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**Coprology and Caste: The Status of Sewerage
in Ahmedabad, India**

Stephanie Tam

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Coprology and Caste: The Status of Sewerage in Ahmedabad, India

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Abstract:

This paper traces the relationship between the development of Ahmedabad's sewerage system and the caste structure, examining how sanitation technology threatened caste politics, as well as how the caste system modified the way sewers were used and maintained. It looks at how sewers came to be understood as markers of legitimacy, sophistication, and moral citizenship through the notion of the "civic sense", and how that notion changed over time. Focusing on the evolving role of Bhangis – Untouchable sweepers turned sewer men –, it looks at the corporeal, political, and economic impact that sewers have had upon them. While there is an existing body of literature that deals with Bhangis and the practice of manual scavenging, little attention has been paid to the evolution of manual scavenging into equally oppressive sewer cleaning practices. By showing how a technology with humane intents was modified to support casteism, this paper posits that sewerage was not a solution to manual scavenging, and that it is only by understanding the tenacity of social structures that technological interventions can be successfully staged.

Author biography:

Stephanie is a first-year graduate student in the MA/PhD Performance Studies program, working on how the poor, Third World body is represented and perceived in Indian slum-upgrading projects. She recently completed a Master of Architecture at the Harvard Graduate School of Design, and is deeply invested in international development issues with a focus on the role of infrastructure in urban poverty. This paper follows from her architecture thesis on the phenomenology of sewerage, and her fieldwork on Ahmedabad slum sewers in 2010.

Wanted: Sewers

One of civilization's earliest sewer systems is found in Lothal, an ancient Harappan settlement located in what is today's Gujarat, India. Fifty miles away lies the state's financial capital of Ahmedabad, a burgeoning center of textile industry in the 19th century that gained the moniker "Manchester of India". Ahmedabad's commercial progress and prosperity were beset by heaps of industrial and human waste, as the population grew and living conditions densified beyond the city's infrastructural capacity. Lothal's sewers stood as reminders of Ahmedabad's tidy and technologically advanced predecessors, its open trenches carving out a gridded masterplan that was in stark contrast to Ahmedabad's chaotic encroachments. Sewerage seemed to be the answer to urban decay, promising order, administrative control, and improved public health. It was being deployed in cities across Europe and North America, and Ahmedabad strove to keep pace with its industrial colleagues.

Sewers structured social spaces and human relationships within cities, locating homes and bodies within a government-controlled network, prescribing new sanitary habits, and creating new labour practices. At the same time, they were themselves used to reinforce and reproduce existing social structures: Susan Chaplin argues that Indian sanitation was monopolized by the middle-class because governance was dominated by middle-class interests.¹ Sewerage both materialized power relationships and became an instrument for perpetuating them. It marginalized communities not only on the premises of class, but of caste.

Although Ahmedabad embraced capitalism, the new economic system did little to break the correlation between class, caste and occupation, especially when it came to those who were at the very bottom of the caste hierarchy. Sewerage colluded with the debasement of Untouchables not only by excluding them from its service, but by creating new labour practices that enforced the definition of caste through coprology – the gathering of ordure.² The objective tenor of technology made it seem as if Untouchable labour was a logical result, concealing caste

discrimination under the aegis of necessity. While the story of the Untouchables is absent from sewerage documentation, it can be reconstituted by looking at the unstated cause of public agitations and defensive government reports. Untouchables were the invisible operators that ensured that sewers functioned, and it is in locating the void in sewerage literature that we find their presence.

Literature on the relationship between Untouchables and sanitation is abundant, but focuses on scavenging practices in unsewered communities where Untouchables are forced to manually remove faeces. This essay examines how sewerage did not solve manual scavenging, but merely gave it a new form. Sewerage in Ahmedabad was deeply intertwined with status, legitimacy and identity, and as much as it altered the city, it was itself transformed over time to conform to social structures.

The Sanitary “Civic Sense”

Cloaca Maxima: it has not failed to claim, up to and including the most insipid of history manuals or in the teachings of the most elementary of Latin classes, to be the signifier of civilization itself, the example we give before all else, before cement and alongside the aqueducts, of the “high degree of civilization” that was reached by the Romans.³

In European history texts, the cloacae or sewers became ciphers for Rome’s “high degree of civilization”, a technology that allowed urban populations to survive and became central to the formation of citizens as both legal and moral subjects. In the late 19th century, sanitation became the primary object of social reform, fêted for simultaneously turning hoodlums into civilized urban dwellers and indicating a society’s innate “civic sense”. As both the product and producer of cultivated society, sewers became social gatekeepers that separated citizens from barbarians. Ahmedabad’s struggle to procure sewers was highly controversial, as debates raged over the public’s state of enlightenment and the impact it would have upon caste structures.

Unlike Bombay and Delhi, Ahmedabad remained relatively independent of British rule, and had its own municipal government consisting primarily of Western-educated professionals.⁴

Its first municipal president was a successful millowner who applied his industrial ingenuity to reducing the city's alarming mortality rates, proposing underground sewers after reading the British Army Sanitary Commission's attribution of disease to lack of drainage.⁵ Ranchhodlal Chhotalal's 1886 sewerage proposal promoted a sewerage scheme written five years earlier by public works engineer Colonel Walter Ducat, and quickly came under fire from both foreigners and locals.

British civil servant Theodore C. Hope found sewers impractical for Ahmedabad, given, "on the part of the people, an absence of intelligence and hearty co-operation, and a poverty which can ill bear the risks of a costly experiment".⁶ Ahmedabadis were deemed too ignorant and too poor to handle sophisticated new technology, especially since their more esteemed countrymen in "great and rich presidency towns" had failed to do so.⁷ Sewers denoted the hierarchy of Indian cities, and Ahmedabad's ambitions exceeded the city's stature, threatening to destabilize the ladder of enlightenment and advancement that grounded British power structures in India. As an emerging Western technology, Hope thought underground sewerage "too far advanced for the present stage of average intelligence and civilization" in Ahmedabad, invoking notions of progress and refinement to establish Western superiority over backward "natives".⁸ While he could not deny that Ahmedabad's sanitary ambitions evinced an elevated "civic sense", Hope was unwilling to concede that sewers were appropriate for the city, distinguishing between sanitary consciousness and sanitary capacity to keep the city in its designated place on the social ladder.

Sewerage's aura of progress drove Chhotalal's campaign to sanitize Ahmedabad. In an 1886 letter, Chhotalal described Ducat's scheme as a "*modern* under-ground sewage system [my italics]", portraying the project as state-of-the-art in contrast to the city's extant open-air sewers that needed to be manually cleaned.⁹ Indeed, Chhotalal's biographer depicted him as a modern man who promoted the "rules of sanitary science" and believed in empirical knowledge. His attitude was un-Indian in the way he "besought his colleagues to set their faces sternly against

the fatalism, so prevalent among the people of India”, and fought on the side of science against native custom.¹⁰ Chhotalal’s Western qualities were deemed righteous in attempting “to ameliorate the material conditions and circumstances of life”, linking Western science to social justice.¹¹ Hope made the moral implications of sanitation clear in his description of Chhotalal’s “humane efforts” as “just and proper”, imbuing sewerage technology with ethical impetus. Ethics echoed from Chhotalal’s repeated assertions that sewerage was a civic responsibility, and alongside the construction of Ahmedabad’s sewerage, Ahmedabad’s moral public was formed.¹²

In the hands of social reformers, “civic sense” possessed a moral dimension that exceeded good breeding. “Civic sense” came to be understood as “that sense of humanity, - the knowledge that mankind is one and must henceforth be dealt with from that standpoint”.¹³ It signified equality and mutual respect, a moral consciousness that indicated one was part of humanity. Chhotalal made a moral argument for sewerage premised upon residents’s right to live, focusing on mortality reduction and establishing that Ahmedabadis are as deserving of a sanitary environment as any other population. Although he asked for Ahmedabadis to be considered as equals to other seweraged populations, Chhotalal omitted mention of the sanitary inequalities internal to Ahmedabad’s populace. Ahmedabadis’s “civic sense” pertained to a select public’s well-being – the public that did not have to jeopardize its health every day cleaning up the city’s excrement.

Caste Controversy

Ahmedabad’s sanitation workers were Bhangis, a caste of Untouchables that was privately employed by neighborhoods to manually remove faeces from dry latrines, empty out cesspools, and sweep gutters.¹ Since they were the only people who were willing to handle excrement, the entire city was dependent upon them, and higher castes became resentful of the

¹ Following the terminology used by Mari Marcel Thekaekara, Vijay Prashad, Fernando Franco, Jyotsna Macwan and Suguna Ramanathan, this essay uses “Bhangi” to refer to Untouchable sweepers despite its derogatory connotations. While other names define caste through religious beliefs (Balmiki, Valmiki) and general oppression (Dalit), Bhangi is associated to sweeping and is therefore the most specific term for describing this community.

Bhangis's power over the city's hygiene. Moreover, Bhangis profited from collecting residents's night-soil by selling it as manure to farmers.¹⁴ Sewerage threatened their employment and their source of additional income, while it simultaneously seemed to liberate them from demeaning labour. The socioeconomic structures that both bound and empowered Bhangis were endangered, and local opposition to Chhotalal's proposal grew as sewerage's implications upon caste divisions became clearer.

Chhotalal strategically made no mention of sewerage's impact upon the Bhangis, discussing sweepers only in the context of their failure to clean sufficiently. He pointed out that "[t]he Municipal Bhungees will only clean the cess-pool once a day and some portion of the foul water will always remain in the cess-pool", while sewerage would eliminate every trace of excrement from residential areas in a timely manner.¹⁵ By evaluating Bhangis only in terms of efficiency and effectiveness, Chhotalal represented them as sanitation instruments, and glossed over the larger social framework that defined their occupation.

Occupation and caste had become synonymous by the 1880s, as Ahmedabad's population grew and the need for a sanitation workforce increased. All Bhangis who migrated into cities were absorbed into the sanitation industry, and soon it became unthinkable for them to perform any other kind of work.¹⁶ The caste system itself became known as "but another name for division of labour", albeit a confining division that restricted Bhangis to menial activities and freed upper castes from repulsive tasks.¹⁷ Chhotalal's sewerage proposal did not simply replace manual sanitation with mechanized sanitation, but challenged the correspondence between caste and occupation. Freed from sanitation work, Bhangis could take over occupations allotted to other castes, thereby blurring caste divisions and threatening hereditary occupational privileges.

It was Hope who bluntly pointed out that the sewerage scheme implied "the abandonment of the existing system of removing the foecal matter, or night-soil, by hand" from dry latrines, as well as eliminating "the collection of all the night-soil and sullage water" from

cesspools.¹⁸ Moreover, Hope made clear that sewerage would entail sanitary equality, stating that, “it should be distinctly realized that under a system of underground drainage, every house in the city ought to be connected with the sewer”.¹⁹ Sharing piped drinking water with lower castes was so objectionable to upper castes that for the first while they would not use it, and sharing a sanitation system met with a similar reaction.²⁰ Ahmedabadis were not ready to embrace a “civic sense” that contested caste divisions and caste-based occupations. Exposing the social structures that sewerage would upset, Hope’s letter became a powerful weapon in the hands of Chhotalal’s opposition. Despite its condescending portrayal of Ahmedabadis as uncivilized and unintelligent, the letter was circulated widely throughout Ahmedabad and published in the *Bombay Gazette*.²¹

The general public, the local press, and even Chhotalal’s colleagues were so incensed by the sewerage proposal that they held daily mass meetings to protest against it. Chhotalal often attended these meetings to defend his proposal, but it was to no avail, and during one meeting he was pelted with garbage and stones.²² Although he was escorted back to his home unharmed, the pelting’s intent was to signify punishment rather than inflict physical injury. Pelting was an aggregated assault that allowed every member of the community to participate – a communal act that spoke to the aggressors’s perception of Chhotalal as a threat to communal identity. His sewerage proposal shook the very core of Ahmedabad society, and instigated a collective response that resembled the stoning that would take place during the city’s caste riots decades later. The body is central to both caste and sewerage, and corporeal punishment reflected the public’s desire for the body to adhere to an accustomed order.

Disciplining the Sanitary Body

In his 1850 writings about British sanitation, Herbert Spencer “had sensed that the issue in sanitary reform was not the disposal of wastes. Fundamentally the issue was the desire of someone [...] to force him to perform in a manner officially prescribed, and not freely chosen”.²³ Sewering Ahmedabad was not a topographic project, but a new regime of corporeal governance.

To sanitize the city, its residents had to conform to new ways of living and relating to their bodies.

The existing sanitation system consisted of individual cesspools or khalkuvas for each house, which received household sullage and liquid human waste. Solid human waste remained in the latrines, and was cleaned up by the Bhangis every day. Wastewater in khalkuvas was expected to seep into the subsoil, but because of Ahmedabad's high water table, it ended up in the groundwater that was used for drinking and kept the ground damp and foul-smelling.²⁴ Homeowners with khalkuvas consumed as little water as possible and could not use their cesspools during the rainy season for fear of overflow.²⁵ Whenever they had an opportunity, they would deposit some of the sewage onto the street. However, 80% of homes did not have khalkuvas and were supposed to place their wastewater in large iron pans in the streets or courtyards for daily collection. Frequently, these households simply threw sewage onto the streets at night when Sanitary Inspectors were not around.²⁶

Water consumption, defecation and bathing were carefully and consciously performed. Dry latrines were prevalent, with excreta being left on a stone, plate, or bucket to be collected by Bhangis. Given that Bhangis cleaned only once a day, faecal matter and the smell of human waste were a constant presence, and residents were desensitized to them. Sewerage proposed to change the relationship of residents to excreta, whisking away human waste once it was produced so that it was no longer an accepted presence. Residents would acquire a heightened sense of disgust towards it, and become distant and detached from it. The act of defecation itself would change with the advent of manually flushed squat latrines that accompanied sewers. While dry latrines permitted some latitude for where defecation occurred, squat latrines were fixed locations with a narrow pit that faeces had to be deposited in. Defecation would become a much more constrained act, and a much more private one. One's faeces would be seen only by oneself, and would no longer need to be touched by others in order to be removed.

In diminishing the corporeal intimacy between Bhangis and faeces, sewerage proposed to diminish the relationship between caste pollution and touch. Some late 19th-century Hindu reformers considered the untouchability of Bhangis an occupational pollution, justifying their low social status through their daily contact with excreta.²⁷ Moreover, contamination through touch is central to the way that untouchability is practiced: not only are Bhangis to be kept away from upper caste bodies, all objects and spaces that come into contact with Bhangis are defiled and not to be touched by upper castes. If pollution is transmitted through touch and Bhangis no longer had to be in physical contact with excreta, the source and nature of Bhangi contamination became questionable. While upper castes that accidentally touched Bhangis could purify themselves through ablutions, Bhangis could not cleanse themselves of their contamination. There was an ontological pollution that was conflated with occupational pollution, a permanent state of defilement that overlapped with polluting events. Their contact with excreta both justified and was justified by their polluted status. Sewerage threatened to break the circular logic of Bhangi contamination by eliminating their contact with faeces, leaving their contamination a myth realized through performative acts rather than a microbiological reality. Sanitary science prized empirical evidence, and challenged the validity of untouchability's mythic premises.

Sewerage also proposed to eliminate the punishing labours that positioned Bhangis on the lowest rungs of Ahmedabad society. Prior to flush toilets, Bhangis went from door to door, accessing dry latrines through a cleaning entrance so as not to pollute the house and its occupants.²⁸ They half-crawled into pits to retrieve faeces, loaded them onto leaky baskets atop their heads, emptied them onto carts and trekked to the Sabarmati River or outside of Ahmedabad's walls to dispose of them. Physical exertion characterized their occupation as much as contact with faeces. Despite their toils, they were stereotyped as "feeble of mind and body", undercutting the athletic power that their work entailed.²⁹ Their labour was not perceived as physical training but as physical punishment: rather than gaining prowess from their exertions,

they suffered from them. Labour was a means of disciplining their bodies into submission, instilling a corporeal order that threatened to be overturned by sewerage's redefinition of Bhangi labour.

Caste hierarchy was about to undergo tumultuous changes with the construction of underground sewers. Sanitation was civically desirable but socially undesirable, as it changed community relationships into human-machine relationships. Relative standings among castes were part of how community status was constructed, and the replacement of sweepers with sewers rocked the lowest regions of the caste structure. Although residents would become increasingly sensitive to excreta, they would no longer be able to displace their disgust onto Bhangis as easily as they used to. Moreover, pollution would no longer be spatially controlled and contained through the body of the Bhangi. While Bhangis could be relegated to the back door, sewers were ubiquitous and transgressed public/private boundaries, running underneath streets and into homes. The public realm of the street that once received illegal sewage deposits bled into the clean, domestic haven. Opponents to Chhotalal's proposal described sewerage as "unpractical, doctrinaire, still in the experimental stage elsewhere [...] and dangerous to health", with one writer claiming that streets would be poisoned by sewer gas.³⁰ Sewers made excreta invisible and dynamic, doing away with the security of tangible and locatable faeces that was handled by humans. Even though it was contained within pipes, excreta became immanent in Ahmedabad's environment, making defilement difficult to assess.

Ahmedabad's First Sewer

Despite significant resistance to it, Ahmedabad's first sewer was laid in 1893 in the Khadia ward. The political strife that led up to its installment played out primarily between Ahmedabad's municipal government and the larger Bombay Presidency that governed the region. Although Ahmedabad's drainage sub-committee approved Chhotalal's proposal in November 1886, the Municipality vetoed sewerage and favoured improving existing manual methods of faecal removal instead. The Municipality's decision was contested by the North

Division Commissioner and the Sanitary Commissioner of the Bombay Presidency, who were convinced that improving manual methods was a makeshift solution to the city's sanitation problem. In spite of the Commissioners's opinion, the Municipality confirmed its intentions to improve manual removal in 1888, and Chhotalal himself was won over by his opposition to recommend the Municipality's decision against sewerage to the Bombay Presidency. Bombay flatly refused to permit the Municipality's scheme, and the Municipality finally agreed to install an experimental sewer on May 14th, 1888.³¹

The Bombay Commissioners had a very different view of sewerage than Hope did. While Hope thought that sewerage's success was dependent upon a civilized populace, the Commissioners believed that sewerage would create a civilized populace. Edwin Chadwick led Britain's sanitary reform in the mid-1800s with the belief that "[t]he maintaining of outward cleanliness would remake the inner man into an ambitious, disciplined Briton".³² Chadwick was of the opinion that social means for instilling sanitary habits in the population were fickle and susceptible to corruption. He turned instead to "an effective and reliable non-human solution": sewers.³³ Likewise, Chhotalal and the Bombay Commissioners mistrusted a sanitation system that gave sanitary independence to the people. Ahmedabadis had shown that they could not be controlled through legal regulations, illegally depositing sewage in the streets so commonly that prosecuting every instance was far beyond the Municipality's resources.³⁴ Hope had supported improving manual removal because it was "in principle indigenous and national to India", but Chhotalal and the Commissioners were not interested in relying upon indigenous habits that had proven to be unsanitary and incorrigible.³⁵ Their solution was to reform behaviour forcibly through mechanical means that would wrest sanitary decision-making from the people, and centralize sanitary control in the government.

The Municipality allocated funds for sewerage, renowned British engineer Baldwin Latham prepared plans and estimates, and construction was completed in 1893. Although the sewers were laid in the part of Ahmedabad that had objected to it the most, they won over the

public once they were installed and soon inhabitants were demanding house connections to it. In 1897, the system was extended in response to public demand, and by 1930 the entire area within the old city walls was sewerred.³⁶ Chhotalal's biographer attributed the public's radical change in attitude to its encounter with empirical proof of sewerage's effectiveness. Susan Chaplin notes a similar attitude change among the British middle-class, which she explains is because the "new sanitary arrangements were so effective and successful".³⁷ Ahmedabadis accepted sewerage not just because it was effective and successful sanitation-wise, but because it proved to be effective and successful in preserving social and political structures. Sewerage did not challenge caste divisions as the people had feared, but became a new means of enforcing them.

Municipal Collusion

Sewerage shifted financial control of the Bhangis away from private citizens onto the Municipality, but the plight of the Bhangis changed little and in certain ways, for the worse. The Municipality had been moving towards financial control of the Bhangis even before the sewers were built. In 1884, Bhangis were expected to deposit the night-soil they collected into municipal tramway carts at the Jamalpur and Shahpur gates for transportation to a manure processing depot two and a half miles away.³⁸ Centralizing faecal collection under the guise of making sanitation more efficient and less laborious enabled the government to impinge upon the Bhangis's prerogative over night-soil sales. Sewerage completed the Municipality's takeover. Chhotalal planned for the faeces collected by sewers to "yield a handsome revenue to the Municipality", leaving Bhangis no source of alternative income.³⁹

Although sewers reduced the number of dry latrines, cesspools and open gutters in Ahmedabad, they also generated a new task: clearing out blocked pipes. When it came to hiring sewer men, the Municipality colluded with the caste assumption that Bhangis "deal in the refuse of other humans and that they are all culturally dysfunctional". It recruited only Bhangis into the sanitation department, refused to hire them in any other department, and left them with few

other options for livelihood.⁴⁰ With the decline of private employers, Bhangis had no choice but to become Municipal employees and to submit to Municipal work conditions. While private employment gave Bhangis the power to negotiate wages and work conditions with individual households, public employment wrapped those who were responsible for work conditions in layers of inaccessible bureaucracy. An official noted a similar situation in Delhi, where “the question regarding ‘prospects’ is not understood” since Bhangis became perpetual menial labourers once they joined the Municipality.⁴¹ They no longer had the independence to select where and for whom they worked, nor could they draw upon night-soil sales to buy them time to be selective about employment opportunities. The Bhangis had become completely financially dependent upon the Municipality, and the Municipality used it to its advantage.

On September 14th, 1911, the Bhangis went on strike, letting Ahmedabad’s streets and sewers overflow and fester. They had not received their salary in two months. Bhangi leaders Kashiya Deva, Mafatiya Mana and Dhana Balu were arrested and sentenced to one month of imprisonment with hard labour, but the strike did not end until the Municipality brought in sanitation workers from other municipalities.⁴² Despite the demeaning and dangerous nature of their work, Bhangis were keen to preserve their monopoly over the sanitation industry. Sanitation work was their only source of income, and the threat of being replaced by out-of-town Bhangis was enough to send them back to work. The Municipality did find the funds to pay them back their salary, but not before it had made it clear that the Bhangis were at its financial mercy.⁴³

The belief that Bhangis were an urban necessity both tied Bhangis to sanitation labour and was a source of financial security for them. Writing about Delhi’s Untouchables, Vijay Prashad points out that they were “seen as essential to the state’s apparatus and to the population’s health”. The sanitation labourer was an “irreplaceable worker” for whom emancipation would spell disaster for the city.⁴⁴ Likewise, Ahmedabad’s Bhangis were viewed as indispensable to the city’s operations. Without them, sewers would choke up and the city would

be flooded. Oddly enough, the design of the sewers had intended to avoid the necessity of manual cleaning. Sewer cleaning was intended to be as mechanized as the collection of wastewater, forming a self-sufficient system that operated independently of humans. However, the designers had miscalculated the tenacity of social structures, and the bearing sanitation had upon them. Ahmedabad's sewerage system would become a hybrid of human and machine: on the one hand, a primitive system that relied upon manual labour, and on the other, a modern technology that automated sanitary processes.

Designing Humane Sewers

Walter Ducat, author of the sewerage scheme that Chhotalal championed, had never imagined Ahmedabad's sewers to be inhabitable. In his 1886 correspondence with Chhotalal, he stated:

But in Ahmedabad you would not need any sewer big enough for a man to go into. You would want nothing larger than a large stoneware pipe which can be cleared, if necessary, by clearing tools and flushed out clean by a small sudden flush of water through it.⁴⁵

Ducat had envisioned a sewerage system that could be cleaned with minimal body contact. Tools and water would act as mechanical prosthetics, replacing human limbs in the sewers. For the most part, sewers were expected to work by themselves, and cleaning was to be an exceptional rather than a regular event. Baldwin Latham, Ahmedabad's first sewer engineer, was likewise invested in designing a self-cleansing system. In his 1884 sewer manual, he declared that proper sewerage design would end the "vile practices" of sewerage cleaning. Blockage or silting was not inevitable, but "arose from the fact that the size, form, mode of construction, or materials adopted were not in accordance with the work the sewers had to perform".⁴⁶ He studied the effect of various pipe materials, sections, and inclinations upon the velocity of sewage flow to determine conditions that would prevent solid matter from depositing. Science would render sewers humane by automating processes that threatened human health, creating a sanitary

environment not only for those who used flush toilets and strolled along clean streets, but for those who serviced sewers in the urban underbelly.

Latham's self-cleansing sewers aimed to turn sewer workers from physical labourers to system monitors, eliminating the hazards of corporeal engagement and replacing them with safe, distant surveillance of the sewer's operations. Despite his technocratic faith in self-cleansing sewers, Latham believed that sewerage needed to be put under "proper supervision and control", especially given how other sewers in India at the time fared.⁴⁷ Chhotalal was familiar with disastrous sewers in cities like Bombay, Calcutta and Pune, and knew the likelihood of pipe blockages and damaged house connections. Dr. Blaney, a Bombay official who Chhotalal consulted regarding sewerage, stressed in his correspondence "the duty of Municipalities, when sanctioning sanitary works, to see that in their practical results they are sanitary". In his experience with the Bombay sewers, Blaney found manual inspection and "intelligent supervision" necessary – technology should not be expected to work automatically and flawlessly.⁴⁸ The Municipality needed to continually invest resources into sewers after they were built.

Ducat's vision of uninhabited sewers assumed that sewers only needed to be serviced in spots where and when an obstruction became apparent, overlooking the need for constant inspection of the whole system. Sewer workers needed to enter the sewers to monitor their operations, intervening before obstructions occurred and understanding obstructions in the context of the system rather than as one-off, localized anomalies. Latham recognized that sewers had to accommodate human bodies, and that sewerage was not an object but a work environment. A larger sewer diameter that was "made sufficiently high for men to walk through them" would make desilting easier and quicker: sewerage spaces dictated posture and movement.⁴⁹ Standing upright in sewers not only made movement more efficient and ergonomic, but also gave workers dignity in allowing them to take the stance of a human rather

than having to crawl like an animal. He accordingly gave Ahmedabad spacious sewers, with diameters as large as six feet along the old city walls.⁵⁰

Since workers were no longer expected to regularly clear out and lift up sewage deposits onto the streets, access to self-cleansing sewers could be smaller and more economical. While the old English sewers had large, square side entrances that opened onto quiet alleys to facilitate the removal of sewage deposits, Ahmedabad's sewers had circular manholes installed directly above the crown of the pipes in the center of main thoroughfares.⁵¹ Ahmedabad's manholes were designed to be just large enough for a human body to squeeze through, averaging a diameter of one foot in comparison to an average human width of one and a half feet.⁵² Although the manholes were not accommodating to the human body, they were intended to be spaces for quick passage from the street to the sewer. As hands-off sewer inspectors, workers were not expected to bring bulky tools with them down to the sewers, nor were they expected to continually travel up and down to empty out sewage deposits. Given how much cheaper small manholes were to construct and their limited usage by the workers, Latham may have been able to consider them adequate despite their meager dimensions.

Latham made design decisions based on intended user behaviour. His system was humane only so far as it was used in the manner he envisioned. Dr. Blaney had warned Chhotalal that "the system might itself be good while its working may be destructive to health": sewers can in and of themselves be sanitary, but the way that they are used can be thoroughly unsanitary.⁵³ While sewers did mechanize the sanitation habits of Ahmedabadis to a certain extent, they could not prevent misuse of the system, such as deposition of solid waste and industrial chemicals into sewers. As much as colonial bias pervaded Hope's earlier assertion that Ahmedabadis were not civilized enough to deserve sewerage, Hope did make an astute observation that society needed to be on board with the behavioural expectations of new technology to produce successful results:

[...] no supervising staff can alone keep the arrangements up to a sufficient and reasonable standard of efficiency; they must have the intelligent co-operation, proceeding from personal conviction of its necessity, of at least a very considerable proportion of the population.⁵⁴

Sewer workers could not keep Ahmedabad's sewers efficiently operating through their vigilance alone. Their supervisory role could only be maintained if the population produced the expected volume and viscosity of sewage to maintain a self-cleansing flow. As seen in the populace's widespread opposition to Chhotalal's proposal, Ahmedabadis had little "personal conviction of [sewerage's] necessity". Despite their eventual endorsement of the system, Ahmedabadis never saw sewerage as something hard-won, to be appreciated and treated with respect. If anything, sewerage was a reminder of Ahmedabad's limited administrative independence. Chhotalal's biographer believed that the Municipality acquiesced to Bombay's insistence upon sewerage as a means of "saving their faces' and avoiding a direct challenge to Government".⁵⁵ The begrudging origins of Ahmedabad's sewers partly accounted for Ahmedabadis's abuse of the system.

Sewerage Dysfunction

As Ahmedabad grew, so did its sewerage. In 1939, the system expanded beyond the old walled city, and in 1955 it expanded to new settlements on the west side of the Sabarmati River. By 1958, most of the area within the city limits had been sewered, and municipal assistant engineer P. R. Shah proudly declared Ahmedabad the first Indian municipality to "have gutter lines in the whole city".⁵⁶ However, the quality of sanitation was far from ideal:

[...] old drainage lines, which were hardly sufficient to take their own discharge, were further loaded with the increased discharge of the extended areas. This resulted in frequent breakdowns due to choking and backing. Such a disregard for the basic principle of sanitation had its toll in the form of polluting the river water. There were frequent incidences of breakdowns of old mains due to the heavy back pressure; over-

flowing of sewers during peak hours occurred at increasing rate; silting of sewer-sections due to stagnancy became common.⁵⁷

Although the Municipality attributed the system's deterioration to an overload of sewage and inadequate pipe sizes, the physics of sewerage design point to another culprit for the city's sanitation problems. While the original sewers did not anticipate such an increase in population, smaller pipes are in fact less likely to silt and can convey sewage much more efficiently than larger ones. A growing population could only have increased sewage flow and made the sewers less vulnerable to blockage. The pipes were not at fault – what was flowing through them was responsible for the choking, back-washing and pipe breakdowns. Not only were solid waste and industrial chemicals being thrown into the sewers, Ahmedabadis had also found that they were a safe place to deposit contraband. Needles, liquor pouches, and tobacco containers were dumped into them to avoid detection, especially after the Bombay Prohibition Act in 1949.

The primary reason for misuse of the sewers was habit. In the old sanitation system, sweepers collected solid waste alongside human waste, which were both considered dirt and handled in the same way. Prashad writes that in Delhi, “[t]he task of the sweeper was to remove the accumulated dirt and dispose of it, to remind residents of their own civility and to hide the city's own refuse from itself”.⁵⁸ Sewers were understood as substitutes for sweepers, and thereby responsible for disposing of all that was dirty, including “street sweeping and matter from private houses”.⁵⁹ Although the Municipality still hired sweepers to clean streets and collect waste after sewerage was installed, solid waste management as a concept did not fully emerge in India until the 1960s.⁶⁰ Rather than waiting for solid waste to be collected by Bhangis, homeowners took advantage of sewers as a means of timely and convenient waste disposal.

Ahmedabadis treated sewers the same way that they used to treat the streets, depositing all that was dirty into them to maintain the separation between clean interior living spaces, and dirty exterior ones. Rather than blurring interior and exterior domains, sewerage remained an external element under the responsibility of the Municipality. There was no sense of civilian

obligation towards ensuring that the sewers worked properly, and Municipal regulations could do little to control the way sewers were used inside homes. Unlike public streets that could be monitored, sewer connections and their misuse were concealed within individual homes. As seen in the earlier problem of illegal sewage deposits in the streets, Ahmedabadis were used to disregarding Municipal regulations in favour of convenience, and with sewers there was no fear of being caught.

Sewers were integrated into existing behaviours and attitudes, becoming new means for enacting long-standing interior/exterior distinctions and private/public responsibilities. Rather than producing new habits in the population, sewers were co-opted into existing habits. In much the same way, the new role of the sewer worker did not upset Ahmedabad's caste structure, but became a new way for manifesting it.

The Sewer Caste

Ahmedabad's sewers had turned into garbage dumps, and blockages could not be removed by a "small sudden flush of water" as Ducat had proposed in 1886. Consequently, sewer workers were not mere supervisors as Latham had intended, but had to perform physical labour to clear the drains. Armed with a bucket and their bare hands, sewer men entered overflowing manholes wearing nothing but a loincloth. A rope wrapped around their chest raised and lowered them from the manhole as they filled bucket after bucket with hardened sewage debris. Latham's condemnation of English sewerage cleaning paled in comparison to the full-body submersion that Ahmedabad's "divers" underwent on a daily basis.⁶¹ The most inhumane and primitive of technologies serviced Latham's humane, state-of-the-art sewers.

Most Ahmedabadis did not associate Latham's sewers with advancement: sewerage's aura of modernity and sophistication could not redeem the contamination of faeces. Rather than connoting an intelligent and civilized society as Hope had imagined, sewerage was tainted by the stigma of defilement and considered as polluted as the human waste it sought to protect the city from. In the same way that handling faeces occupationally polluted the Bhangis, conveying

faecal matter polluted the sewers. It was therefore logical that only polluted bodies were employed in the sewers. The sweeper caste had morphed into the sewer caste, and all the social biases against sweepers were transferred to the sewer workers.

The Politics of Technology Development

Bhangis had always been considered filthy and backwards, these characteristics being deemed innate to them and the cause of their oppression. In such a way, their plight was considered inevitable and their own fault.⁶² Other castes were thought to be intelligent enough to refuse to handle faeces, and the Bhangis's willingness to perform such acts was taken to be indicative of their stupor. Their backwardness was understood not only as the cause of social dysfunction, but also as the incapacity to handle technology. Sweepers were traditionally untrained and given no tools to handle faeces. They found scraps of wood and metal to scrape up faeces and deposited them into baskets and boxes for transport, having no time, education or access to resources to improve their tools.⁶³ The primitive nature of their tools was then used to reinforce the image of them as mentally deficient and incapable of learning how to use improved technology. Similarly, sewermen were deprived of training and tools under the assumption that they were inept and unable to comprehend the repulsiveness of their tasks. No protective gear was developed to keep sewage from entering their orifices and permeating their skin, since it was assumed that they were already as contaminated as the substances they were submerged in. Sewerage maintenance technology remained primitive because it reinforced the Bhangi stereotype. To give them new tools would have entailed recognition of Bhangis as intelligent, sentient humans who experienced the same revulsion towards faeces as everyone else did.

Consequently, Ahmedabad's sewerage technology developed asymmetrically, with sewage treatment plants and pumping stations being repeatedly updated and replaced by newer technologies while maintenance tools remained the same. Between 1924 and 1928, Ahmedabad President Vallabhbhai dedicated funds to expanding, re-equipping and modernizing the city's pumping station and sewage farm.⁶⁴ Between 1986 and 1995, Ahmedabad received a World

Bank credit (1643 IN) to sewer newly annexed territory in the east that was largely unserved. The project was left incomplete due to the Municipality's inability to raise sufficient funds, and much of the infrastructure was cancelled.⁶⁵ However, Ahmedabad ensured that a new sewage treatment plant was built before access to the funds ran out.⁶⁶ Between 2002 and 2004, the city received a grant from the Government of India to mitigate sewage entering the Sabarmati River. Almost half of the grant was marked for constructing new sewage treatment plants to replace the existing ones, even though the main source of the river's pollution was from storm water outfalls.⁶⁷ Between 2004 and 2008, the number of sewage treatment plants doubled even though the number of sewer lines hardly increased. In 2009, pumping stations were equipped with eight-channel temperature measuring devices, ultrasonic transmitters and electromagnetic flow meters. Their processes were fully automated via programmable logic controllers that decided whether the pumps should stop or start, and which pumps should be in use.⁶⁸ Biased sewerage development has resulted in sewage treatment plants and pumping stations whose current sophistication rivals those in most Western cities, while maintenance technology has not progressed beyond buckets and human hands.

The crudeness of Ahmedabad's sewerage maintenance equipment was not due to lack of funding or lack of available technology. The advanced state of the sewage treatment plants and pumping stations proves that the city had the capacity to mechanize pipe maintenance, or at the very least provide better equipment to the Bhangis. It was lack of political will that arrested the development of maintenance technology. Bhangis had nobody to speak on their behalf when it came to sewerage budgeting decisions, nor was there any public interest in improving their work conditions. What did get the public's attention were new constructions, particularly those that were aboveground and could be visually verified. Treatment plants were highly visible facilities that officials could point to as evidence of their civic duty. Local newspapers celebrated Ahmedabad's latest sewage treatment plants as the largest ones in Asia, and the municipal commissioner described them as evidence of the government's "scientific" efforts in

“environment conservation”.⁶⁹ Ahmedabad’s efforts in keeping up with new treatment plants allowed it to claim technical proficiency and civic responsibility, while masking the neglect of its maintenance staff.

Visibility played an important role in acquiring political support for sewerage technology. The poor visibility of maintenance processes contributed to the Bhangis’s neglect. Sewermen worked underground and mostly at night, remaining invisible to most Ahmedabadis. Ashamed of their jobs, they avoided contact with the public and thereby colluded with their own marginalization. Despite remaining unseen, their demeaning labour was a commonly known fact. In 1952, the Government of India set up the Scavengers’s Living Conditions Enquiry Committee, which published a detailed report of Bhangi conditions in 1961. The report did little to improve their wellbeing since knowledge of their circumstances had nothing to do with their treatment as “untouchable, unapproachable and unseeable”.⁷⁰ Although the 1993 Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act prompted sewerage engineers to make cosmetic efforts in mechanizing sewer maintenance, there was little investment in ensuring that the new maintenance provisions worked. Large, rectangular scraper manholes were installed at every third or fourth manhole throughout the city in the 1990s to facilitate machine access to the pipes, and expensive super sucker machines were purchased to replace sewer workers.⁷¹ The machines failed to work: some were too weak to clear blockages, while others were too strong and broke the old pipes. Moreover, the machines could not access many of the city’s narrow, winding streets, and were therefore unusable.⁷² These efforts at mechanizing maintenance were merely a show to appease national authorities, and had no impact upon actual maintenance practices. Because sewer workers were invisible, municipal officials could disavow the continued practice of manual sewerage cleaning and point to the machines and manholes as evidence of mechanized cleaning.

Caste politics were built upon social exclusion of the Bhangis, making them a central part of the social structure even though their bodies were kept out of public view. Invisibility was a

means of marking their separation from other castes, becoming visually akin to Untouchability's shunning of the body. When they worked as sweepers, Bhangis could leverage their visual presence to demand recognition of their hardships. They occupied the same space as other castes, and their daily routines were intertwined with those whom they served. As sewer workers, their labours went unseen and unacknowledged, permitting the perpetuation of the Bhangi stereotype as lazy and useless.⁷³ What was seen by the public were constantly overflowing manholes, sewage backwashing into homes and broken pipes, all of which Ahmedabadis attributed to the Bhangis's incompetence. As all communication lines were cut off between Bhangis and other castes, their isolation and political disempowerment increased.

Political Mobility

Banished from sight and separated from other Ahmedabadis spatially and temporally, Bhangis developed their own culture and interests through their segregation. They became an experiential caste or *jati*, their everyday lived experiences marking them as Bhangis more so than religion and genealogy.⁷⁴ Sewerage cleaning consolidated their communal experience and secluded them from other oppressed communities. Shyamlal writes that the "Bhangis are a people apart even among people apart",⁷⁵ sharing little sense of solidarity with other oppressed castes and excluded from the political mobilization of other marginalized groups. In 1981, riots erupted over Ahmedabad's espousal of Scheduled Caste reservations, which set aside a certain number of seats in schools and in public office for lower castes in an attempt to erase caste barriers. Spodek notes that during the riots, lower castes were divided into "upwardly mobile castes like Vankars, traditionally weavers, and Chamars, traditionally leather workers, on the one hand and the lowest of the low, the Bhangi sweepers who remained outside the conflict, on the other".⁷⁶ In their position of complete subservience, Bhangis posed no threat to the caste hierarchy and had no ambitions towards social mobility. They were excluded from the benefits of Scheduled Caste reservations, and played no part in the riots.

Even in the few instances when Bhangis did take up political action, they made no demands for liberation from their occupation. When they went on strike in 1911, it was out of desperation after having not been paid, and they asked for nothing more than reinstatement of the terms of their work. A second strike occurred on June 12th, 1946 when sanitary workers protested worker assault, insults by officials, exposure to harsh environments, and having to report four times a day at their workplace.⁷⁷ Although the strike was a success and raised wages by 5 Rs, they were once again contesting instances of unusual cruelty, not their occupations. There was no mention of their lack of cleaning equipment or the health hazards they endured on a daily basis, both of which had become accepted as normative. The strike was organized by the Ahmedabad Municipal Kamdar Sangh, a municipal servants association that was concerned about instances of employee abuse, not the abusive nature of the employment itself.

Other forms of Bhangi political organization were likewise bent upon improving living conditions rather than challenging the work that enslaved the Bhangis. Gandhi sought to free Bhangis from their pejorative name by rechristening them Harijans or “children of God”. He unified them and worked on improving their welfare, to which end he organized the Harijan Sevak Sangh in 1932.⁷⁸ Focusing on improving their access to social services, Gandhi advocated “courtesy, goodness and compromise”⁷⁹ and did little to contest their caste-based occupation. His influence permeated the Bhangi Mahajan, a worker’s union that was set up in 1927 modeled upon Ahmedabad’s powerful textile labourers’s union.⁸⁰ Unlike the textile labourers’s union, the Mahajan had little political influence, having taken up the Gandhian focus on improving living conditions rather than contesting the structures that created the conditions in the first place. A rival Untouchable welfare organization was created in 1928 by followers of D. R. Ambedkar, who sharply criticized Gandhi’s approach. Ambedkar believed that Bhangi freedom could not be achieved without destroying the caste system, his radical approach promising to liberate Bhangis from their demeaning labour. However, hailing from outside of the state, Ambedkar’s influence floundered next to that of Gandhi, a Gujarati native.⁸¹

The opportunity for concerted political action disappeared with the passing of the 1993 Employment of Manual Scavengers and Construction of Dry Latrines (Prohibition) Act. The act banned the legal practice of manual faecal removal, but had little effect on its actual occurrence. Rather than investing in maintenance equipment that actually worked, Municipal officials simply found administrative loopholes to continue hiring Bhangis. Bhangis were employed through a chain of contractors and subcontractors, renamed independent contract workers, and cut off from any direct legal association to the government. As contract workers, they could not form unions, receive benefits, demand minimum wage or be guaranteed job security.⁸² The sewerage cleaning community became fragmented, stripped of legal rights and made legally culpable for its own exploitation. Under such conditions, the possibility for the kind of political action of the early 1900s faded.

Disciplining the Unsanitary Body

Not only did sewers deprive Bhangis of their last vestiges of political freedom, they imposed corporeal constraints with more rigour than sweeping did. Ahmedabad's frugal manholes imprisoned sewer men, restricting their movement in precisely the way that Latham had deplored. The shafts that were meant to be used fleetingly had become the sewer men's dominant work environment. They had to contract their bodies to fit into the circular cross-section, spending an average of two hours in each manhole to clear up blockages. The ropes that were used to raise and lower them from the shaft left distinct markings on their chests, branding them as Bhangis more permanently than their sweeper brooms used to. Sewerage cleaning demanded a corporeal surrender that sweeping never did: it did much more than train the body to perform certain acts – it invaded the body. Sewage entered the body through the eyes, ears, and nose, infecting workers with leptospirosis, viral hepatitis and typhoid.⁸³ Bhangi bodies were not just in physical contact with faeces, they had become vessels for them.

In becoming a part of the body, sewer workers's contamination complicated caste reformers's assertions that pollution was episodic and could happen to anyone who touched dirt.

Since the 1920s, “contact with dirt was seen as less of a mark of permanent pollution than a transgression of social norms or a mythical fault or error”.⁸⁴ Gandhi promoted a similar view, portraying pollution as a microbiological phenomenon.⁸⁵ By carrying microbiological pollution within their bodies, sewer workers blurred the boundary between episodic and ontological contamination, contributing to traditional understandings of Untouchability as inherent to a person. Their unclothed bodies affirmed the image of Untouchables as primitive and bestial, justifying their treatment as animals.⁸⁶ Not only did their direct epidermal contact with sewage signify their submission to pollution, it also denied them human dignity. Their lives were treated as expendable, with many a sewer worker perishing from asphyxiation and lethal gases within the manholes.

Latham’s vision of humane spaces where workers could engage in safe and dignified employment was subverted through misuse and unforeseen social practices. The ventilation system that Latham had installed to keep sewer gases from accruing to lethal levels remained in place within the old walled city, but disappeared everywhere else. It consisted of metal shafts that towered four stories high, resembling lampposts with baffled crowns. Over time, they were taken down – some conjecture that people used them for scrap metal, while others believe that construction crews dismantled them when they repaved roads and neglected to reinstall them.⁸⁷ Without ventilation shafts, carbon monoxide, methane, hydrogen sulphide, benzene, carbon dioxide, ammonia, and other hydrocarbons reached deadly levels in the sewers.⁸⁸ Ahmedabad’s sewers had become the dangerous, unsanitary spaces that Ahmedabadis had feared in the 1880s. However, they no longer protested with the vehemence they did then, since the dangers did not affect the general public. Poisonous sewer gases did not leak out onto the streets as they had feared. The gases only killed Bhangis, whose deaths were officially denied and concealed.

While Richard Schoenwald argues that sanitation reforms in England provided means for disciplining urban bodies, Ahmedabad’s sanitation system enabled invasive control over Untouchable bodies. Sewerage cleaning took over Bhangis’s bodies, branded them, and usurped

their lives, inscribing them within Untouchability discourse more effectively than sweeping did. Instead of imparting civic enlightenment, sewerage forced Bhangis to succumb to primitive cleaning practices and intensified their segregation from the rest of the city.

Recasting the “Civic Sense”

Sewerage’s relationship to different segments of the population reflected a change in the way Ahmedabadis understood the term “civic sense”. Before Ahmedabad was sewered, the sanitary “civic sense” had been an exclusive characteristic of Western societies that was deemed to be beyond Ahmedabadis. At the time, Ahmedabadis had believed their practices to be sufficiently sanitary, and were highly suspicious of the foreign “civic sense” that had spelled disaster in Bombay and Calcutta. It was upon acquiring sewerage that Ahmedabadis espoused the term “civic sense” and integrated it into existing understandings of the city, in the same way that they adapted sewerage to support existing caste structures. The sanitary “civic sense” spelled out a relationship between individuals and the city that was realized through the sewers.

Sewerage was a social contract between individual homes and the city: in joining the sewer system, homes were agreeing to pay city taxes and to adopt a set of urban sanitation practices. In return, the city recognized the home as legitimate and accorded it legal protection. Sewerage was an instrument of civic conquest that demarcated Ahmedabad’s territory. As the city’s limits expanded and new tracts of land were annexed, Ahmedabad’s foremost concern was to sewer those territories, thereby materializing its legal claim over them. The East Ahmedabad Project in 1986-1996 (phase 1) and 1997-1999 (phase 2) sought to sewer newly claimed territory, even in unpopulated areas. In many instances, sewers were inserted before roads were laid and before town planning schemes were finalized.⁸⁹ The rush to sewer new territory led to a number of pipelines being built over by encroachments and subsequent changes to the town planning scheme. Sewers were not being built for functional purposes, but as markers of civic space.

Having a sewer connection came to signify one’s allegiance to the city. Sewers indicated a “civic sense” that was no longer associated with good breeding, but with legitimacy. Those with

sewerage access were deemed to be proper citizens, while those who did not were considered encroachers who leached upon the city and caused its sanitary deterioration. In the 1980s, migrant workers were blamed for the decay of urban sanitation, which was thought to result from them having “no stake in the city” and not developing “a notion of civic sense”.⁹⁰ Worker housing had historically lacked adequate sanitation. In 1929, the textile mills released wastewater into their residential areas, and by 1951, over half of worker housing had no sewage or toilet facilities.⁹¹ Most workers came from villages and remained characterized as rural and backwards, having failed to integrate into the city.⁹² Ahmedabadis felt no responsibility towards these outsiders, and saw them as inherently dirty and responsible for their own degradation.

Responsibility for urban sanitation had shifted from the government to the people. Chhotalal’s belief in the Municipality’s civic responsibility had dispersed into the “civic sense” of the people, which was made explicit during Vallabhbai’s term as Municipal President from 1924-1928. As former chair of the sanitary committee, he “not only demanded that government implement programs for urban sanitation, but he also called on the citizens individually and collectively to modify their behavior”.⁹³ During a conference on local self-government, he described the people as “very lax in observing even the most ordinary rules of health and cleanliness, and indeed in such matters they neither appreciate what their duty is to themselves nor their duty to their neighbours”.⁹⁴ The sense of personal responsibility that pervaded sanitation corresponded with the sense of personal liability that justified the caste system, so that migrant workers became as culpable as the Bhangis for their own dirtiness.

A 1955 summary of the Report from the Scavengers’s Living Conditions Enquiry Committee reveals that Bhangis in the region had no latrines, and lived next to dumping grounds and open drains.⁹⁵ According to a 2006 state-wide study, 45.4% of Bhangis still had no toilets and no bathrooms, their unsanitary living conditions being used to justify their polluted status.⁹⁶ Their small and unstable income consigned them to living in slums, beside railroad tracks, and along the river – all illegally occupied lands that had no access to sewer lines. Their

exclusion from sewerage amounted to banishment from civic space, as they had no social contract with the city and their homes and jobs were illegitimate. Their identities were also illegitimate: they were not considered citizens since they paid no city taxes, and they did not perform the sanitary practices that Vallabhbhai considered civic duties. However, their illegitimacy did not arise from the sewers. They had always been social outcasts, and sewers simply offered another way to confirm their status. As such, Bhangis have never been acknowledged for their “civic sense” despite sacrificing their health and even their lives to perform a civic service for Ahmedabad. They have never been included in the city even though they have been and continue to be considered an urban necessity.⁹⁷

Sanitation technologies that were intended to replace Bhangi labour have instead contributed to the preservation of their living and working conditions, perpetuating the belief that they are irreplaceable and essential to the city. While sewerage did have a significant impact upon the way Ahmedabadis lived and Ahmedabad developed, it was itself subject to significant impact from Ahmedabadis and became complicit in the very practices and ideologies it sought to erase. Technical details were designed assuming that particular human behaviours and relationships could be cultivated, without thinking that the technology itself would be exposed to manipulation. The association between coprology and caste has persisted because of its ability to adapt to changing urban conditions, co-opting the new into the existing to always remain current. The hope for Bhangi emancipation therefore cannot arise from notions of development or modernity – they will only provide new methods for subjugating Bhangis. Instead of looking forwards, perhaps looking backwards and seeing how casteism has written itself into new practices can reveal how future actions can guard against its propagation. Recognizing the power of social practice upon technology is necessary for any successful interventions. Otherwise, as Dr. Blaney once put it, “they are not only useless but useful for evil, and as such they are a cruel waste of public money”.⁹⁸

 Notes

1. Susan E. Chaplin, "Cities, sewers and poverty: India's politics of sanitation," *Environment and Urbanization* 11, no. 1 (1999): 146.
2. *Oxford English Dictionary*, 2nd ed., s.v. "coprology."
3. Dominique Laporte, *Histoire de la merde* (Paris: Christian Bourgeois, 1978), 23.
4. Kenneth Gillion, *Ahmedabad: A Study in Indian Urban History* (Berkeley: University of California Press, 1968), 121.
5. Ranchhodlal Chhotlal Memorandum, 1 December 1885, in *The Life of Rao Bahadur Ranchorelal Chhotlal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 39.
6. T. C. Hope Reply, 25 October 1886, in *The Life of Rao Bahadur Ranchorelal Chhotlal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 63.
7. *Ibid.*, 72.
8. *Ibid.*, 72.
9. Ranchhodlal Chhotlal to Dr. Thomas Blaney, 22 January 1886, in *The Life of Rao Bahadur Ranchorelal Chhotlal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 40.
10. S. M. Edwardes, *A Memoir of Rao Bahadur Ranchhodlal Chhotlal, C.I.E.* (Exeter: William Pollard, 1920), 29.
11. *Ibid.*, 29.
12. Hope, Reply 25 October 1886, 68 and 72.
13. Helen Campbell, "Social Settlements and the Civic Sense," *The Arena* 20, no. 5 (November-December 1898): 596.
14. Vijay, Prashad, *Untouchable Freedom: A Social History of a Dalit Community* (Oxford: Oxford University Press, 2000), 3-5. Prashad describes Delhi's sweepers, but Ahmedabad's sweepers must have been in the same situation given Chhotlal's proposal to centralize night-soil collection and gain municipal revenue from it.
15. Ranchhodlal Chhotlal Memorandum, 1 November 1886 in *The Life of Rao Bahadur Ranchorelal Chhotlal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 83.
16. Prashad, *Untouchable Freedom*, xvii.
17. D. R. Ambedkar, *Annihilation of Caste* (Bombay: Government Central Press, 1979), 47.

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18. Hope, Reply 25 October 1886, 70.
 19. *Ibid.*, 70.
 20. Gillion, *Ahmedabad*, 136.
 21. Edwardes, *A Memoir of Rao Bahadur Ranchhodlal Chhotalal*, 35.
 22. *Ibid.*, 33
 23. Richard L. Schoenwald, "Training Urban Man: A hypothesis about the sanitary movement," in vol. 2 of *The Victorian City: Images and Realities*, ed. H. J. Dyos and Michael Wolff (London: Routledge, 1973), 682.
 24. Gillion, *Ahmedabad*, 132.
 25. Chhotalal, Memorandum 1 November 1886, 81.
 26. Gillion, *Ahmedabad*, 132.
 27. Prashad, *Untouchable Freedom*, 119.
 28. Mari Marcel Thekaekara, *Endless Filth: The Saga of the Bhangis* (London: ZED Books, 1999), 3.
 29. Prashad, *Untouchable Freedom*, 23.
 30. Gillion, *Ahmedabad*, 138.
 31. Edwardes, *A Memoir of Rao Bahadur Ranchhodlal Chhotalal*, 38-39.
 32. Schoenwald, "Training Urban Man," 677.
 33. *Ibid.*, 677.
 34. Chhotalal, Memorandum 1 November 1886, 81.
 35. Hope, Reply 25 October 1886, 72.
 36. Chhotalal Memorandum, 1 December 1885, 40 and Howard Spodek, *Ahmedabad: Shock City of Twentieth-Century India* (Bloomington: Indiana University Press, 2011), 133.
 37. Chaplin, "Cities, sewers and poverty," 148.
 38. Gillion, *Ahmedabad*, 133.
 39. Chhotalal Memorandum, 1 November 1886, 86.
 40. Prashad, *Untouchable Freedom*, xvii.
 41. *Ibid.*, 45.

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42. *Prajabundhu*, 17 September 1911; 24 September 1911, quoted in Fernando Franco, Jyotsna Mcwan and Suguna Ramanathan, *Journeys to Freedom: Dalit Narratives* (Kolkata: Samya, 2004), 359-360.
43. Spodek, *Ahmedabad: Shock City*, 59.
44. Prashad, *Untouchable Freedom*, 145.
45. Colonel Ducat to Runchorelal, 19 March 1886 in *The Life of Rao Bahadur Ranchorelal Chhotalal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 47.
46. Baldwin Latham, *Sanitary Engineering: A Guide to the Construction of Works of Sewerage and House Drainage* (New York: Engineering News Publishing Co, 1884), 7.
47. *Ibid.*, 45.
48. Dr. Blaney to Runchorelal, 25 January 1886 in *The Life of Rao Bahadur Ranchorelal Chhotalal, C.I.E.*, ed. Bhagwanlal R. Badshah (Bombay: "Times of India" Steam Press, 1899), 45.
49. Latham, *Sanitary Engineering*, 7.
50. Ahmedabad Municipal Corporation Drainage Department and Multi Media Consultants, "Map of Existing and Proposed Ahmedabad Sewerage Network," (2007).
51. Latham, *Sanitary Engineering*, 45.
52. Human body dimensions are from Donald Watson et al., *Time-Saver standards for Architectural Design Data*, 7th ed. (Madison, CT: McGraw-Hill, 1997), AP-3.
53. Dr. Blaney to Runchorelal, 25 January 1886, 45.
54. Hope, Reply 25 October 1886, 68.
55. Edwardes, *A Memoir of Rao Bahadur Ranchhodlal Chhotalal*, 39.
56. Spodek, *Ahmedabad: Shock City*, 133.
57. *Ibid.*, 133-134.
58. Prashad, *Untouchable Freedom*, 4.
59. Anonymous Delhi colonial official quoted in Prashad, *Untouchable Freedom*, 4.
60. T. V. Ramachandra and Shruti Bachamanda, "Environmental Audit of Municipal Solid Waste Management," Center for Ecological Sciences, Indian Institute of Science, Bangalore, last modified June 2006, http://www.ces.iisc.ernet.in/biodiversity/pubs/ces_tr/TR118_SPoolanancha/Index.htm.
61. Spodek, *Ahmedabad: Shock City*, 134 and Manjula Pradeep, interview with author, Executive Director of the Navsarjan Trust, June 24, 2010.
62. Prashad, *Untouchable Freedom*, 82-83.

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63. Pradeep interview, June 24, 2010.
64. Spodek, *Ahmedabad: Shock City*, 71.
65. *Ibid.*, 204.
66. Ahmedabad Municipal Corporation, "East Ahmedabad Sewerage Project Phase II," (2007).
67. Ahmedabad Municipal Corporation and Ahmedabad Urban Development Authority with Technical Support from CEPT University, *Jawaharlal Nehru National Urban Renewal Mission: City Development Plan Ahmedabad 2006-2012*, (2006).
68. Ahmedabad Municipal Corporation and Multi Media Consultants, "Tender Documents for Construction of Motera Sewage Pumping Station alongwith [sic] Mechanical and Electrical Installation and allied Works including testing, commissioning and O & M for two years of Sewage Pumping Station under Jn-NURM Programme," (2009), 9.
69. Raturaj Jadav, "AMC, AUDA to give city Asia's biggest sewage plants," *Ahmedabad Mirror*, August 2, 2009. <http://www.ahmedabadmirror.com>.
70. Chaplin, "Cities, sewers and poverty," 153. Manual scavenging is a term that presumes an old system of sanitation, but it is just as applicable to newly serviced areas where workers are manually clearing out sewer blockages.
71. Mukesh Shah and Jatin Mehta, interview with author, former heads of Ahmedabad Municipal Corporation Drainage Department, July 13, 2010.
72. Ashish Mishra, interview with author, Kamdar Swasthiya Suraksha Mandal, June 28, 2010.
73. Shaileshkumar Darokar and H. Beck, *Study on Practice of Manual Scavenging in the State of Gujarat*, (Mumbai: Tata Institute of Social Sciences, 2006).
74. Prashad, *Untouchable Freedom*, 21-22.
75. Shyamlal, *The Bhangi: A Sweeper Caste, its socio-economic portraits: with special reference to Jodhpur City*, (Mumbai: Popular Prakashan, 1992), 23.
76. Howard Spodek, "Struggle and Development: A History of Coping with Poverty," in *Poverty and Vulnerability in a Globalising Metropolis: Ahmedabad*, (New Delhi: Manak Publications, 2002), 225.
77. Franco, *Journeys to Freedom*, 360.
78. *Ibid.*, 348 and Spodek, *Ahmedabad: Shock City*, 109.
79. Franco, *Journeys to Freedom*, 348.
80. Spodek, *Ahmedabad: Shock City*, 104.
81. *Ibid.*, 108.

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82. Mishra interview, June 28, 2010.
83. Ibid., and S. Anand, "Life Inside A Black Hole," *Teelka Magazine* 4 iss. 47, December 2007,
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84. Prashad, *Untouchable Freedom*, 119.
85. Ibid., 118-119.
86. Franco, *Journeys to Freedom*, 346.
87. Shah and Mehta interview, July 13, 2010.
88. "Dying to Keep Sewers Clean," *Economic and Political Weekly* 23, no. 40 (October 1988): 2046-2048.
89. Apurva Parikh, interview with author, director of Multi Media Consultants, July 5, 2010.
90. Chaplin, "Cities, sewers and poverty," 155 and Prashad, *Untouchable Freedom*, 155.
91. Spodek, "Struggle and Development," 135.
92. Spodek, *Ahmedabad: Shock City*, 54 and 71.
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