance of colonial, *shetia*, and upper income intelligentsia voices in the Municipal reform debates, ratepayer complaints were not limited to the elite. Lower-income groups also resisted unfair taxation and waged struggles against landlords. For instance, petty merchant groups from "the lower strata of the middle classes" submitted petitions to the Bench of Justices, decrying the huge loans being undertaken by the municipality and the unfair, non-property tax burdens. These lower-income *Bania, Bhatia,* and *Parsi* communities were less interested in representation in the corporation than in their own tax burden (Dobbin 1974).

After much debate and anticipation, the Municipal Act of 1872 finally passed in October, and included a provision that secured elected representation to the Corporation for half of its 64 members. The other half would be appointed by Government and elected by

the Bench of Justices. Membership required a minimum rate payment of Rs. 50 per year, limiting representation to large landlords. The franchise excluded other ratepayers, who as tenants paid water, *halalkhore*, lighting, and police rates as well as wheel taxes and town duties on basic consumption goods (Masani 1929). It is ironic that although the lower-income intelligentsia initially promoted municipal reforms, the liberal discourse in which these protests were couched was substantively redirected to serve the interests of the landed *shetias.* As Dobbin has argued, the "intelligentsia, by diverting the ratepayer's cause into their own channels, had obtained the principle only to find that the high franchise qualification might deprive them of the reality" (1970: 90).

Despite the reform and taxation debates, the colonial administration was able to embark on the second major water works project, the Tulsi extension of the Vihar reservoir, under the management of Executive Engineer Hector Tulloch. The project was completed in 1879, and cost the municipality Rs. 3,700,000, raised from non-government loans (Edwardes 1909). The relative ease with which this project was undertaken, compared with Vihar, reveals the power that the colonial administration maintained throughout the reform process. Public debate rested squarely on the question of who among Indian residents would shoulder the costs, but not whether projects should be undertaken, nor whether the imperial government should shoulder the costs. Capital debt repayments for Tulsi extension came from revenues generated from general taxes, including property tax, town duties, and licensing fees, with the former constituting the bulk of municipal income. Expanded water rates charged house and business owners for service and infrastructure maintenance. The 1872 municipal fiscal reforms consisted largely of shifting more of the tax burden onto non-propertied Indians. Little capital costs would be recovered from the large European agency houses that had benefited greatly from Bombay's infrastructure, because the administration's commitment to *laissez-faire* capitalism prohibited taxation policies that might ostensibly hinder economic growth. However, Bombay's landlords waged a number of battles to shift the tax burden onto others. They argued that tenants who benefited so greatly from town improvements were totally exempt from paying their dues. While town duties had been repealed during the difficult cotton crash period, they were reinstated with the 1872 reforms due to these pressures. Landlords made a similar argument about water rates and *halalkhore*

cess, which they argued should be paid through an occupancy tax (Wacha 1913). Soon water, police, and lighting would be paid for by occupants rather than by owners (Edwardes 1909). This was an important political victory for the landowning class, who had unsuccessfully fought for the occupant tax during the previous Crawford administration (Wacha 1913). The legacy of landlord power was also clearly evident in the 1886 decision to raise town duties on food staples, such as grain and sugar, as well as the installation of a smaller tax on petroleum to repay debt accrued for the Tansa works, one of the city's most expensive water works projects (Edwardes 1909).

While the Act of 1872 represented a major victory for the landed *shetias,* several other important developments also stand out. First, the necessity of expenditure on water and sanitary works was now unquestioned. The topic of debate was not whether to undertake expensive debt-financed projects, but rather how to check the power of the Commissioner, and who would pay for municipal expenses. Another outcome was the new use of liberal discourses by the intelligentsia, to challenge both colonial administrators and planners, as well as native *shetia* elites. Landed elites also began to participate in debates on democratic reforms beyond taxation issues. Biases towards landowner interests were duly noted and sharply criticized; one major newspaper called the reforms "a mere sham" (*Indu Prakash,* quoted in Dobbin 1974: 146) that excluded the less wealthy educated classes. Though conflicts led to the expansion of the franchise to include the Fellows of Bombay University, landlord dominance in the corporation was already too deeply entrenched to fundamentally threaten their economic interests.

CONSOLIDATION OF LANDLORD-INDUSTRIALIST POWER AND THE MUNICIPAL CORPORATION ACT OF 1888

After the reforms of 1872, the political economy of the city began to shift again, leading to further transformations in the Municipal Corporation. Landowning *Parsi, Bania,* and *Bhatia shetias* who were losing their market share in the cotton trade, began to take advantage of the joint stock principle and invest more heavily in textile factories. The decade of the 1870s witnessed a tripling in the number of mills in the city, from ten in 1872 to 30 in 1881, with nine mills opening in

1876 alone (Dobbin 1974). With this political-economic transformation came significant changes in the interests of Indian elites in Bombay, to expand beyond trade and property and to include the concerns of industrialists. The emerging relations between capital and labor would create new state practices in the provision of water. The key axis around which these relations revolved was that of housing, because of Mumbai's steep rental market and inadequate services (Chandavarkar 1998). The tenements and "slum" neighborhoods of Bombay were not only becoming increasingly crowded, bleak, unsanitary, and unsafe, they were also the site of struggles over water, sanitation, and other basic amenities and services.

Accordingly, by the 1870s water became central to industrial growth. Because the *shetia*-industrialists continued to be strongly represented in the Corporation, they were able to secure inexpensive access to water. In 1877, for example, mill owners were assured a cheap and abundant supply of water for industry by vetoing a proposal to increase water rates for mills (Dobbin 1972). More water works projects were undertaken during this time, including the Tansa works, the largest source of water for the city to date. Though the Tansa works were financed by a hefty Rs. 15 million loan, there were no major protests from *shetias*, as there were towards the Vihar works and Crawford's sanitary projects. Perhaps the reason for this acquiescence was that water projects increasingly served the interests of new mill owners, and *shetias* diverted their attention to the shifting of the tax burden to pay for these projects, instead of trying to stop them.

When Tansa was officially opened in 1892, Sir William Hunter called it "the most important undertaking of the period," and the Viceroy, Lord Lansdowne, hailed the "magnitude of achievement" of the works. However, the increase of the water supply did not accompany the construction of drainage in the poorer sections of the city, compelling many residents to live in "pools of sewage" (quoted in Klein 1986: 739). Waste contaminated the exposed and meager water supplies of many poorer neighborhoods, causing more surges in water-borne diseases. The Health Officer of the city noted the "pitiable sight . . . of men, women and children awaiting around a pipe eagerly and quarrelling for the miserable dribble from it" (quoted in Chandavarkar 1994: 37). Indeed, the 1880s and 1890s were a period

of water abundance that, due to poor distribution, drainage, and storage, resulted in intensified health problems for the city's low-income neighborhoods.

Mill owner interests were secured in additional ways. The period of the 1870s saw the growing prominence of wealthier members of the intelligentsia, who began to go beyond municipal politics to launch important critiques of British rule in support of home industries. One the most famous outcomes of this period in Bombay was the "drain theory," advanced by Dadabhai Naoroji, who argued that India had become impoverished economically and morally because of the drain of wealth to England via taxation, trade, high salaried British bureaucrats, and the unwillingness to hire Indian administrators (Masselos 1974). This theory evidenced the emerging nationalist fervor among Bombay's industrialists who sought to promote domestic industries that utilized (and often exploited), India's raw materials and labor force. The cotton mill owners of the city were politically galvanized through the Bombay Mill Owners Association, an influential force in municipal politics. For example, the group advocated strongly against the Factory Bill, which aimed to improve working hours, wages, and standards in mills, and to hold owners responsible for providing adequate housing for their workers. Mill owners argued that workers were satisfied with the state of housing, and actually preferred basic accommodations to be able to send more of their wages back to their rural villages (Conlon 1984). Mill owners obtained strong support from the intelligentsia in their allegations that the Factory Bill was meant to destroy India's budding new industry (Dobbin 1974).

There were several other significant outcomes of the Municipal Act of 1888, which consolidated the official charter of the city's local government which continues, with amendments, today. First, the Act established the highest level of fiscal autonomy from the Imperial State that had existed to date (Manshardt 1935). The municipality thus enjoyed a greater degree of leeway to acquire loans, and it was during this period that loans for public works began to be undertaken with more ease than during the Vihar works. Among these loans, water works continued to stand out as the most expensive municipal undertaking. The municipal debt of Rs. 54.3 million in 1909 consisted mainly of loans undertaken for urban projects in the 1880s and 1890s (including the remaining Vihar debt). Municipal records indicate that control over the flow of water in the city had become

the single greatest source of debt accumulation by the local government (Edwardes 1909). The Act of 1888 also established a new administrative organization of municipal land, through the demarcation of seven municipal wards represented by 36 members elected by rate payers to the Municipal Corporation. The continued protests throughout the 1870s against under-representation in the Corporation led to a minimal expansion of the franchise to include, for example, payers of the wheel tax (Dobbin 1974). However, this extension did not undermine the power of large land and mill owners, and in the thirty-five-year period between 1888 and 1923, the extension of the franchise was completely frozen in contrast to the same period of municipal government evolution in Britain (Hazareesingh 2000). The taxation policies of the Act of 1888 were similar to those of the 1872 Act, and preserved the interests of the *shetias* regarding town duties, despite the political reluctance of the colonial administration (Masani 1929). Furthermore, the entrenchment of occupier rates for water enforced a tradition of shifting municipal tax burdens to those with the fewest resources, while simultaneously providing the lowest level of service to the poor. The inadequacies of both water provision and housing for the working classes demonstrate socio-spatial inequalities in Bombay, which intensified during this period of new industrialization and continuing imperialist trade.

Through the consolidation of class power in local government, late-nineteenth-century Bombay showed characteristics of both capitalist and colonial urban spatial formations and relations, rather than simply replicating a dualistic extractive colonial city model (Farooqui 1996). While cotton trading agency houses were clearly influential in the city's development, Indian capitalists and landowners also shaped urban geography, which becomes especially important with the advent of the mill industry in the late nineteenth and early twentieth century (1996). Drawing on Castells (1977) and Harvey (1985), Farooqui argues that Bombay exhibited the following political (and I would argue ecological) contradiction:

> While urban space must be appropriated for functions related to capital, this accumulation of capital is a negation of self-sufficiency and requires the apportioning of space for classes who can only live by their labour. As economic activity gets concentrated in urban areas due to the convenience of finding there the infrastructure for . . . accumulation . . . the

contradiction mounts. There is a tendency to apportion as little space as possible to the poor. This is not merely a matter of land value, . . . but is also a matter of not providing adequate amenities to the poor (Farooqui 1996: 2751).

Indeed, throughout the last decades of the nineteenth and into the twentieth century, housing and services in Bombay were a source of distress and contention for the majority of Bombay's residents. Negotiations among the colonial regime, the Indian capital, and lower income and working class groups further complicated socio-spatial patterns of urbanization in Bombay. As Chandravarkar has noted (1998), these patterns of urbanization and spatio-ecological politics in Bombay urge a rethinking of classic notions of class struggle in the transition to capitalism. The power of urban landholders and extreme spatio-ecological inequalities (combined with other configurations of power and culture) meant that housing, water, and sanitation struggles often trumped "point of production" conflicts over working conditions and wages between capital and labor. The politics behind the establishment of local state institutions, such as the Municipal Corporation, reveal how such power formations emerged during moments of crisis and conflict over urban spatial transformations.

CONCLUSION

Bombay's Municipal Corporation—the major urban governing body facilitating colonial extraction and (limited) capitalist development in Western India—emerged out of three decades of heated debate and struggles over municipal taxation, accountability, and representation. These struggles cannot be understood without considering the political ecology of water and sanitation works, as well as the political-economic terrain upon which urban transformations took hold. Water and sanitation works not only forestalled ecological crisis by providing basic necessities for urban expansion, they were constitutive of significant and contradictory state practices and institutions that would further colonial and capitalist urbanization projects. Because urban water projects were among the most expensive municipal endeavors, they set off a legacy of debt accumulation and repayment through local taxation. Expert engineering and planning

practices framed in racialized, modernizing discourses were also introduced through these projects, further consolidating and legitimizing colonial authoritarianism. Despite their role in maintaining the urban populations that facilitated colonial extraction in the port-city, water and sanitation projects were always limited by the governmental insistence that "local needs" be financed through "local" revenues (taxes and service charges collected from native residents). Ensuing struggles over water and sanitary expenditures, taxation, and municipal reform thus represented a noteworthy challenge to the colonial administration by large land-holding families as well as other, less wealthy groups such as the intelligentsia, petty merchants, and service workers.

While the transformation of Bombay's built environment secured imperial economic interests in the cotton trade, concessions made to guarantee those interests deeply entrenched the power of Bombay's landlords and mill owners—not mutually exclusive groups—in the local state. As water works and other sanitary projects became enmeshed in local state practice, Bombay's Indian elite failed to advance a sustained challenge to imperial engineers', planners', and doctors' scientifically-oriented "sanitary" projects. Nonetheless, the experience of exclusion and elite bias sparked municipal reform struggles on the part of the less wealthy groups, especially the intelligentsia. Taxation battles waged by the *shetias* would later divert liberal reform discourses to serve the Indian elites own political and economic interests. The Municipal Acts of 1865, 1872, and 1888 officially consolidated the shape and function of the Municipal Corporation, and addressed such contentious issues as balance of powers between ratepayer representatives, colonial appointees, and the Commissioner, as well as financial accountability and taxation. The newly structured practices of local government provided concessions via new official channels of power for Bombay's *shetias.* Indeed, as Hazareesingh argues, these pieces of legislation "anchored a somewhat restive alliance between the elitist and selective urban development ambitions of the local colonial state (the Government of Bombay) and landlord-millowner class interests" (2002: 799). Beyond a mere "elite capture" of the state, Bombay's water and state formation history demonstrates that the local state was itself constituted through interconnected political ecological struggles and alliances. Bombay's water politics during this foundational period significantly

influenced the hegemony of elite interests in the local state, key aspects of which have endured over the following century of urban development and governance.

In Bombay the colonial-capitalist urban crisis can be linked to the intertwined pressures and requirements of the British and Gujarati cotton trade, industry, and real estate market. The water and sanitation crisis and "resolution" came sooner and, perhaps, more intensely in Bombay than the other cities due to these political-economic factors, in addition to drought conditions. As in the other presidency capitals, water and sanitation works in Bombay secured benefits for both native and British elites with relatively limited costs incurred to the Raj. However, Bombay's British rulers experienced more severe pressures from tax-weary *shetias* than in other cities and, through the struggles engendered thereof, the *shetias* came to secure an unstable alliance with the British. It may be argued that the effects of Bombay's *shetia* power led to some of the most volatile urban real estate markets and uneven development practices in India of the time, which has had important implications for Bombay today.

My investigation of this imperial urban water complex ends with the institution of the 1888 Municipal Corporation Act because it symbolically and substantively marks the consolidation of colonial state hegemony in Bombay. However, this formulation of Bombay's water and urbanization trajectory can be extended historically. For instance, during the 1890s and the early twentieth century, the processes of land development and mill industrialization reproduced severe inequalities across the urban landscape that were reflected in the uneven access to water and sanitation in the city. Bombay's merchant-industrial families played a major role in anticolonial struggles, though patterns of inequality and limited technocratic solutions continued in the post-independence period. From the 1950s onward, water projects funded by international finance agencies such as the World Bank supported the needs of industry, but services and housing for the poor were increasingly precarious and under-prioritized by the state, despite the surge in the city's population. In the period of deindustrialization and economic liberalization since the 1980s and 1990s, the centralized water supply system seems to be unraveling, and the city's poor have become increasingly dependent on expensive water provided by informal vendors. The water difficulties of the city's poor today must be understood in terms of the historical accumulation of class and racial dispossession and the trans-local

forces and creative-destructive processes of capitalist development. Indeed, the history of state practice in colonial Bombay may be a useful framework for understanding the urban crisis of today's Third World "mega-cities" during the recent era of neoliberal empire.

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