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Life in the Wastelands: Work, Infrastructures, and Value in Urban Pakistan

A dissertation submitted in partial satisfaction of the
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in

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by

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The Dissertation of Waqas H. Butt is approved, and it is acceptable in quality and form for publication on microfilm and electronically:

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DEDICATION

To Ammi and Pop

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LIST OF ABBREVIATIONS

CDGL	City District Government of Lahore
GoP	Government of Punjab
LIT	Lahore Improvement Trust
LDA	Lahore Development Authority
LMC	Lahore Municipal Committee
LUDP	Lahore Urban Development Project
MCL	Metropolitan Corporation of Lhore
SWM	Solid Waste Management
WASA	Water and Sanitation Agency

LIST OF FIGURES AND TABLES

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Chapters 2 and 3 contain materials that are included in a publication currently being prepared. Dissertation author was sole researcher and author of the materials in both chapters.

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ABSTRACT OF THE DISSERTATION

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By provisioning materials things such as water, power, information, and waste disposal, infrastructures have been instrumental in materializing the promise of modernity and development on a global scale (Larkin 2013; Anand 2017; von Schnitzler 2016; Mitchell 2002; Prakash 1999; Khan 2006; Anwar 2014). Waste infrastructures are the socio-technical assemblages through which Lahore's modernity and development have been imagined across

historical moments. The city's daily waste generation is disposed of by either sanitation workers who are almost entirely Christian or waste workers from the informal sector that are drawn from lower status groups such as khānah badosh (nomad or "gypsy" groups), changar, and others. My dissertation argues that, despite being an elementary aspect of urban life, this form of caste labor – waste work – comes to be viewed, along with those who perform it, as non-valuable. In exploring these paradoxical logics, I develop the theory of "essential waste" to argue that waste, something often viewed as mere excess, is foundational to Lahore's reproduction in multiple ways.

Based on fieldwork with a variety of actors and archival research, I explore the work, institutions, and infrastructures by which waste, in a variety of forms, is disposed of and/or circulated. Drawing on anthropological theories that prioritize how actions represent forms of value within a dispensation of social and political life (Turner 1979; Munn 1986; Graeber 2001; Pedersen 2013), disposal and circulation of these materials are crucial to how value in different forms is materialized out of what is deemed to be non-value. I thus examine how the notion of essential waste plays itself out across the state, which materializes value out of waste through infrastructures of disposability, and the informal economy, which marketizes these materials through infrastructures of circulation. Moreover, as subaltern groups have situated themselves within these infrastructures, this dissertation sheds light on the relationship that these groups have to political power in contemporary Pakistan. This dissertation argues that waste comes to be transformed into different forms of value, which then reproduce the city and its population in highly uneven, though deeply enmeshed ways.

Introduction

Situating Waste, Work, and Value in Urban Pakistan

Not even a mile away from where he has spent the past two decades employed as a municipal sanitation worker, Rameez resides in a modest home in an area of Lahore known as Green Town. Originally settled on military land, with a lesser known cantonment nearby, Green Town has been receiving migrants since the 1970s when church figures acquired much of the land and distributed it among Christians. Located by an industrial estate where many of its residents are employed, Green Town is now a religiously mixed, working class locality on Lahore's peripheries. Its main thoroughfare is a hub of commercial activity, maintaining shops, markets, and billiards clubs, and vehicular congestion, bustling with motorcycles, pedestrians, auto-rickshaws, buses, and passenger vans.

When I visited him during fieldwork in 2014, Rameez had made his home chār-dīwārī[1] (enclosed with a brick wall) only a couple of years back, and on every one of my visits, he was always doing something to make it more pakkā (lit. cooked, a solid structure). Located on an unpaved, dirt road that had a spattering of other houses, the house's floor was finished with cement, and its two rooms were painted in bright colors of green and pink. Though from the outside, the structure gave an impression of austerity, it contained all kinds of goods and possessions - from a laptop, a television, and other electronics to furniture, fans, and numerous household appliances. Rameez's son finished his formal education at a private school and was taking a course to become a lab technician while his elder daughter received training and now worked as a seamstress. Rameez and I had spoken extensively about his work, how he came to

[1] All transliterations are based on American Library Association and Library of Congress's standards for romanization (https://www.loc.gov/catdir/cpso/romanization/urdu.pdf). The only adjustment made has been for "چ," which is transliterated as "ch" in this dissertation for purposes of readability, and a few words are transliterated to reflect colloquial pronounciatoin.

be employed in Solid Waste Management department, how that work has changed over the years, and the challenges he has faced during this time. But only during these visits did I see what his years of working with waste had been transformed into: a place in a rapidly urbanizing city.

Much further on the city's peripheries, in area known as Multan Chungi, is an encampment of jhuggīān (clusters of huts) where many waste workers from the informal sector reside. These jhuggīān are not easily accessible. One must pass through middle-class households built in the past decade that encircle the settlement. The jhuggīān themselves are built on dirt, and the paths in between them are strewn with broken bricks, brittle paper, deformed plastics, and wet and dry non-human feces. These jhuggīān are recognized in media as the stereotypical spaces of wasted places and people: trash is collected inside the home, plastic bags are melted like napalm onto wood and used to ignite fires for cooking, and the structures themselves are mostly made from repurposed wood, bricks, and cloth.

A worker I will speak about throughout this dissertation, Manzoor narrated to me how he and his extended kin who reside in this settlement have been shifted through cycles of dispossession and resettlement over the course of nearly three decades. He had been settled in this particular jhuggī for around fifteen years while I was conducting my fieldwork. During that time, Manzoor and his kin had done much to maintain the structure itself and life within it: constantly replacing its roofing and walls, incrementally acquiring household goods and items, and intermittently creating connections to other infrastructures (e.g. water). Much had happened in their lives during this time. His parents had passed away. His brother had built a home nearby. His older children had been married while the younger ones were receiving

formal education. Simply put, Manzoor and his social relations had made a life possible for themselves in this jhuggī.

Whereas Rameez received a salary from the municipality for his labor, Manzoor only charges a minimal service fee to the households he collects waste from. In the jhuggī Manzoor accumulates recyclables that he sorts out from the collective discard of others and then, sells them to nearby junkyards. Rameez, too, collects and sells recyclables, though not to the extent Manzoor does. Much like Rameez, Manzoor and his family relied upon transforming waste into something else: many of the goods and possessions that make up domestic life.

Though residing in different kinds of homes, having different conditions of work, receiving different types of remuneration, and having different personal histories, Rameez and Manzoor had both made a life possible out of transforming waste into value: money, goods, and possessions. It was in the space of their home that the formative questions for this dissertation started to emerge. How did something known and defined as non-value get transformed into something that was once again deemed valuable? What forms did waste and value get transformed into? What were the processes by which such transformations could be effected? What role does the development of governance institutions, waste infrastructures, urban space, and informal economies have in these transformative processes? And lastly, what possibilities does this present for subaltern groups who are situated within these infrastructures?

Every day, several thousand sanitation workers like Rameez from the City District Government of Lahore (CDGL) and an equally large number of waste workers from the informal sector like Manzoor collect, transport, and dispose of Lahore's estimated 5,000 tons of daily waste generation (Batool and Nawaz 2009). Much of sanitation workers' daily effort

involves sweeping streets with a jhāṛu (handheld broom)[2] and gathering waste from areas such as streets and empty plots of land. This labor constitutes their official responsibilities as municipal employees. After clearing these "public" areas, they then collect waste from "private" establishments such as households, shops, and markets. Waste workers from the informal sector travel by donkey cart, refitted motorbike, and even foot across Lahore's landscape to collect waste materials from a variety of "public" and "private" spaces. These workers separate out what is recyclable from the waste they collect and take these recyclables back to their households where it is sorted and sold forward. The non-recyclable items (trash, or kachrā or koṛā) that remain are deposited into municipal containers. A contingent of field staff, who are referred to as dāroghah, supervise much of this activity. All this labor or work is coordinated to collect waste materials from a variety of spaces and transport it to a series of other places from where it can be collected and then, finally, transported to, previously, a dumping ground and now, a sanitary landfill site. This activity, performed by a labor force made up of subaltern groups, ensures the city's waste generation is kept in motion, disposed of, and/or circulated. These infrastructures, which are made to happen by this collective activity, transform waste into something that is once again of value.

This dissertation tracks through Lahore's wasteland,[3] where subaltern groups engage in a stigmatizing, though essential form of work within the city's waste infrastructures. They perform this labor in varying working conditions - at times as laborers subsisting on a wage and at other times, as direct producers relying upon selling recyclables. These groups, ones that have been historically dispossessed and marginalized, have made a life possible out of the

[2] This is why they are called "sweepers," both with the English word "sweeper" and the Urdu word khākrob.
[3] Here, and later, I draw on the work of Kalyan Sanyal (2007), who has traced out the wasteland as a space for surplus populations or reserve army, who are external to the domain of contractual labor and rely upon others forms of work and exchange to subsist.

city's collective waste by situating themselves within these infrastructures. I examine how the work they perform makes Lahore's waste infrastructures operate and allows for the city's reproduction. The labor of these subaltern groups is thus essential to the reproduction of life in Lahore and across urban Pakistan.

CASTE LABOR AND ESSENTIAL WASTE

Sanitation workers employed by City District Government of Lahore (CDGL) are almost exclusively Christian while waste workers from the informal sector are drawn from lower status groups such as changar, khānah badosh (nomad or "gypsy" groups), mūsalī, Muslim sheikh, nau-Muslim and others. Communities from Khyber Pakhtunkhwa or Afghanistan are also prominent in Lahore's waste infrastructures, though I was unable to do fieldwork with them.[4] Each of these groups has had their own historical experiences, impacting how and when they have migrated to Lahore and situated themselves within the city's waste infrastructures. This dissertation demonstrates the connections between caste labor and waste by tracing how Lahore's waste infrastructures have come to be organized with and through subaltern groups engaging in waste work as a form of caste labor. It argues that the historical entanglement of these groups with the city's waste infrastructures raises a series of interrelated questions about the state, development, informal economies, and subaltern politics in urban Pakistan.

The large-scale conversion to Christianity of non-caste Hindus called the chūṛās from the late nineteenth through the early twentieth century was an important event in colonial Punjab. The chūṛā in colonial accounts was described as "the sweeper or scavenger, hence the

[4] I was unable to do so because of suspicions they had related to me being a citizen of the United States. I did not pursue any fieldwork among Pashtuns because of the constant harassment and violence they face by the Pakistani army and security forces.

out-caste, *par excellence*, of the Punjab" (Ibbetson 1980 [1911]:182). Other ethnographic accounts described lower-status groups such as the changar or chamār who were placed into similar social categories. These social categorizations were bound up with colonial ethnography that sought to understand the basis of social organization in the Punjab, something that would facilitate colonial rule in the domains of land settlements, canal colonization, and bureaucratic and legal administration (see Ali 1998; Gilmartin 2003). Terms such as chūṛā, changar, and many others still have strong salience in contemporary Pakistan. Chūṛā, in particular, is an invective hurled at Christians, especially sanitation workers as they perform their labor. I deal directly with this term and how it indexes a particular kind of caste labor in a later chapter, but at this point, the conflation between chūṛā and Christians demonstrates the enduring connections between caste labor, religion, and waste, something that impacts other subaltern groups as well.

In the Punjab, birādarī emphasizes transactional qualities of sociality and kinship (see Gilmartin 1994). Birādarī continues to be a way in which these groups transact with the state, especially its administrative or bureaucratic apparatus, and negotiate relations with political power, both those attached to the state and those outside of it (see e.g., Beall 1997, 2005; Streetfland 1979). As I discuss in later chapters, birādarī relations facilitate the employment of Christians as sanitation workers by municipalities and the ability of waste workers from lower status groups to access localities' waste generation across urban Pakistan. Once we take into account how these infrastructures are embedded within spatial scales other than the city, which I do when discussing the informal economy, it becomes clear that birādarī continues to enact much larger processes within the global economy.

Alongside birādarī are a series of other terms through which group and community are articulated in relation to caste sociality. Qaum ("people" or "nation") is used to describe discreet groups or communities while zāt (caste) is utilized to speak of group or community as an attribute inherited by birth. Other terms such as kammī [5] or nīch log are used to specifically refer to groups of lower social status and to trace out their presumed origins in rural Punjab. But the term with the most direct relevance to the question of caste is āchhūt ("untouchable"). Placing persons into this social category means avoiding the sharing of food, drinks, or dishes, something that could potentially defile and pollute those who come into contact with them. All these terms are used to refer to those who engage in waste work, and how their relation to this work is negotiated by a form of sociality, in which group and community are organized around something that is referred to as caste. These terms, in other words, are ways of speaking about caste labor and waste work together, something that allows for their joint devaluation.

The desire to have an environment cleansed of waste materials on health, aesthetic, religious, and other grounds has become hegemonic across Pakistan, not to mention much of the world today. That desire permeates Lahore's development trajectory and shapes how these materials and those who work with them are (de)valued. A fundamental and generative contradiction around caste labor and Lahore's waste infrastructures unfolds across this dissertation at various historical and ethnographic moments. The disposal of waste materials by these groups is essential to the reproduction of Lahore in terms of public health, environmental sustainability, and economic viability. Yet, waste work itself is seen as profoundly degrading, and those who engage in it are stigmatized and marginalized. Despite being an elementary aspect of urban life, this form of caste labor – waste work – comes to be viewed, along with

[5] Kammī are historically known to be artisans or craftsmen, engaged in occupations such as religious instruction, ironwork, or weaving, and/or were landless laborers.

those who perform it, as non-valuable. In exploring these paradoxical logics, I develop the framework of "*essential waste*" to argue that waste, something often viewed as mere excess, remnant, or byproduct, and the work surrounding it are actually foundational and elementary to Lahore's reproduction in multiple, intersecting ways.

DEVELOPMENT IN LAHORE

Lahore is the capital city of the Punjab province in Pakistan. It is located in central Punjab on plain lands between the rivers Ravi and Beas. Changing course over the years, the Ravi now flows on the city's western peripheries. The Inner City (Andarūn-i-Shahr) has been treated as the city's historical center and has garnered bureaucratic, artistic, literary, and cultural attention across multiple centuries. For well over a century and a half now however, Lahore has been expanding beyond the Inner City in a southeasterly direction through the strategies of a variety of actors. Across historical moments one sees how this spatial development, especially in the past couple of decades, has been profoundly uneven. In contemporary Lahore, the city's peripheries have grown by dispossessing those who already reside there and constructing housing developments and societies for the aspirational classes. While some sanitation and waste workers with whom I conducted fieldwork are from either the Inner City or other areas that have been incorporated into the CDGL, many such as Rameez and Manzoor have migrated to the city from other areas of central Punjab and reside on the city's peripheries in settlements that have only emerged since the late 1970s.

In January 1976, after a meeting with the Punjab Cabinet, Zulfiqar Ali Bhutto (the country's Prime Minister at the time) declared in an editorial piece titled "The City of Lahore, Old and New:" "The fact, however, is often forgotten by those who should remember it that, to the visitor from abroad, it is Lahore more than any other town or city, which symbolises the

personality of Pakistan." Bhutto continued, "It is not, therefore, due to the Federal Government's inattention that the problems of congestion, lack of sanitation, defective water supply and disposal, creeping dirt and dinginess, spread of slums, chaotic traffic conditions, dilapidation within the inner city and housing shortage have not yet been effectively tackled." As this editorial commemorated the passing of the Lahore Development Authority Act, which established the Lahore Development Authority (LDA), it signaled an attempt to create governance institutions that would be responsive to changing urban dynamics that were incipient in the late 1970s. The LDA was to replace the Lahore Improvement Trust (LIT). Following the formation of Lahore Municipal Committee in 1862, trusts such as these were established across colonial India throughout the late 19th and early 20th centuries to manage the growth of cities. Lahore has been the object of development for nearly two centuries at this point. This development was first pursued in the name of civilization progress, improvement, and reform of a colonized population. Now, it is undertaken in the name of the land and people of a post-colonial nation-state. Across these historical moments, institutions of governance would, especially at the municipal level, attempt to govern certain materialities such that the health and welfare of the population could be improved, managed, and enhanced.

Alongside institutions, infrastructures as socio-technical assemblages have been a historical component of these development paradigms. Sewerage infrastructures have expanded significantly across Lahore's landscape, something that has heralded a separation between sewage and solid waste. Moreover, dumping grounds and sanitary landfill sites have been constructed over the past couple of decades to manage a growing population that has produced unprecedented amounts of waste. Moving across historical moments, this dissertation clarifies how many features of urban life - from space and the built environment to labor practices to

governance institutions - are brought together in constituting these infrastructures. It examines how shifts in governance and technology have allowed for the emergence and transformation of waste as an object of governance and management through its infrastructures. But something else has endured across these shifts: managing the population's metabolic life processes is done through the labor-power of lower status groups, or what I call "*caste labor*." Institutions of governance, infrastructural technologies, and forms of work and labor have been assembled around waste materialities under distinct regimes of governance, technology, and value. Lahore's waste infrastructures have come to rely upon and capture surplus populations that remain in the wasteland, where they are neither allowed to live nor let to die (see Paur 2017).

MANAGING CASTE, WASTE, AND LIFE

Governmentality as biopower[6] characterizes a modern form of power that has become ascendant since the late 18th and early 19th centuries. Governmentality, Foucault emphasizes, is at once both "internal and external to the state" (1991:103). As it is defined by the limited exercise of governing, governmentality engages in internal critique regarding the extent of its own powers. This self-criticism demands "the continual definition and redefinition of what is within the competence of the state and what is not, the public versus the private, and so on" (Ibid. 1991:103). A central problematic within governmentality, especially as it is inflected by liberal distinctions of public and private, is what features or components of life can fall within the purview of government – what forms and activities of life can be tracked, manipulated, and managed. There remains an external domain that can be brought within or remains outside that purview – that remainder is residual, surplus forms of life. To clarify, these external domains

[6] Governmentality as biopower is distinguished from sovereign and disciplinary power principally through its targeting of the population, deployment of political economy as its form of knowledge, and apparatus of security as "its essential technical means" (Foucault 1991:102).

are not given and prior. They are created as external through a process of internalization – how those domains of life are brought within the domain of regulation and management by technologies of governing. That which remains becomes the potential other to be exploited in the pursuit of value. The following chapters trace out how the governance of waste, something that brings together materialities, activities, behaviors, and spaces, has been transformed, reworked, and expanded across historical moments, thereby constantly refashioning distinctions between public/private, internal/external, and inner/out. These transformations, especially around waste materials and how they are disposed of and circulated, not only expand those techniques of government but have made them into a site of political struggle and contestation.

If the target or object of governmentality is the population, then why talk about this form of power in relation to waste materials? As the question of caste in its pre-colonial form is beyond the scope of this dissertation (see Dirks 1989; Kaviraj 2014), I am more interested in the implications that governmentality, with its emphasis on management of populations, has had for caste labor in contemporary Pakistan. In colonial Punjab, major interventions were made into revenue settlement and canal colonization, which were attempts to maximize, rationalize, and make efficient agricultural production. In order to do so, populations needed to be classified, organized, mobilized, and ultimately managed. An explicit feature of colonial rule in the Punjab was stabilizing its supposed "tribal" structure (see Gilmartin 1988). Ethnological studies produced knowledge about this structure that could then be incorporated into the legal and administrative apparatus of the colonial state, which was deployed to facilitate revenue settlement and canal colonization, drew in landed groups (elites and others) into this apparatus, and excluded non-landed ones such as the chūṛā, changar, and other lower status groups. Caste

became a central category for producing knowledge about and managing populations in colonial India and was thus elementary to the form of governance that emerged during that time (Dirk 2001; Rao 2009). This form of governance would ensure that lower-status groups, as *particular populations*, are the ones who have historically performed the work of waste disposal within Lahore's waste infrastructures for *the general population*.

Alongside, or because of, this shift in the structure of power, sovereign power as the right to take life is eclipsed by disciplinary and biopolitical power, which, taken together, are part of "a power to foster life or disallow it" (1990:147). Unlike disciplinary power that is exercised over the individual body, biopolitical power "intervene[s] at the level of their generality," and "is, in a word, a matter of taking control of life and the biological processes of man-as-species and of ensuring that they are not disciplined, but regularized" (2007:246-7; see also Osborne 1996; Joyce 2003). Both forms of power – disciplinary and biopolitical – are at work in waste infrastructures: for instance, defecation in public spaces has long been a sign of an undisciplined, native, and racialized body while sewerage infrastructure is the technical apparatus by which materialities such as human feces are moved, and thus come to be governed and managed. In this dissertation, I approach waste infrastructures as directly concerned with biological processes of man-as-species, especially the production of waste as a byproduct of human and non-human metabolic processes. These infrastructures ensure the movement and circulation of materialities, thereby mitigating risk and protecting the population from the dangers and hazards these materials potentially pose, and in that sense, I concentrate on the biopolitical form of power as it gets exercised through waste infrastructures across urban Pakistan.

These infrastructures provision a good that has health, environmental, aesthetic, and economic value. Yet, the techniques by which that happens are performed by subaltern groups. This is why I have situated caste labor within governmentality. Caste labor refers to how waste materials, the work surrounding them, and the performance of this work by subaltern groups have been repeatedly assembled across historical moments to constitute Lahore's waste infrastructures. These infrastructures, which manage the capacity of the population to produce waste at an aggregate level, are premised upon and reproduces a form of sociality in which caste is constitutive. Even if the objective of these infrastructures is biopolitical (i.e. to make live), they also let die, and this is where "racism intervenes" (Foucault 2007:254). Those who perform the work of disposal and circulation in Lahore's waste infrastructures are also the ones who are most exposed to the risk, hazards, and dangers attached to these materials. In other words, waste infrastructures reproduce the population by depending upon caste labor, specifically the labor-power of subaltern groups. Mananging the life of the population, which is a central problematic in biopower, is technique for managing the right disposition of things, bodies, persons, and places in contemporary Pakistan. In this way, infrastructures are the socio-technical assemblages by which that disposition is distributed and reproduced.

WASTE WORK AND REPRODUCTION

In framing waste work, especially the kind that is of concern for this dissertation, as a form of reproductive work, I de-center production and re-center reproduction within the concept of labor. For Engels (1934), Marx (1959), and others that followed them, labor became "a specific praxis of human existence in the world" (Marcuse 1973:13). Capitalism disturbs the evolutionary movement within labor by utilizing that human capacity to exploit nature for the pursuit of profit, rather than the reproduction of individual and collective forms of life. This

concept of labor prioritized the capacity of human effort to objectify and externalize things in the world through bodily effort (e.g., producing commodities for exchange). The body, in this concept, mediated a series of exchanges between capital and waged labor, and became the site of accumulation (see Harvey 1998). Mediation is what connects labor to the production (of commodities) and the reproduction (of society) (see Marcuse 1973:18). What a concept of labor that emphasizes production, or the externalization and objectification of human effort through making a world of objects, does is erase those forms of effort directed at reproduction. In this conceptualization, reproduction does not entail the objectification of labor in commodities found in public life. It is presumed to be directed at cultivating persons and relations in domestic, private life, and is understood as not being productive in a way that the labor of the wage worker is.

On the other hand, feminists Marxists scholars have highlighted how the gendering of labor is a process by which certain kinds of labor, usually those seen to be reproductive in nature and performed by women, are deemed less valuable, outside the domain of productive work that materializes value (surplus-value or profit), and takes on the myth of disposability.[7] The presumed sphere of reproduction, as well as a self that is not estranged or alienated from their work, relied on the notion of an outside to capitalist production that was deemed to be non-productive, non-value, and non-capitalist (see Weeks 2007).[8] This is also the external or

[7] The non-waged labor performed by women such as housework or prostitution appears outside the relation between the wage worker and capital, and thus as private, domestic, or natural exchanges happening outside production. The emphasis has been to demonstrate that this only appears at the formal level, from the perspective of capital and the male waged laborer, but in reality, the relation is between indirectly waged female workers engaged in reproductive work and capital, a relation that is mediated by the male waged worker (Fortunati 1995:33). See also Vora (2015) and Pande (2014).

[8] Weeks makes the insight that historical shifts, such as post-Fordism, post-industrial labor, or neoliberalism, have made distinctions between productive and unproductive, inside and outside, and value and non-value increasingly untenable, even making those "outsides" into sites of capitalization as seen through the proliferation of feminized, racialized, and globalized forms of care and service work.

residual domain that is putatively understood as being prior to the exercise of power but is in actuality an effect of power. Questions about reproductive works' productivity has been whether it was "integral to or relatively autonomous from capitalist production" (Weeks 2007:236).[9] One approach to this question has been to emphasize the dual nature of reproductive work, in which it is central to capitalist relations of production, in which accumulation and exploitation are joined together, but the subject of that labor (i.e. women) becomes erased from the process of producing value, even if they are actually central to it (Fortunati 1995).[10]

Here might be a good point to pause and clarify how a particular kind of caste labor - waste work - can be understood as reproductive in nature. First, this form of work is crucial to the reproduction of labor-power on an aggregate scale, especially as it deals with the detritus, refuse, and discard of an entire city's consumptive metabolisms. As such waste work is caught up in social reproduction in which accumulation depends upon forms of social cooperation done at a mass scale, or what Weeks calls a "biopolitical model of social reproduction" (Weeks 2011:29; see also Murphy 2011). And second, as reproductive work, it is devalorized because of the stigma and impurity attached to waste materials, the work around it, and those who perform it. Moreover, similar to other kinds of reproductive work, especially those done in the "domestic" or "private" sphere, waste work has been monetized for some, and not for others,

[9] Debates around "affective," "immaterial," and "cognitive" labor also examine how these historical shifts have reconfigured what is viewed as productive labor and what the form the product of that labor takes (i.e. emotions or feelings, care and services, expertise and knowledge, or communication) (cf. Hardt 1994; Harvey 1990; Hochschild 2012; Muehlebach 2011; Lazzaratto 1996; Bear et al. 2017; Gupta and Mankekar 2017; Berardi 2005). These latter approaches remained wedded to different forms of labor or work being productive, and what externalized, objectified, or materialized forms that productivity may take.

[10] This body of literature have been instrumental in extending thinking about the extraction and accumulation of value out of things (plants, animals, biological activity, or forms of exchange) that are putatively external to capitalist relations, and the enduring histories of race, gender, sexuality, and colonialisms that undergird those uneven processes (see e.g. Herzig and Subramaniam 2017).

especially in the informal economy as I show later in the dissertation. Finally, drawing on this body of literature allows me to thematize reproduction as a distributed process, one in which the body is both prominent and de-centered (see Murphy 2011). Much of this dissertation thus attempts to prioritize how waste, the work surrounding it, and the subaltern groups who perform it are essential to the reproduction of individual and collective life across urban Pakistan. While this dissertation centers the role that caste labor has had in Lahore's waste infrastructures, I also trace out the processes - historical, political, technical - by which this form of work is devalorized and erased.

Processes by which this reproductive work is devalorized is the point of convergence between governmentality, reproduction, and caste labor. As I discuss in the opening chapter, modern sanitation and public health emerged as a response to impacts that industrial capitalism was having across European cities at the time. For instance, Edwin Chadwick, who is often credited as the figure who spearheaded sanitary reform and public health was in contact with liberal thinkers and political economists such as Jeremy Bentham and Thomas Malthus. These figures were consciously considering how the labor-power of populations (their amount, health and vitality, etc.) can be reproduced such that the production process could continue. Similarly, governmentality takes as its object the territory and population, and seeks to manage, regulate, normalize, and enhance life through them. It is a regime for managing life itself. The fact remains that lower-status groups are the ones who performed the work of waste disposal and circulation across urban Pakistan, and thus caste labor has been folded into governmentality. In other words, the reproduction of the population is ensured through caste labor. Though there may be a distinct material outcome produced through waste work (waste disposal services as a public good, for instance), that production should not be conflated with reproduction as a

distributed process, in which this work and these groups are embedded. As racialized forms of difference are distributed across the social body in Pakistan, in which certain groups and bodies are viewed as impure and polluting, this form of work also reproduces a hierarchical dispensation of value in contemporary Pakistan.

TRANSFORMATIONS OF VALUE

Bringing together governmentality and reproductive work allows us to see how a particular form of caste labor - waste work - occupies a central role in Lahore's waste infrastructures. These infrastructures ensure that the life of the city and its population are reproduced through the labor-power of subaltern groups. However, seeing waste work as reproductive in nature also recalibrates anthropological theories of value. Before I proceed to these theories, I want to briefly clarify the following point. My discussion of waste and value does not arise from the fact that waste is commonly understood as being opposed to value (lacking it, being exhausted of it, etc.) or those who work with it being devalued (being viewed as impure, stigmatized, marginalized, etc.). I engage anthropological theories of value because they shed light on how things and persons take on significance within a particular dispensation of social, political, and economic life, in which the actions of differently situated actors are instrumental to materializing value in a variety of forms. My approach to value thus views it an inherently transformative process. In other words, it is not that waste does or does not have value, but that it takes on value in different forms. That relationship between forms of waste and value is a central insight of this dissertation, in which the contours of work, both within state institutions and outside of them, effect these transformative processes.

Value is not something that simply congeals in the product of human labor. Value formations arise out of the hierarchical organization of social classes within any particular

totality (Turner 1979). I use value in Turner's terms, as a specific reading of Marx, to show how a particular social organization comes to be distributed through a series of transformations that materialize value in different forms within social life. These value transformations are effected through the production and circulations of things, objects, persons, and relations and are thus expressed in and through actions (Munn 1986; see also Graeber 2001).[11] However, action should not have us fall into a refurbished labor theory of value, which posited human labor as the privileged transmitter of value into commodities and once again depends upon productivity as a legitimizing discourse.

Diane Elson emphasizes that work or labor has different aspects - abstract and concrete, social and private - that can be distilled out in some way by its representation in a particular form (see also Spivak 1985).[12] Form becomes important as it allows labor to be represented and thus, value to be congealed, utilized, exchanged, and/or accumulated through circulatory processes (Pedersen and Eiss 2002:286; see also Appadurai 1986). What is thus necessary is to consider value as a representational tendency (Pedersen 2013:16-19). What approaching value as a representational tendency allows us to see are processes of transvaluation through which things, objects, places, persons, relations and histories open themselves up to other possibilities, or what Pedersen describes as the "capacity for the same form or sign to shift or expand its immediate object" (Ibid. 2013:24). In this dissertation, I do not define waste as non-value.

[11] Munn draws extensively on the work of Charles S. Peirce, especially his notions of iconicity, qualia, and qualasigns through which she understands how acts embody certain qualities and bring about a value transformation (e.g. heaviness through excessive consumption of food). On the relationship of action to value, see Graber (2001:49); Lambek (2008); Robbins (2015).

[12] This is achieved by historical processes through which an aspect of labor (abstractness) becomes the dominant one that then facilitates its representation in the form of exchange-value, or money and price – that being the relationship between labor and price. That abstractness comes not only from the form of value being money but also, "because…[value] is an objectification or materialitsation of a certain aspect of [or socially necessary labour-time] labour-time, its aspect of being simply an expenditure of human labour in general, i.e. abstract labour" (Elson 2015:132).

Rather, when bringing together waste and value, I tease out how value as a representational tendency allows us to see other possibilities and histories around waste, the work surrounding it, and the lives of those who perform that work. It allows us to return to a moment in Lahore's history when colonial sanitation and public health put into practice certain liberal distinctions of governance, such that materialities, bodies, populations, and spaces could be governed and reproduced. And at another moment, it allows us to consider how an informal economy has emerged around waste materials in contemporary Pakistan, in which infrastructures that circulate these materials become the site for the capture, materialization, realization, and accumulation of value in multiple forms. In other words, materialities are transformed into waste as an object to be disposed of, managed, or circulated, and that transformation is one of value. In describing this as a representational tendency, we can then see how materialities that constitute waste remain open to signification and thus, being worth something else. Put simply, while waste becomes materials to be thrown away for some, it becomes the possibility of life for others.

MATERIALITIES AND HISTORIES

Definitions of waste – either as a thing, action, or quality – are united in their common reference point of something that has been exhausted, is lacking, deformed, or reduced in its usefulness, worth, or value. Waste land is those tracts of land that are barren and remain uncultivated. Waste is also a negative externality associated with production. Wastefulness describes the excess use of resources by public officials or private citizens. Or, as is this ethnographic case suggests, waste materials are the discarded product of human consumption. Waste is a thing and a process. Definitions such as these however disentangle waste from the materialities and histories in which it is embedded and through which it emerges. In

counterpoint, I investigate the historical moments out of which waste emerges and transforms as a material thing. In other words, the argument of this dissertation situates the materiality of waste, or its "thing-power" (Bennet 2010a, 2010b), within historical processes, both past and present. The materialities that constitute waste matter *because* of how they are embedded in and thus work to constitute historical processes.

Mary Douglas's (2002) dictum that dirt is "matter out of place" has become a touchstone for discard studies because of its prioritization of the relation that materialities labeled waste have to the organization of personal, cultural, social, economic, and political life. How can waste be both central to life while at the same time being rendered invisible, de-valued, mere excess, byproduct, and superfluous?[13] As might be clear in my discussion of anthropological theories of value, waste comes to be known through transformation, in which a thing or object transitions to something else. Waste cannot be conceptualized as an object that has been classified on the peripheries of cultural orders, as is the case with Douglas. It is better conceptualized "as signs of a living thing, one that continued to live as evidenced by its having left something behind" (Reno 2014:20). Waste constantly refers to its origins or sources (e.g. a commodity) but also, forward as potentially being worth something else (i.e. more commodities, discard to be disposed of, or things to be reused). As I show in my discussion of the informal economy, the circulation of waste materials across Pakistan and within a global economy are simultaneously severed from the living thing that generated them *and* point backward from their possible origin and forward to potential futures. This conceptualization of

[13] A whole host of authors have examined this question through problems of invisibility, ethics, social organization, economic production, bodily habits and disciplines, and norms of cleanliness and hygiene (Rogers 2005; Strasser 1999; O'Brien 2008; Hoy 1995; Hawkin 2006; Scanlin 2005; Zimring 2017).

waste however must be grounded within historical events that shape our ideas of waste (see Zsuzsa 20017).

I return to colonial Lahore because that historical moment brought together colonial medicine, sanitation, and public health with liberal distinctions of governance to put into place infrastructures around waste disposal, something that endures in contemporary Pakistan. Not only did sanitation and public health seek to assemble infrastructures around certain materialities, they were exercises in a form of power emerging across colonial India and elsewhere, which legitimized rule in the name of improving, making progress in, and securing the health and welfare of the population and territory. As the city itself has changed since the colonial period, especially in terms of institutions, infrastructures, space, and demographics, so have contemporary practices and technologies around solid waste management, specifically machinery, recycling, and sanitary landfilling. Moreover, the change from sanitary reform movements, in which piped water, underground sewerage, and conservancy were the dominant concerns, have transitioned not because of just practices and technologies but also, the material forms of waste have changed, proliferated, and become more complex. For example, the use of plastic polymers in the production process is a relatively recent phenomenon, one that has been taken up by contemporary discourses and practices around solid waste management, recycling, and environmental activism. Medicine, sanitation, and public health and contemporary practices and technologies of waste management are significant because of how they themselves are related to the valuations of materialities that constitute waste as an object.

One valuation of waste has been how certain materialiaties pose dangers, risks, and harms on environmental, health, and aesthetic grounds. Thus, their disposal becomes essential to contain, mitigate, and undo those dangers, risks, and harms. This valuation of disposal builds

upon a notion of waste as mass waste: "Mixed in with waste of other people, discards lose their indexical connection to the being that generated them, they become anonymous and acquire an abstract, general character" (Reno 2014:17). A generalized, abstracted, and anonymous character squares well with the practices of governing populations as internally homogeneous collectivities, in which individuality becomes progressively irrelevant to practices of governing. It is here that what happens to waste becomes a site for the articulation of the public (see Chaflin 2014, 2017; see also Frederick 2012, 2014; Hird et al. 2014). This is an important point, especially in light of Vinay Gidwani's claim that "[a]s a concept, 'waste' tersely condenses an entire early history of liberalism," in which development of land and people becomes a key problematic (2012:19). Waste becomes a material thing through which the land and people can become modern and undergo development.

Development through waste infrastructures is carried out in the name of the public as constitutive of the nation. In Pakistan and elsewhere, a variety of texts found in print, television, and digital media circulate to make infrastructures of different kinds a matter of concern, in which audiences are assembled to form publics through the functioning, breakdown, or crisis of infrastructures.[14] Though, in a later chapter, I examine mediation technologies through which state power and institutions are transformed into a public-private partnership, this dissertation does not take up the issue of how publics are assembled as a discursive space in which texts are circulated and transfigured and subjects makes claims of recognition (see Povinelli and Gaonkar 2003; Lee and LiPuma 2002). Rather, drawing on the

[14] This discussion of publics is based on the insights of Michael Warner (2002) in which publics are self-organized, reflexive discursive spaces of circulating texts around which stranger-sociality emerges and is assembled, and the forms of address and attention in these publics being at once personal and impersonal. An important mention made by Warner is that publics enable a movement from a public (i.e. personal, being address to a person) to the public (i.e. impersonal, being addressed to no specific person). The circulation of textual forms, specifically print journalism and the literary novel, have been the basis of theories of the public sphere proposed by Jürgen Harbermas (1989) and nationalism by Benedict Anderson (1991).

insights of Susan Gal, this dissertation examines how the public/private distinction, though shifting and blurry, has a "fractal nature" that makes it "[experienced]… as stable and continuous, in spite of changes" and "allows for the denial or erasure of some levels or contexts of distinction, as people focus on other contexts" (2002:91). The disposal of waste materials is a public good that the state must provision either of its own accord or through private actors – even here, the private is folded into the public. The legitimacy of the state rests upon the provisioning of this good as a public one, because the impact that these materials have on the health of the population and territory. Moreover, this dissertation argues that liberal distinctions of public and private as historically unstable results from their fractal nature. This fractal nature allows for the reorganizations of public and private across historical moments and spatial scales and has been productive for a variety of actors entangled with these infrastructures. At the same time, waste infrastructures are not limited to disposal as a public good by state institutions and private actors, and the development imaginations instantiated by them. While disposal (and management) becomes one form of valuation of waste, the other valuation concerns the circulation of these materials. The informal economy, in which circulation is the dominant valuation, recasts these distinctions of public and private.

This process of production, consumption, and accumulation has left unprecedented amounts of waste in its wake, either as material refuse, ruined and devastated landscapes, or wasted lives (see e.g., Bauman 2013; Benjamin 1968; Edensor 2005). Across a variety of contemporary contexts, it has been shown how the proliferation of novel forms of waste (e.g. electronic waste) has created situations in which surplus populations, specifically those who cannot find employment in waged, contractual labor, find sources of livelihoods in the recovery and sale of potentially valuable discard (see Millar 2008, 2014; Gidwani 2013; Reddy 2015;

Medina 2007; Brooks 2013; Gregson et al. 2010; Crang et al. 2013). I examines similar processes at work when I examine how an informal economy has taken shape across Pakistan where increasing waste generation has made these materials into a resource to be recovered, infrastructures have marketized them, and a series of value transformations have taken shape around and through them (see Reno 2009; Callon and Çalışkan 2009, 2010).[15] A contradiction, however, remains unresolved between waste as discarded materials and the possibilities that these materials presents for those residing on the margins and peripheries of social, economic, and political life, especially once we recognize the global dynamics of recycling economies (see Alexander and Reno 2012) This dissertation argues that this contradiction emerges out of the transformative processes at work in constituting both waste and value. Neither is a stable object but only appears as such through transformation. Though momentarily outside the pale of value, waste can and does get reincorporated back into its purview, though in a transformed state, and while waste certainly returns, the places where it accumulates and the lives of those working with it may not (Gidwani and Reddy 2011; Gidwani 2015). They remain in the wasteland, making a life possible out of those transformations of waste and value that are the promise of Pakistan's waste infrastructures.

THE PROMISE OF INFRASTRUCTURES IN PAKISTAN

Waste infrastructures are concerned with the provisioning and distribution of goods or services - in this case, waste disposal - across Pakistan. Lahore, a city whose population has pushed past 11 million, now generates waste on a scale unprecedented in its history. This

[15] My analytical attention to the materiality of waste is motivated by how its physical qualities have become a site for its marketization within informal economies through valuation, evaluation, and legitimation, all of which are play important roles in the workings of markets, the functioning of the economy of qualities, and the establishment of the relative worth of things, goods, and persons (Callon, Méadel, and Rabeharisoa 2002; Lamont 2012; Boltanski and Thévenot 2006; Stark 2009). Their materiality is important in itself and for how it becomes the site for capturing, materializing, and realizing their potential value.

dissertation is an account of how this material is collected, sorted, transported, traded, and exchanged in Lahore by subaltern groups. Thus, it is interested in the infrastructures that have come to be assembled around waste materials, how they have figured into promises of Pakistan's modernity and development, and what they reveal about politics for the subaltern groups who are situated within these infrastructures. Infrastructures are assemblages of things, persons, relations, words, and technologies that enable the movement and circulation of those materialities that have come to be known as waste.[16] Brian Larkin characterizes infrastructures as "matter that enable the movement of other matter. [Infrastructures'] peculiar ontology lies in the fact that they are things and also the relation between things" (2013:329). This movement can be directed at either disposal or circulation – its two distinct, though entangled valuations – and those movements are enabled by a series of relations between things (e.g. spaces, persons, objects), in which technologies, mediation, words, recognition and claims-making, and power all participate (see Anand 2011, 2012; Larkin 2008; Gandy 2008; Collier 2011; Barry 2013; Braun and Whatmore 2010; von Schniztler 2013; Amin 2014). Different regimes of governance, technology, and value have organized the socio-technical processes through which these infrastructures have been assembled and waste comes to be disposed and/or circulated.

Infrastructures around waste have been circulating globally for several decades now. As hinted at earlier, Lahore's waste infrastructures started to emerge in their contemporary manifestation after the establishment of municipal governments in the middle of the 19th century across colonial India. The expansion of governance ("local self-government") and technologies around water (hydraulics, town planning, drainage, and sewerage) under colonial rule would rework the spatial ordering of the urban landscape. These infrastructures, as I

[16] Any definition of infrastructures is provisional since infrastructures, as used in this dissertation, must "[come] to terms with infrastructures as concept and practice in continuous variation" (Harvey, Jensen, and Morita 2016:6).

demonstrate, also mobilized the labor-power of lower status groups through a variety of work and technological relations. Discussions of these materialities during colonial rule relied on terms such as refuse, filth, dirt, cesspools, and stagnant water, and were reflected in the type of infrastructures being put into place at the time. Since then these infrastructures have become the object of development along with the spatial, institutional, and demographic growth of the city. From the 1970s onward, management of solid waste at the municipal level has been extended across national contexts. Even though the term infrastructure started to appear from the early twentieth century onward, it started to circulate more widely as a global regime of development took shape in the post-World War 2 era, an idea backed by the United States and transnational institutions such as the World Bank and others within the context of the Cold War (see Carse 2016). Sewerage was separated from solid waste on the infrastructural and institutional level, and other changes in systems of waste collection and disposal have also taken place, including sanitary landfilling and incineration, the growth of private companies, and experiments in recycling, recovery, and reuse. This dissertation examines how waste infrastructures in Lahore have been the object of development in colonial India and post-colonial Pakistan, each of their historical instantiations being backed by distinct regimes of governance, technology, and value.

Infrastructures tend to remain in the background, being the horizon of possibilities for forms of life, and breakdown, failure, and repair come to be moments in which infrastructures are pushed to the foreground - or what has been called infrastructural inversion.[17] These infrastructures exert an imaginative force in forming affects, expectations, and promises of

[17] This is in part due to the insights of Susan Leigh Star (1999), but others have also extended this line of thinking in other ways (see Robbins 2007; Schwenkel 2015; Chu 2014; Knox 2017; Fisch 2013; Harvey et al. 2017; Bowker 1995).

futurity, progress, and growth that putatively materialize modernity (Ferguson 1999). When infrastructures are materialized, their presence or absence, use or misuse are taken as a barometer of Pakistan's modernity and harbinger of the future, and have been assimilated into imaginations of the country's cultural geography, in which modernity is something that has not yet fully arrived or, if it has, is distributed unevenly across the country's regions (Khan 2006; Akhter 2015; Anwar 2015; Imran 2010; Mustafa 2013). The state of Lahore's waste infrastructures is often presented as failing, breaking down, absent, or in a general state of crisis, but such portrayals, like those of other infrastructures such as electricity and industry, are "somewhat deceptive" (Anwar 2015:10). Waste does get collected, transported, disposed of, and managed across Lahore. Yet its presence in public spaces continually becomes an object of critique about bureaucracies, labor, and/or national culture. What becomes noteworthy in these instances are not the success or failure of these infrastructures, but how they continually present Pakistanis with certain promises around development and modernity. Those promises are what suffuse the mundane activities of infrastructures with such strong affect around failure, lack, and absence (see Knox 2017; Harvey and Knox 2012; Stoler 2004). What concerns me here about these affects is how they are produced out of infrastructure's unfulfilled promises and modernity's anticipated future for places like contemporary Pakistan. Modernity and development becomes not a matter of historical transition but rather, a staging of history, in which those striving after modernity and development are always almost there (see Mitchell 2002; Chakrabarty 2007). This staging of history allows infrastructures to constantly question the legitimacy of the state, the individuals that inhabits its apparatus and para-sites,[18] and the

[18] This refers to what George Marcus refers to as a "marking the kind of cultural work that subjects do in the construction of a para-site in relation to some level of major institutional function undergoing current transformation" (2000:7).

wider actors that participates in these infrastructures, especially subaltern groups that provide the labor-power that make infrastructures happen.

Across this dissertation, I argue that waste infrastructures are important sites for unpacking the relationship that subaltern groups have to political power in contemporary Pakistan. One way to explore this relationship is through the question of agency: what forms of agency are exercised by those groups who have been historically denied them? Dipesh Chakarbarty differentiates between History 1 - the history of capital itself, in which free labor is central, as a "precondition" and "result" - and History 2 - as the "heterogeneity" of other life processes with an uncertain relationship to the reproduction of capital's life processes (2007:62-63). An important point is that, while History 1 present us with accounts of how capital reproduces itself by bringing History 2 within its totalizing life processes, History 2, on the other hand, can "be thought of as a category charged with the function of constantly interrupting the totalizing thrusts of History 1" (Ibid. 2007:66). A plurality of life-forms and processes exist in an indeterminate, though intimate relationship with the expansion of capital on a global scale. The centrality of subaltern groups to processes of urbanization, development, and informal economies emphasizes that a multiplicity of life-forms must be repeatedly brought together in reproducing a hierarchical dispensation of value across Pakistan.

Ananya Roy (2011) has drawn attention to changing urban dynamics, especially in cities where subaltern groups have been excluded in the name of aligning and representing cities as global or "world class,"[19] and has argued for what she calls subaltern urbanism, with the important insight that emerging inequalities cannot be reduced to spatial categories such as

[19] See for instance, Bayat (2000), Ghanam (2002), Ghernter (2011), Ong and Roy (2011), see also Anand (2017) and Amin (2014) on how infrastructures are ways in which those excluded from these global or world class cities can then make claims to space through accessing the city's infrastructures.

global cities and urban slums. Similarly, urban development across Pakistan has taken shape over the past several decades that differentiates spaces and populations along hierarchical lines of caste, class, and lifestyle. One can see this in the religious and cultural practices of an emergent middle-class in many Pakistani cities (see Maqsood 2017; Ahmad 2009). Many of those who are part of these aspirational classes increasingly reside in housing societies located on the urban peripheries and demand improved service delivery around water, power, and waste, either by the state or private arrangements. Though subaltern groups are certainly excluded from these processes across urban Pakistan, it remains an open of question of how these processes have rendered these groups vulnerable while also presenting them with unexpected political possibilities.

Subaltern groups have remained essential to waste infrastructures across urban Pakistan. As they gain access to political power, either through the governmental apparatus of the state or through sociopolitical relations on its peripheries, the workings of political society as described by Partha Chatterjee (2004) are certainly present, but so are infrastructures themselves. [20] The position of subaltern groups within Lahore's waste infrastructures, as socio-technical

[20] Partha Chatterjee (2004) through the notion of "political society" has sought to elucidate how subaltern groups, who stand outside of civil society with its liberal forms of claims-making, deploy their own extra-legal mechanisms and techniques to carve out a space for themselves in contemporary India. An important distinction made by Chatterjee is, drawing on Foucault, the governmentalization of the state, in which developmental states craft administrative and economic policies around technological interventions to develop and modernize. What this has done, on an ideological level, is emptied governance and administration of politics, while, at the same time, compelling governmental agencies "descend from that high ground to the terrain of political society in order to renew their legitimacy as providers of well-being and there to confront whatever is the current configuration of politically mobilized demands" (Chatterjee 2004:41). Nikhil Anand (2017) extends these insights in discussing how accessing water, among "slum dwellers," quite often through techniques that are deemed "illegitimate," can then enable liberal forms of recognition and belonging to the city to materialize. On the other hand, working in rural Pakistan, Nicholas Martin (2014) has criticized these positions by arguing that the political society, with its "ad-hoc" and "extra-legal" nature, reproduces situations in which subaltern groups are disenfranchised and dispossessed. One approach that stands out contradistinction to these is that of Akhil Gupta (2012) in which he argues how the "poor," many of whom come from the subaltern classes, in contemporary Indian continue to experience forms of structural violence, despite the Indian state having a long-standing tradition of social welfare policies. Outside of South Asia, Asef Bayat has emphasized that subaltern groups in urban contexts "strive in life-long process to improve their lot through often individualistic and quiet encroachment on the public goods and on the power and property of the elite groups" (2000:553).

assemblages that reproduce life itself, has invested these groups with political potential. It has afforded them forms of political agency through the work and labor that they perform on an everyday basis. Across its chapters, this dissertation explores how sanitation and waste workers inhabit, mobilize, and are constrained by sociopolitical relations, in which the state acts as a conduit of power, and unpacks how this arises out of specific relations embedded in these infrastructures. These groups reside on the urban peripheries or margins, both in spatial and imaginary terms, and part of the reason for that marginality is the work they perform and the materials with which they work. Rather than exploring their strategies to find a physical space in the city (e.g. through informal housing), this dissertation examines what the presence of subaltern groups as a central component of waste infrastructures reveals about the unfulfilled promise of these infrastructures, the state and its legitimacy, informal economies, and changing forms of work and labor across urban Pakistan.

* * *

This dissertation argues that waste, the work surrounding it, and the subaltern groups who perform it are essential to the reproduction of urban environments by a regime of life that has established itself across Pakistan over the past several decades. It examines how regimes of governance, technology, and value at different historical moments have sought to secure, enhance, and manage the health and welfare of the population in Lahore by mobilizing the labor-power of subaltern groups. In doing so, I propose the framework of "essential waste" to demonstrate the centrality that waste and what happens to it have in shaping the contours of contemporary life in Pakistan and elsewhere.

This dissertation begins by introducing how institutions and infrastructures started to emerge in colonial Lahore around governing space, populations, and materialities. Those

material things would range from dirt, filth, and refuse to stagnant water, cesspools, and manure. What brought these materialities together was a regime of colonial sanitation, public health, and governance that sought to create a spatial order in which urban environments could be improved. In this chapter, I trace out how governmentality emerged in colonial India that prioritized the problem of development - of the city and its population - within liberal distinctions of public and private. Colonial conditions of unfreedom cannot be overlooked: this regime sought to develop the territory and population as alien and subjugated in the presumed preparation for future self-government and freedom. And yet, this moment would be a formative one since it raised a set of problems and distinctions that endure into the contemporary moment, which would solidify linkages among waste infrastructures, urban governance and space, and caste labor. The framework of essential waste draws attention to how these linkages were both transformed and endured across historical moments through the materiality of waste, what happens to it, and by whom.

Chapter 2 engages with literature on infrastructure, the state, and development to examine the value that waste infrastructures have had in post-colonial Pakistan. Because of the public presence of waste in urban Pakistan, waste infrastructures become the terrain upon which concerns about post-colonial state are articulated. In the first half of this chapter, I trace how a regime of governance, technology, and value has made these infrastructures into an object of development. Not only has this process involved the expansion of infrastructures, institutions, and space, but also the proliferation of population and waste itself. In the second half of this chapter, I then explore how the state has become a conduit of power within Lahore's waste infrastructures, through which these materials and the work around them pass, expand, and get distributed. In particular, I argue the relations within the state and outside its

boundaries must be mobilized such that waste materials are kept in motion, something that is politically generative. This chapter also emphasized how sanitation and waste workers, as subaltern groups, have utilized access to this form of work as a way in which to access political power, both from the state and others entangled with it.

Chapter 3 takes up the transformation of the Solid Waste Management (SWM) Department into the publicly-funded Lahore Waste Management Company (or the "Company") through a public-private partnership. These changes were ongoing while I conducted the largest portion of my fieldwork and they remain ongoing as I write these words. This chapter seeks to understand how waste disposal services have been transformed as a *public good:* what forms of valuation, calculation, expertise, and mediation were necessary to making that transformation happen, and what impact has it had on state power and authority. Alongside technologies of mediation, I demonstrate that much of these changes have involved disciplining and retraining habits of those who inhabit the state apparatus. As such, the figure of the sanitation worker, as a manifestation of caste labor, returns to question the legitimacy of this particular regime of governance, technology, and value. Taken together, chapters 2 and 3 argue that waste, the work surrounding it, and those who perform are elementary to a regime of life seeking to reproduce Lahore and its population. This regime manages the discarded materials of an entire city by harnessing the labor-power of subaltern groups.

Where previous chapters explore waste infrastructures within the spatial scale of the city and parameters of the state, Chapter 4 draws upon recent writing in South Asia on informality to examine how waste materials, once discarded, are made to reenter circuits of capitalist production and value determination. While much of the dissertation looks at how valuation of disposal shapes what is to be done with these materials, this chapter examines how

a valuation of circulation entails infrastructures for the marketizing waste materials. This chapter concludes with a consideration of how informality, being crucial to the capture, materialization, and realization of value, continually becomes an object of concern for multiple actors in contemporary Pakistan. Once again, these infrastructures, which marketize waste, depend upon subaltern groups, and as these recovered materials are used in the production of more commodities, this chapter makes one final insight about essential waste: the notion of excess, byproduct, or residue that characterizes waste remains a potential site for the determination and accumulation of capitalist value. The informal economy thus becomes an economic form in which domains of capital and non-capital are mutually constitutive.

In the past few years, Lahore's landscape has undergone considerable and important changes, in which infrastructures have reoriented the texture of urban life for many of the city's inhabitants. These changes have raised environmental concerns among activists, residents, and bureaucrats around the city's livability. Thus, the conclusion engages discussion of infrastructures and distribution to reconsider the connections among abjection, caste inequality, and waste. By clarifying the ways in which the histories of waste materials and the work around them adhere in environments, persons, and infrastructures, this dissertation concludes with important insights for anthropology and other disciplines that emerge from an historical and ethnographic account of waste in Lahore.

Chapter 1

Governing Waste in Colonial Lahore

In 1875 the Punjab Sanitary Commissioner Annesley Castriot Charles De Renzy traveled across the province to carry out a series of inspections on the status and progress of sanitation and public health in areas recently made accessible by the railway. After several of these inspections, many of which were conducted in areas located near military cantonments,[1] De Renzy gave a speech to district committees on what he had observed and reported on. He began by commenting on the slowness of change, the dying of old habits and customs, the time required for new ideas and practices to be taken up, and the importance of recognizing this incremental process of change. The question confronting DeRenzy was, how to reduce sickness and improve mortality? De Renzy compared the Punjab at the time to England in the more recent past, and the improvement in the health of the latter, and how that can and should be duplicated in the former.[2] Lessening this gap between England and Punjab required purposive and rational action in the form of sanitary progress and public health by the colonial state. For such an action to be taken presupposed a causative reason for poor health.

De Renzy ended his speech with a harsh indictment: "The cause may all be expressed in one word, namely, 'dirt'! Dirt in the air, dirt in the soil, dirt in the water, dirt in the dwelling, dirt on the person, dirt in the clothes; and the remedy for excessive sickness consists simply in the removal of dirt, by having cleanliness in the air, in the soil, in the water, in the dwelling, in the person, in the clothes."[3] Dirt was something ubiquitous. It was seen everywhere. It was

[1] Anthony King has described the cantonment or "permanent military station" as "the institutionalised form of the settlement for the military representatives of British colonial power in India from the eighteenth to the twentieth centuries" (1976:97).
[2] For comparison in the colonial imagination, see Prakash (1998:5).
[3] "Proposed Address to District Committees Regarding Sanitary Matter." No. 909, dated Lahore, 5th November 1875. From A.C.C. De Renzy, Sanitary Commissioner, Punjab to Secretary to Government, Punjab, pp. 959.

present even when it was not visible to the naked eye. Such antiquated terms reveal something lost in more contemporary ones such as waste, garbage, or trash. They affirm the materiality of things such as water, sewerage, and refuse. Colonial officials (administrators, engineers, or architects) focused very much on the qualities, movements, and circulation of these material things and inquired into those conditions, of landscapes, built environments, and habits, that were deemed to impact them. It was by knowing, regulating, designing, and managing the flow of these materialities through institutions and infrastructures that a sanitary environment could be ensured and the health of the population be improved. In order to do so, a regime of governance, technology, and value would need to be put into place the right disposition of things, one that could materialize modernity and bring development, which would be civilization progress and improvement in colonial parlance, to Lahore. Improving the health of a colonized territory and population would also legitimize colonial rule in the name of progress, reason, and freedom.

INTRODUCTION

Sanitation and public health emerged and unfolded across the course of the 19th and 20th centuries on a global scale. In 1832 a Royal Commission of Enquiry into the Poor Laws was constituted to examine the workings and functioning of the Old Poor Laws and would eventually be headed by Edwin Chadwick. This reform was a response to the effects wrought by industrial capitalism across England and Europe during this period,[4] specifically epidemics of fever, typhus, and cholera in industrial centers. What undergirded these reforms was to make

[4] Political economists and liberal thinkers such as Thomas Malthus, Thomas Paine, and Jeremy Bentham were directly concerned by the relationship between industrial capitalism and the population: enclosures of land, population growth and migration, mortality and morbidity, and availability of food. In fact, Edwin Chadwick was secretary to Jeremy Bentham. They however did differ over Chadwick's concern with order and discipline while Bentham's focus on maximizing happiness and expanding democracy (Hamlin 1998:87).

governance institutions and technologies such as piped water and underground sewerage more attentive to the changing conditions of life, work, and health of the population in Great Britain. As these institutions and infrastructures had been implemented in Great Britain, they could then be brought to colonial India. Sanitary and public health reform in colonial India brought together the science of medicine and engineering with that of bureaucracies - it joined together imperial science with the science of empire (Gilmartin 1994). Sanitation and public health thus combined institutions of governance with technical apparatuses related to water, drainage and sewerage, and waste disposal - what we would now call infrastructures. Indeed, the materials I provide in this chapter trace out how our capacity to locate these things as separable entities (i.e. infrastructures) has emerged historically.

The regime of colonial sanitation and public health sought to construct institutions and infrastructures across the urban environment in ways that could predict and manage the materialities produced by "native" populations. As I show throughout the chapter, colonial officials made certain inferences around "native" behaviors and habits such that bodies, spaces, and populations could be governed (see Rutherford 2009). These infrastructures, with their predictive and inferential aspects, could ensure sanitary conditions and healthy populations would be reproduced in *any* environment by provisioning clean and pure water, removing drainage and sewage, and the disposing refuse. Intervening into these conditions could change, improve, and make progress in the forms of life in India.

Foucault's formulation of governmentality, being heavily invested in the historical experiences of Europe (mostly France, England, and Germany), must be reformulated within the context of liberalism in colonial India, which impacted how these modalities of power

would come to be exercised upon territories and populations.[5] Elementary to this exercise of power were governance distinctions of public and private, specifically how such distinctions organized spaces, activities, institutions, and infrastructures across urban environments. As Dipesh Chakrabarty has suggested, "While this way of seeing is no longer exclusively European, its main bearer in nineteenth-century India were no doubt the Europeans themselves whose modernist categories of 'public' and 'private' were constantly challenged by the ways Indians used open space. The street presented, as it were, a total confusion of the 'private' and the 'public' in the many different uses to which it was put. People washed, changed, slept, and even urinated and defecated out in the open" (1991:16; see also Kaviraj 1997). Distinctions of public and private were instrumental to liberal rule in India because they identified an inner domain (i.e. the private) that was understood to stand prior to an external domain (i.e. the public). Though connected the latter was within the purview of government while the former was to be protected by limiting the exercise of power. Infrastructures were the socio-technical assemblages that arranged these distinctions (private/public, inner/outer, internal/external) such that progress could be made in forms of life in India, especially the health and welfare of a subjugated population.

Liberal distinctions of governance were subsequently folded into questions of development. Development was an attempt to organize "the conditions for economic conduct that will multiply the production of wealth," which was "inseparable from (and hence concurrent with) attempts to transform waste*ful* forms of moral conduct as well" (Gidwani 2008:14, emphasis in original). A regime of governance, technology, and value was built upon

[5] Colonial conditions were characterized as a situation of unfreedom that became the legitimizing the grounds for preparing subjects, both individual and collective, for self-rule, through education, uplift, reform, and improvement (see Prakash 1998, Mehta 1999).

these distinctions and problematic that was invested in "a process of *channeling* and *forming* in desired ways the errant matter of native subjects and their physical environments," and sought out engender "an optimal balance between the *internment* and *circulation* of nonhuman flows as well as human bodies" (Ibid. 2008:14, emphasis in original). The movement of materialities - what went by the name of stagnant water and cesspools, dirt and filth, or rubbish but what we now call potable water, sewerage, solid waste, and recyclables - became an enduring concern for colonial sanitation and public health, and much effort was made into understanding, regulating, and managing its movement from certain spaces, usually enclosed, inner ones, and taken elsewhere, usually open, outer ones.[6] By targeting the environment through the external, outer domains of streets, drains, sewerage, and air circulation, not only would a collective subject be (re)produced (i.e. the public and its health) but also, inner, internal domains of habits, dispositions, and conduct would be invoked, reformed, and transformed. Governing the movement of materialities between these spaces and associated forms of conduct would ensure the reproduction of the population – a key objective of governmentality. Distinctions of public and private were thus critical to how governmentality came to organize the right disposition of things, bodies, persons, and spaces.

This chapter argues that sanitation and public health was imagined as an endeavor of governance and technology, seeking to govern (manage, channel, circulate) those errant materialities and attendant forms of conduct, thereby making them into an object of knowledge and management and becoming part of a larger regime of value. It demonstrates how these distinctions between public and private, ones that structured the administrative apparatus of the

[6] For an excellent account of sanitation and public health sought to create closed, cordoned off spaces that were protected from the dangers taking place in open spaces inhabited by native populations and bodies, see Anderson (1995, 2006).

state, became blurry in the conduct of government. If the "private" habits of natives who inhabited the city could not be reformed, the habits of those natives, especially "sweepers" but also others, who inhabited the state apparatus could be. Much of what I describe in this chapter was to be inherited by post-colonial Pakistan, and thus, the materials presented here are meant to describe the emergence of a regime of governance, technology, and value and the distinctions, problematics, and concerns that have come to organize that regime.

SANITARY INSPECTIONS

The bureaucratic and technical apparatus of the colonial state greatly expanded following the Indian Rebellion of 1857.[7] Colonial administrators made inquiries in those conditions that impacted sanitation and public health and made interventions based on those inquiries, producing an extensive amount of knowledge and were documented in various forms.[8] In the middle of the 1860s sanitary boards were formed across provinces in colonial India. These boards were eventually turned into departments to be headed by commissioners - by 1868, the sanitary department was formed.[9] Inspections would become a regular activity of these departments - the findings of which would be compiled into an inspection report or an administrative report for the department. Bernard Cohn (1996) has highlighted the investigative modalities by which such facts were collected to facilitate the process of state building and governing in colonial India and Britain. I keep these investigative modalities in mind when I

[7] Joining together political stability and socioeconomic progress, colonial rule now demanded an alien territory and population, in all its diversity, be known through reports and statistics, and that diversity be protected while also ensuring its progress through "an equitable form of government," or what would later come to be known as self-rule (see Cohn 1983:166).

[8] The inspection reports that I rely upon this section, for instance, was often sent to the Provincial Secretary to the Government and depending on the issue at hand, it would be shared with the respective commissioner and at times, even with the Central Government. In its entirety or as parts, the report would also be shared with commissioners who were the heads of administrative districts were expected to take note of any pressing issues or shortcomings in sanitation and public health and resolve them in a timely fashion.

[9] It was headed by a Sanitary Commissioner (De Renzy) and would eventually be changed to a Public Health department in 1921 with a Director of Public Health at its head (Government of Punjab 1927:16-7).

read these reports and other documents across this chapter. In doing so, I seek to unpack how materialities and their movement and circulations became bound up with the improvement, progress, and development in the life of the population, how these things and mobilities became the site for exercising political power and legitimizing rule within colonial liberalism, and the uncertain distinctions of governance upon which they came to be built.

The *primary* source of disease for public health reformers during this time was the environment. In fact, it made the environment "problematic in its own right. One still assumed that environmental conditions affects human institutions and behaviors, yet focused so much on the dwelling, pipe, or rain that these effectively become proxies for the social and the subjective" (Hamlin 1998:215). Colorful descriptions in these reports abound: festering dung heaps, the stench of cesspools and stagnant water, accumulated nightsoil, filthy streets, figures such as scavengers and water carriers, and failing archaic institutions. These descriptions were instances of Indian habits and habitations that went against "laws of public nuisance" as a "technology of governance," codified in the first penal code of 1862 and part of which (Chapter XIV) deals with "offences affecting the public health, safety, convenience, decency and morals" (Sharan 2006:4906).[10] Nuisance would be joined with disease to instigate "material improvements and the containment of the dangers posed by native habits" (Ibid. 2006:4907). Take, for instance, De Renzy's inspection report on the complete absence of town drainage that resulted in drainage happening in deep ditches and holes: "As a rule, the holes containing sewage are at a *tolerable* distance from the houses, so that no perceptible *nuisance* arises, but I was shown one very *offensive* one, not far from the Government school, which was said to have

[10] One can be held accountable for such offenses "if s/he carried out 'any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or to the people in general who dwell or occupy property int he vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right' (Sharan 2006:4906).

been made by the Department Public Works in removing material for a road embankment. The hole in question should unquestionably be filled up, so that the sewage may pass on a greater distance from the town (emphasis added)."[11] Similarly, in his inspection report of Amritsar, he lauded the filling up of several ditches and holes within the city that "were such an eyesore and so *dangerous* to the health of this city," and one of these ditches, which "covered an area of several acres" and "contained a depth of not less than twelve feet of sewage in many places," was situated near "wells used for the supply of drinking water," making it into "source of the greatest *danger,* and did *incalculable injury* to the public health (emphasis added)."[12]

Similarly, public latrines were vividly described for their "offensive" and insanitary conditions. Their placement would at times be "at a very inconvenient distance," being no more than "mere open enclosures," and located near and pervading settlements of lower status groups such as *chamars* that resided at the periphery of settlements. At other times, the floors of these latrines were found to be "saturated with urine," and its ground inside being "very rough and uneven" and the outside being "covered with fœcal deposits." Moreover, the wrong materials would often be used: "dry earth is not used as it should be." Even when a latrine was made out of "pucca" materials, other problems arose: "The lime of mortar decomposes the carbonate of ammonia formed by the decomposition of the area of the urine, and sets free gaseous ammonia which makes the atmosphere of the latrine very pungent and offensive." Even if the laws of public nuisance attempted to assign guilt and responsibility in persons, De Renzy emphasized an outer domain of the landscape and built environment - this distinction was very much in line with thinking common among public health reformers at the time that differentiated between

[11] Government of Punjab, "Sanitary Inspection Report of the Town of Jagadhri, Amalah District," Home Department Proceedings (Medical and Sanitary), no. 11 (March 1974): 207.
[12] Government of Punjab, "Sanitary Inspection Report for Amritsar," Home Department Proceedings (Medical and Sanitary), no. 1 (May 1874): 239.

causes of poor health "independent of habits" and those "originating in habits" (Hamlin 1998:108). This did not mean that Indians that inhabited these areas were exonerated from responsibility; rather, the outer conditions of landscapes and the built environment became a proxy for speaking about the inner conditions of subjects.

The proper and organized disposal of human and non-human-excreta, much of which fell under "conservancy," was a prominent sanitary concern and was thought to be crucial for improving public health.[13] I will deal much more closely with significant of habit, work, and organization in coming sections but here let me highlight a couple of points. As hydraulics had not yet expanded into most parts of the Punjab, as well as most of colonial India, colonial administrators saw tremendous deficiencies in how disposal was organized. Settlements of different scales across the province waited for liquid waste to evaporate, something that depended upon the vicissitudes of natural or climatic conditions.[14] Additionally, the Punjab on the whole was thought to especially value and prize non-human excreta as manure for

[13] From Rohtak in the easter parts of the province, where De Renzy "found every part of the town remarkably clean and well swept" to Multan and Muzaffargarh in the south that were "in a generally well kept state," the evaluations of conservancy were generally more positive relative to the highly negative descriptions of water supply, drainage, and sewerage. Unlike the latter, the factors that impacted conservancy very much originated in habit: the number of "sweepers" and supervisors employed, distribution of responsibilities (sweeping, latrine cleaning, or digging trenches), kinds and amount of renumeration, utilization of tools and equipment (casks pulled by donkeys carts or carts carried by buffaloes used for the removal of liquid waste and foul water), and the presence and activities of livestock such as cattle. The "great fault" however resided in "the want of proper organization and supervision" while conservancy came to be maintained by drawing excessively on municipal funds. See Government of Punjab, "Sanitary Inspection of the Towns of Rewari, Farakhnagar, Jhajjar, Bahadugarh, Rohtak, Hansi, and Hissar," Home Department Proceedings (Medical and Sanitary), no. 7 (March 1874): 195; Government of Punjab, "Inspection Report on the Mooltan City and Municipal Town of Muzzafargarh. Use of Proper Clothing by the People as a Guard Against Sickness," Home Department Proceedings (Medical and Sanitary), no. 1 (February 1885): 12-15

[14] Nissang, for instance, "a small place of something over 2,000 inhabitants, who belong almost exclusively to the agricultural class," was reported to have "no less than 12,000 head of cattle stabled in the town every night," making it into a veritable "vast cow-house" and raising concerns about the "drippings of cattle" and "excreta of the inhabitants [that] accumulate in the village or its precincts." Having only 32 sweepers and 6 conservancy chapraasi at the time, colonial administrators chalked up the surprising cleanliness of the area to "the dryness of the air at the time [of inspection]," making the environs "not very offensive, but," further noting that, "in hot, damp weather" this would not have been the case." Government of Punjab, "Inspection Report of the Town of Nissang, in the Karnal District," Home Department Proceedings (Medical and Sanitary), no. 3 (April 1874): 178-79.

agricultural purposes. The sale of manure was repeatedly emphasized as a way to raise funds for improving these institutions and infrastructures.[15] The discursive backwardness of India here meant that, due to lack of proper organization and planning for removing excreta and other kinds of material, Indians relied upon the vicissitudes of natural or climatic conditions or primitive uses of manure. There was a naturalness to how Indians related to these material things, which could be effective, successful, and profitable (sale of manure) but were characterized as disorderly, irregular, and unreliable.

These reports were thus attempts discover the natural laws that constituted the order of the social with regards to disease, illness, and health. Only by discovering those laws could the health of a (colonized) population be improved. Colonial administrators, if they were to make any progress in public health, needed to learn about not necessarily the population but rather, the environment and its relevant features that produce insanitary conditions and harm public health. The term "sanitary" itself deserves some attention. Within these reports it was deployed to refer to what it did in Chadwick and other reformers' reports: "those structures that affect health" (Hamlin 1998:101-2). Importantly, sanitary conditions, in one discursive movement, was deployed in these reports to include certain factors such as stagnant water or nightsoil while others such as diet and work were absent and thus excluded since they did not fit the model of public health of the time.

The reason that materialities and their flows must be regulated and managed through the technical and administrative apparatus of the state was because the dangers, risks, and offenses that they potentially pose to the welfare of the population, or the public. Regulating and

[15] Toward the end of the nineteenth century and through the early parts of the twentieth, interventions were made in larger municipalities throughout the Punjab to use the sewage as manure on "sewage farms," that would reuse this waste material as well as raise funds for municipalities.

managing these materialities demanded technical and administrative interventions aimed at the environmental and collective, thereby achieving progress and improvement in sanitation and public health at the level of the individual. This was certainly a form of biopolitics emergent in colonial India through the course of the latter half of the nineteenth and the initial decades of the twentieth centuries. Even if the colonial state was unwilling to make the necessary investments to materialize technical interventions in towns and cities across the Punjab, most specifically the hydraulics of piped water and underground sewerage, this did not prevent it from making efforts to organize an administrative apparatus that could make some headway in this regard. Both of these - the technical and the administrative - were directed largely at the domain of landscapes and the environment. But such efforts should not be disentangled from the work of rule and government.

ANXIETIES OF RULE

To be clear, sanitation and public health was a project initially interested in the health and welfare of the military and civilian administrators and secondly, the wider Indian public. Thus, the separation of these racialized populations was a key feature of colonial governmentality. The well-known "cordon sanitaire" would be implemented in colonial cities such as Rabat while, in times of epidemics, cantonments would be cordoned off in order protect the health of troops in colonial India. In 1859 following a Royal Commission that raised concern about the high levels of mortality among the British Army "at home," the Royal Commission on the Sanitary State of the Army in India presented multiple findings: they were ill-prepared to deal with the Indian Rebellion, abnormally high levels of morality, and most importantly for my purposes, faced "inadequate sewerage and water supply, poor drainage, and ill-ventilated and overcrowded barracks" (Harrison 1994:61). From the very onset of colonial

rule in the Punjab, these features became an immediate and pressing concerns for both civilian and military administrators in the province.

After its annexation in 1849, much of military and civil administration were stationed in the area known as Anarkali - an area right outside the Inner City that was for a period of time utilized as a cantonment and continued to be a major European quarter. Cantonments near urban localities became important sites through which control over Indian populations and territories was ensured while, being controlled spaces themselves, safeguarded the health and security of troops housed within them against an inhospitable environment. As something that "depended greatly on conditions outside of military stations," drainage of water was repeatedly identified as the major cause for Lahore's "insalubrity" and a potential threat to the health and security of Europeans, both civil officials and military officers (Harrison 1994:69). Multiple hollows, excavations, and ditches dotted its landscape and were deemed a constant source of threat: stagnant pools of water contained all kinds of "filth" and festered with diseases - this was especially the case in Anarkali.[16] It was the irregularity and unevenness of the topography that was to be blamed. As "much of this ground having been the site of the Ancient City, is intersected with the ruins of foundations of walls, streets, gardens, enclosures, and tanks which prevent the escape of the rain water, and are receptacles for the filth that is inseparable from the vicinity of a large city." This characterization of Lahore's landscape as one of ruins was echoed later on: "…the debris of ages has raised the site of the city to a considerable height above the river. The city is built on several mounds rising to a height of fifty feet and under, with incumber depressions" (2006[1894]:284-5). Nida Rehman has highlighted how "evoking the act of ruin, such descriptions provided powerful historical legitimacy to the act of physical

[16] Government of Punjab, "Letter from Secretary to the Government of India to the Board of Administration for the affairs of the Punjab regarding Public Work and Irrigation in the Punjab," Nos. 60-2 (April 1850).

transformation" (2014:179). The Inner City was seen as much more of a living city, though one too overwhelming and crowded for any interventions, while the surrounding low-lying areas, where within a few decades a civil station, cantonment, and residential suburbs would be constructed, was viewed as a decaying landscape of ruins. Interventions related to water, both its quality and flow, was necessary to revitalizing a decayed landscape and improve sanitary conditions and public health for mainly its growing European population and stationed troops. While the portions of the wall surrounding and buildings within the Inner City would lowered for sanitary purposes, colonial administrators, most prominent of which was Robert Napier who was the lieutenant colonel and chief engineer to the Board of Administration, discussed the construction of drains made mostly of masonry materials throughout the 1850s both within the Inner City and the surrounding environs that would become the civil station and cantonment.

The cantonment at Anarkali would eventually be abandoned because of its "unhealthiness," and a few years later, troops would be moved to the village of Mian Mir located further away from the Inner City and Civil Lines. Indian villages were characterized as less dense and having more open spaces, something that ensured the circulation of air and more hygienic living conditions, whereas Indian cities were viewed as particularly filthy and unclean. Despite this urban and rural differentiation, a series of epidemic (smallpox, malaria, and cholera) broke out across the Punjab and other parts of India in the latter half of the 19th century. The helplessness of troops to stave of these epidemics was not lost on officials such as De Renzy.[17] In 1869 based on letter requests from the principal of Lahore Medical College, De Renzy called on the Secretary to the Government of Punjab and its Superintending Engineer to present a report on the flushing of drains, which was such a pressing concern as the "great want

[17] Government of Punjab, "Lahore fresh water supply to civil station of Lahore," no. 10 (July 1869).

at present is, security against cholera; and English experience proves that a pure water supply is the greatest preventative of this disease, and that in the absence of such a supply other sanitary improvements afford very little security from this attack."[18]

Even though by this time the cantonment had been moved to Mian Mir, further from the Inner City and Civil lines, a quarter of the troops stationed therein perished from an outbreak of cholera.[19] Event such as these demanded that the security and health of cantonments be safeguarded and motivate a series of inspections across the Punjab in the latter half of the 1870s. The goal of these inspections was to ascertain how sanitary conditions in villages impacted the health of cantonments within a five miles radius and the troops stationed therein. De Renzy perfectly encapsulates the anxieties that proximity would breed in the course of his inspections:

> In the wells from which the European troops are supplied I found the water about 10 feet from the surface. The wells are boarded over, a trap-door being formed in the cover, through which water is drawn in the usual way by bhistís. As the bhistís in drawing water stand on the cover immediately over the water, the dropping of their feet of course falls back into the well. No matter who comes to draw water, including the sweeper fresh from handling the latrine utensils, the dripping of the people's feet and hands all returns to the well; and when it is recollected how large a number of people draw from one of these wells in the course of the day, it will be seen that existing arrangement provide effectually for the wholesale contamination of the well water.[20]

The forms that pollution and contamination, whether as filth emanating from stagnant pools of water or drippings that entered the supply of well water, were so broad that they came to

[18] Government of Punjab, "Sanitary Improvement of Lahore," no. 3. (October 1869): 522-23. As he was a proponent of contagionism, De Renzy recommended the provisioning of a "pure" water supply and the flushing of drains, as cholera was found in the 1880s to be a waterborne disease resulting from the contamination of water by human excrement. The other prominent position was anticontagionism that argued for either proclivities of certain bodies or features of the climate and geography (Arnold 1993).

[19] Cholera, in particular was "endowed with [*great*] significance by Indians and Europeans," as it seemed to "strike suddenly and unpredictably" and drew considerable "administrative concern," associating it very much with "disorder" (Arnold 1993:159, 198).

[20] Government of Punjab, "Sanitary Inspections of Villages," no. 6 (May 1876): 175.

permeate and adhere to all sorts of things, bodies, and environments. These anxieties are particularly relevant in light of theories of contagionism and miasma circulating at the times. These anxieties voiced by De Renzy emerged out of the various theories of disease and motivated investments in improvements of water supply to cantonments throughout the closing decades of the nineteenth century - the impact of which on epidemics remained uncertain.[21] These assessments eventually materialized in interventions across the Punjab's landscape, especially in localities surrounding Lahore's Civil Station and Mian Mir cantonment.

Anxieties provoked by materialities (excreta, sewage, dirt, refuse, and cesspools) were, on the one hand, born out of medicine, sanitation, and public health that saw these as sources of poor health, illness, and disease, and on the other the broader project of colonial modernity, liberalism, and racialized notions of civilizational progress upon which they were formulated. What linked these anxieties was a common desire to secure and legitimize colonial rule in India, something that created enduring linkages between institutions in post-colonial Pakistan and these materialities. The priority during these initial stages of colonial rule was to secure rule through spatial and infrastructural separation of Europeans and a select group of Indians from the wider, native public. This infrastructure - water supply, drainage and sewerage, and waste disposal - would be extended to that wider public, though rather unevenly, in the late colonial and post-colonial periods. Let me now turn to institutions and infrastructures emerging in colonial Lahore that were to manage the movement and circulation of these materialities.

WATERY MATTERS

[21] By the 1890s "substantial improvements" would be made into the water supply, which would be partly due "new water-filters," such as the Pasteur-Chamberland, with much denser filter beds capable of preventing the passage of micro-organisms" (Harris 1994:68).

Whether as an unsullied source of water provisioned to the city or contaminated drainage kept at a safe distance in sinks located on the city's peripheries, nature - water, topography, human and non-human excreta - properly managed through governance institutions and infrastructures could "sanitize the city," improve the health of the public, and create linkages to its hinterlands (Kaika 2005:19; see also Sharan 2011). In colonial Lahore watery matter flowed and was kept in circulation through a configuration of bodies, infrastructure, institutions, the built environment, and landscapes. It should be clear by now that colonial administrators, whether military or civilian or at the municipal, provincial, or central levels of government, became concerned from the onset of colonial rule in the Punjab with how water was and should be brought to the city and its populations and then, taken away to prevent against any harms or risks that this watery matter might potentially pose. The material processes by which water was provisioned - its movement, delivery, distribution, removal, and circulation - meant that the infrastructures within the built environment and urban landscapes became prominent objects of governance. How did these objects become consolidated as changes to the built environment proceeded and institutions of governance were reworked and emerged? How did these watery matters move in between spaces that were differentiated along the lines of public and private? Rather than a straightforward taming of nature and subterranean flows by this regime of governance, technology, and value, it becomes clear that multiple possibilities emerged and endured to manage the flow of these materialities across and below the urban environment in colonial Lahore.

Discussions immediately after annexation focusing on the source and amount of water to be provisioned to Lahore came to fruition in 1876 when the Lahore Municipal Committee (LMC) affirmed their commitment to provisioning an uncontaminated water supply and the

building of “an improved and complete drainage and sewerage system.” The LMC applied for a thirty-year loan from the Government of India. The report estimated that the number of wells within the city numbered well over 3,000, which was the major source of water for the burgeoning city, and that they were, in the words of the Sanitary Commissioner, on the whole “unfit for use.” The conditions of the wells could not be remedied as “the ground through which the water percolates to the wells has been the site of a great and most closely populated city for many hundred years, indeed from the earliest times, and from the primitive habits of the people, the soil has been made the natural receptacle for every kind of filth, solid and liquid, until the whole site of both the ancient and modern city has become thoroughly impregnated with dangerous, and even deadly impurities.” The condition of these wells was also mirrored in Syed Muhammad Latif’s description: “…owing to the denseness of the population and the entire disregard of all sanitary precautions and arrangements, the accumulated filth of ages had so impregnated the ground that the water in the wells was utterly unfit for use” (Latif 2005 [1892]:298).

Despite relying on the colorful words of the Sanitary Commissioner’s condemnations, Leslie Clarke who was the municipal engineer quickly moves on to the various possibilities for provisioning a supply of water for the city in the proposal he authored: quality, quantity, and distribution. He gives an overview of water quality with regards to sediment, organic and saline matters, the water bed itself, and climatic factors and discussed characteristics of the population. The quantity of water per person needed to be calculated: while a limit of 10 gallons per person was fixed for the supply of “pure” water in the report, it was estimated that 25 gallons per person of sewerage was produced on a daily basis. The limit of water would, at a later point, be increased 20 gallons, bringing it roughly in line with sewage estimates. He

proposed pumping engines at wells and a reservoir placed at a certain height from which a distribution system of main and service pipes of cast iron would supply main streets with water and would be accessed by stand pipes. Considerable technical specification on each of these (engines, reservoirs, mains, and pipes) are contained in his plan - these being the basis of his expertise - and he recommends that water be taken from wells located near Badami Bagh. It would be in 1881 that "a system of water-works was opened" with the supply being taken from wells located on a "strip of land" that was the bed of the Ravi before it had changed its course (2013[1908]:38).

The other side of provisioning of "pure" water was the removal of "sullied" water. Certain public works, especially the filling hollows and ditches, paving roads, and building drains, were constructed in what would eventually become the Civil Lines and certain parts of the Inner City. Most of the early drainage and sewerage infrastructure - simply described as "open rectangular channels built of brick set in mud mortar and plastered" - was laid down around 1852 haphazardly when Napier was attempting to deal with threats and dangers posed to troops and Europeans in Lahore (Government of Punjab 1876:2). Unlike waterworks, which, as a technical endeavor, had been constructed and implemented to a large degree in Lahore by the 1880s, some of which still exists in older parts of the city, drainage was described as being largely absent and deemed insufficient. Its insufficiency arose out of a built environment that was overwhelming and excessive:

> In the larger streets they [*drains*] are placed close to the houses, but have no connection with them; in the smaller streets and lanes in the centre of the road. They are laid down with little regard to the laws which regulate the flow of water in open channels, being merely built on the surface, and rising and falling as the ground does; so long as the fall is constant they work and carry according to the inclination and capacity, but the slightest impediment stops them and the sewerage flows over the road to be absorbed or evaporated. The depressions in the ground and the bends in the gutters are so numerous that a constant flow of

> sewage is impossible, and very little of the sewage ever reaches the intercepting sewers (Government of Punjab 1876:2-3).

It was the totality of the built environment, from the status of drains and absence of household connections to the topography of streets and presence of depression, that directed the flow of drainage and other liquid matter. Streets and gutters, in particular, posed a major challenge to this flow. Clark noted how streets were "at present narrow and torturous, so much so that very few of them will allow a cart to pass along them, or turn when once in," and had "for centuries" functioned as "natural water courses, into which the storm waters, as well as the sewage from the city rushed and passed off through them" (Government of Punjab 1876:8). The movement of this material across Lahore's built environment was complicated by the undisciplined habits of natives whose uncontrolled building practices prevented sanitary environments.[22]

The naturalness of Lahore's built environment cannot be overlooked in these passages. This naturalness was linked to the decay and ruination of the landscape I mentioned earlier. All these - nature, decay, and ruination - could become the sites of certain intervention to improve and make progress, even if those same intervention were limited and piecemeal. Taming nature was not simply about the materialities that were constituted it, it was dealing with a building process that came to be marked as "natural." One that was not the result of rational planning compiled in reports and implemented in action bur rather the product of a past. The naturalness of this process became both the site and limits of interventions during this period. To entirely reconstruct streets in this instance was seen as impractical. It was not simply the "uses to which [the street] was put" that confounded distinctions between "private" and "public," in the words

[22] Its "narrow and tortuous" streets were made even less accessible by "shopkeepers [*who*] on either side of the streets have encroached on the public ground by erecting over the drains wooden or other platforms for exposing their wares on and for sitting." Such encroachments made it "difficult in many cases for the sweepers to keep the drains clean" (see Government of Punjab, "Sanitary Inspection Report of the Town of Lahore," no. 8 (May 1874): 255).

of Chakrabarty, but the street itself was resistant to these distinctions of governance. These streets were "to be accepted intact, so far as their general direction and position is concerned," but it would be necessary to have them "opened up and widened" for purposes of "sanitation and convenience," as "[f]resh air and ventilation" are critical to "the health and comfort of animal existence as pure water" (Government of Punjab 1876:8-9). Despite "the prejudice of inhabitants," the municipality would carry forward, though in a piecemeal fashion, the widening of a limited number streets in the Inner City.

Despite the challenges posed to drainage, watery refuse eventually did reach intercepting sewers, which would be carried to a back channel of the River Ravi that, over the past few years, had gone from a "running stream" to a "huge cesspool" that posed "an *incalculable danger*" to the population being so close to the city. Even if these unsanitary conditions were affronts to conceptions of spatial order within the discourse of sanitation and public health (Gandy 2014), all Clark could recommend at the end of his proposal was constructing first an intercepting sewer at the same site as the existing open drain and second an outfall sewer that was to deposit sewage in the River Ravi and the nearby village of Sanda (Government of Punjab 1876:4). Owing to financial costs it would only be a two mile outfall sewer, and later, sanitary improvements such as "guttering and metaling of roads" and "remodeling intercepting sewers" that were constructed to have sewage discharged into the Ravi (Government of Punjab 2006[1894]:314).

Connection to these infrastructures was the point of contact between inner spaces of households, bazaars, and squares and outer ones of drains, sewers, and streets. Being situated at the cusp of governance distinctions of public and private, connections became an ambiguous affair. Clark affirms these ambiguities when he admitting ignorance about "internal

arrangements of native houses in Lahore," something that would impact how "sullage water" was taken to sewers that he wanted to construct (Government of Punjab 1876:7). Then, a plan prepared several decade later, which would become the basis for Lahore's sewerage system following partition, made the case that even though some buildings, mostly commercial and governmental ones, in designated areas were "already [...] equipped with water flush appliances," there was "little prospect that many house owners will proceed voluntarily to install water flushed sanitary appliances in their houses, nor is it likely that the Municipal Committee would compel house owners to do so" (Government of Punjab 1924:ii). The implementation of underground sewerage would thus focus in areas where connections could more easily and less intrusively be made to this infrastructure, largely those where commercial activity was dominant or had a British and wealthier Indian populations.

As Lahore expanded outside the Civil Lines and the Cantonments, the Lahore Improvement Trust (LIT), founded in the 1920s, became responsible for emerging areas such as Misri Shah, Faiz Bagh, Bhaghpanpura, Qila Gujar Singh, Gawal Mandi, and Landa Bazaar and had drawn up and implemented various plans related to land use and infrastructures (see Government of Punjab 1945:23). These areas were distinct from the "bungalow areas" of the Civil Lines and Cantonment, and attempts were made to improve their drainage and sewerage infrastructure. For instance, Misri Shah, located north of the Railway Workshop, became one site for a Development Scheme in 1939, with first an earthen road and brick soiling, the construction of an approach road, and provisioning of underground sewerage. There were also plans drawn up for building a "working class flat" in this locality (see Figure. 1). And in the case of a low-lying area such as Gowal Mandi, the growth of which was unchecked and

unplanned, flooding was “inevitable” during and after the rains (Government of Punjab 1945:29). On the northwest of the city was Mozang, a crowded “village,” that became the site of repeated “piecemeal” improvements, which focused mostly on water, drainage, and sewerage infrastructure (see Glover 2005).

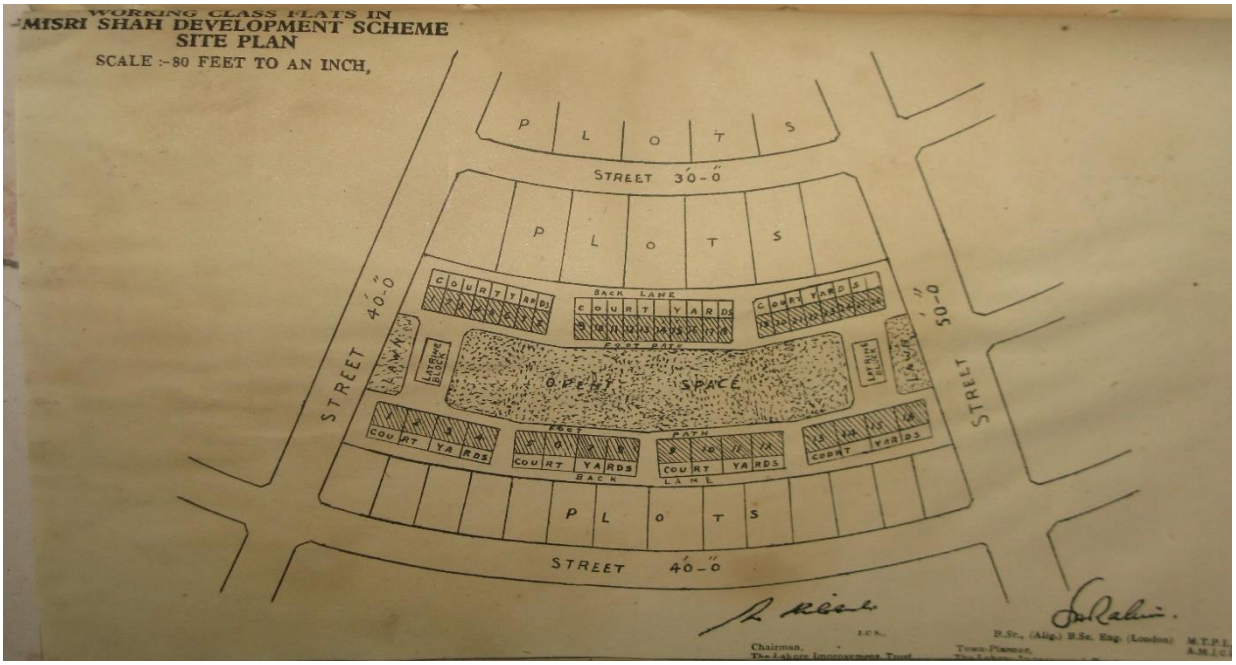

Figure 1: Plans for Working Class Flats in Misri Shah area of Lahore (Source: Government of Punjab 1945)

At this point in time, in lieu of connections to drainage and sewerage infrastructure, a majority of households had their night soil removed manually by “sweepers:” “Night soil from rooftop latrines was collected in small earthen vessels (gumlas) once a day, usually in the morning, by 'sweepers' who customarily received one chapatti (unleavened bread) as payment. Liquid waste from the latrine was channeled to drains in the street through a vertical notch (parnala) in the house's outer wall rather than through internal piping” (Glover 2008:113). Once again, it was the connection between the inner spaces, where waste in variety of forms (nightsoil or sewage) was produced and expunged out, and outer spaces that signified a series of absences for colonial officials: a lack of connection to this infrastructure, a disjuncture

between public and private, and endurance of the pre-modern. The cleaning of drains by sweepers, exacerbated by encroachments, similarly frustrated this particular spatial and infrastructural order of things, bodies, persons, and environments. Extant and emergent, infrastructures in colonial Lahore did provide the means (physical, social, political) by which material, here not yet labeled waste but a product of the social body's metabolic processes, was kept in motion and circulation. Emanating from specific institutional sites, these accounts took this movement into account and treated it as an object, to be known, analyzed, and manipulated.[23] Knowledge about this object made possible certain kinds of interventions, especially through infrastructures, that would improve the conditions of life and make progress in forms of conduct arising out of those conditions. The state of the outer, external environment in Lahore however has largely been discussed in relation to water, drainage, and sewerage, or those things that were thought to be independent of habit. This approach aligns, as I mentioned earlier, with public health thinking of the time. As this final passage suggests however, the outer, external domain of environments was inextricably linked with inner, internal domain of habit.

GOVERNING THE SOCIAL

Established in 1862 in the wake of Municipal Act passed by the central government, the LMC, like others throughout colonial India, became the primary institution of governance overseeing sanitation and public health. In the following decades following, a series of Municipal Acts would be passed to reform and expand the scope of municipal institutions,

[23] Administrators in colonial Lahore viewed landscapes and built environments as being composed of "'discoursing'—and therefore potentially educative—objects," which subsequently meant that "[*with*] conscious attention to design and organization, the ordinary material fabric of a village or city might continuously irrigate the Indian social body with a flow of improving effects" (Glover 2005:545).

especially those reforms enacted under Lord Ripon (1880-1884) that expanded local government with greater administrative and financial controls.[24] Governance reform invested LMC with powers with regards to sanitation and public health that regulated construction, maintenance, and improvement of streets and buildings (see Glover 2008:131; Harrison 1994:166). Under "offences affecting the Public Health, Safety or Convenience," fines (20 rupees) were outlined for the non-removal or unlawful disposal of certain materials either in streets, open areas, or drains and sewers. Colonial accounts make it quite clear that many of these "offences" continued unabated despite governance institutions and reforms. Beyond the domain of governance, pamphlets and treatises in vernacular languages were published and circulated that sought to improve sanitation, public health, and hygiene and impacted building practices in Lahore with regard to drainage and plumbing and light and air ventilation (see e.g. Glover 2008:132-35). Rather than assess whether sanitation and public health in colonial Lahore extended beyond the domain of governance and into inner recesses of Indian homes and habits, I want to emphasize governance created a division between its institutions and the social, the latter being regulated, managed, and thus brought into the purview of the former. While the movement and circulations of materialities were instrumental to how sanitation and public health were put into practice, I now want to make evident how distinctions between

[24] Prior to these reforms, British and Indian members, who could be official or non-official, would be appointed to serve on Municipal Committee. Prior to Ripon reforms, this would be slightly expanded to allow for the election of some committee members. Limited "indigenous representation" in these committees was unacceptable to liberal critics as it went against the notion of "self-government," which was necessary to change "indigenous cultural practices" that impacted health and hygiene (Harrison 1994:166). Even if committee members were indigenous and elected, it was not close to universal enfranchisement as only European and Indian "ratepayers" within a municipality could serve not hem. Others however even opposed this limited extension of self-government, seeing it "as an abdication of Britain's responsibility to its imperial subjects" (Ibid. 1994:167). Indians, already having demonstrated their antipathy toward public health and hygiene, would only worsen sanitary conditions if decentralization proceeded and there was greater indigenous representation within local government.

public and private were brought to the fore within this regime of governance, technology, and value.

The LIT after its establishment in the 1920s sought to manage Lahore's physical expansion.[25] Unlike the Lahore's burgeoning localities that were organized by the LIT, the Inner City evaded that sort of organization, management, and even knowability. As I mentioned at the opening of this chapter, Bernard Cohen charted out a series of investigative modalities through which knowledge was organized and produced about colonial India.[26] However, the Inner City eluded "knowability, presenting a kind of visual opacity resistant to aggregate description" (Ibid. 2008:50). Its purported disorder and excess was something that evaded a scientific, objective description and could only be known through a sensuous experience of disorder and awareness of excess, both of which were thought to elicit pleasure in unexpected and uncanny ways.[27] This disorder and excess presented certain challenges to urban reform and planning and bureaucratic administration. If one looks at these reports however, much of that disorder and excess arises out of the certain distinctions of public and private upon which social life was thought to be governed in colonial Lahore.

The LIT enlisted the help of Basil M. Sullivan, who was the consulting architect to the Government of Punjab in 1913 and served in that position until 1938, to prepare a report on

[25] These trusts were founded across colonial India. For instance, an earlier trust was formed in Bombay in 1898 following the outbreak of the bubonic plague, and primarily addressed "sanitary disorder" by slum destruction, street expansions, land reclamation, and several tactics to improve the health of the city through the apparatus of governance - the success of which remained questionable (Kidambi 2007:7100-113).

[26] Much of the interventions related to water, drainage, and sewerage dependent upon knowledge about "local" conditions. Two of these epistemological modalities that are noteworthy are the "observational / travel modality," which "related to the creation of a repertoire of images and typifications that determined what was significant to the European eye" and the other being the "survey modality," which referenced "a form of exploration of the natural and social landscape" (Cohn 1996:6, 7). Though the former was found in the genre of travel writing by a variety of actors (see Arnold 2006), the latter was to be located in the bureaucratic documents produced by the colonial state.

[27] Glover in his account of colonial Lahore relies on many of the fictional and non-fictional writings of Rudyard Kipling, who had spent considerable time in Lahore with many of his writings taking place in it.

conditions impacting sanitation and public health in the Inner City. One of the major challenges facing the administration at the time was Lahore being "seriously congested" because of a litany of buildings, bodies, materials, and structures. This congestion had left sanitation in the Inner City in a dire state. "The high buildings and the narrow lanes often ending in blind alleys and the blockage due to the building up over lanes from first floor levels upwards," Sullivan observed, "cause pocket after pocket of foul and stagnant air. This condition is found throughout the city" (1929:5-6). Yet, unlike most other accounts, Sullivan makes clear, "The paved lanes and streets are swilled down and swept and the bazars [sic] are cleaned," with the problem being located in another domain: "No effort of this nature, however, can cope with house refuse thrown into the street and loose cattle by the thousand, in the lanes, bazars and chauks. The difficulty is complicated by the existence of kuchas[28] where it is impossible, for lack of space, for soil carts to go. From such places all refuse must be carried out by hand" (1929:6) Sullivan then draws attention to the movement of this matter within the outer, external domains but the inner, internal remains in the horizon: "It is noticeable how clean and swept the insides of the houses are and how squalid outside. Inside is usually found a court with the building round it. Outside is a dirty wall and a dirtier parnala covered with old kerosene oil tins. Through this rotting channel is discharged sullage, frequently over the joints of the water supply pipes" (Ibid. 1929:6; see Figure 2a).

Sullivan's report is noteworthy for its utilization of images. The pictures are of several physical features of the landscape and built environment that were thought to impact sanitary conditions. Some of these images are simply of the built environment, attention being directed toward the messiness of structures and bodies: electrical wiring, projections or encroachments,

[28] Kuchas refer to passages within alleys that do not open out back into a street and end in a cul-de-sac.

cattle and livestock within homes and thoroughfares, the presence of rubbish, "sullage" flowing over water pipes, and food such as grain sitting out in the open or near drains. These images, along with the captions that are provided, organize scenes of what seems to be everyday life in Lahore at this time. They are organized, however, within the distinctions of governance provided by liberal rule in colonial India. They are almost all of those spaces that come to be marked as outer or public. These scenes are ones of disorder, of activity and building going unchecked and unregulated. They are imaged indictments of what will need to be controlled. One image (Figure 2b) magnifies those distinctions and limits within its frame. Outside the home stands a shirtless man with a muscular frame donning a dhoti. Just inside passed the entrance, we see half the body of a cow tied to an oil press. We do not see the actual press but only the rope that goes around cattle's necks. Above stands a woman on the terrace with her hand seemingly covering her face and looking down in the direction from where the photograph is taken. The image is so striking because, unlike the others in the report that do not have a human subject, this one is framed almost as a portrait of domestic life in India. Also, distinct from the others that have captions to frame what sanitary or public health infraction is being portrayed, in this one, it is not entirely clear what the sanitary matter at hand exactly is - only suggestion is the keeping of livestock inside domestic space. A series of distinctions, between inner and outer, internal and external, the individual and environmental, and public and private all inhere within it. The perspective from which the image is taken suggests a peering into an inner domain, of habits and habitations, that was closed off to the colonial state and yet, saturated outer ones of governance, sanitation and public health, and urban environments. Not only were European's "modernists categories of 'public' and 'private' […] constantly challenged by the ways Indians used open space," as Chakrabarty (1991:16) states,

these distinctions became embedded in how institutions sought to govern the social through channeling the flow of materialities, shaping the conditions of life, and reforming the forms of moral conduct of Indian subjects.

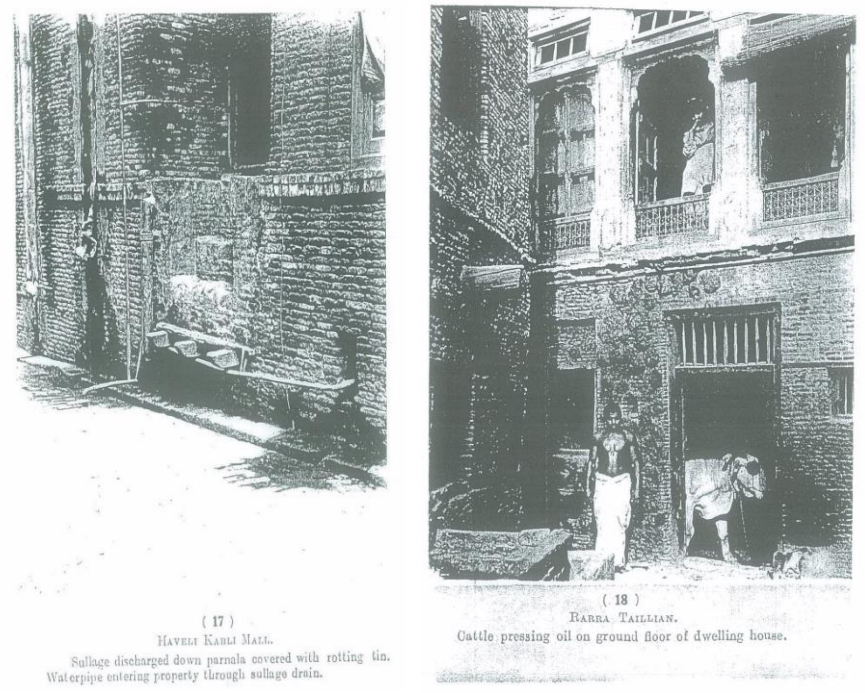

Figure 2: a) Sullage being discharged b) Man and woman with cattle inside home

(DIS)ORDERLY HABITS

As the domain of the public fell under institutions of governance, the habits of those who inhabited these institutions became a fraught concern. As early as 1868, it was reported that in towns across the Punjab excrement "is removed either by an establishment of sweepers paid out of municipal funds who convey it away in carts, or in panniers on bullock and donkeys, or else a contractor undertakes to remove it for a certain sum, the excrement being given as a portion of his renumeration." At that time, it was noted that conservancy was carried out by contract in Lahore, with a "contractor [*who*] maintains an establishment of sweepers, carts, bullocks, donkeys, &c, for removal of filth, and undertakes to keep the streets, drains, &c

clean." Prior to the instituting of a contract system, the municipality's "servants had nothing to do but to collect the nightsoil in heaps, its removal being left to the cultivators of the estates around Lahore, who had gradually acquired strong prescriptive rights in the valuable manure they obtained" (Government of Punjab 2006[1894]:316). Citing "uncertain and incomplete" timing and method of removal, the rights of cultivators were "broke[n] down" and "leas[ed] out to another contractor who paid for them. Then, the LMC would "revert to the former system, allowing the cultivators to carry of the sweeping subject to definite rules and times after the conservancy establishment has done their early morning work of collecting the stuff from houses and alleys and have deposited it at certain fixed places" (Ibid. 2006[1894]:316). At that time the cultivators paid between 5 - 15 rupees a month in order to keep a cart at stations where waste, mostly manure, was deposited.

The fluctuation in contracts was not unique to Lahore at the time, as it was found across the Punjab and became prominent in the Delhi Municipal Corporation during this time, where it went through constant revamping and reform (Prashad 2000:12-14; see also Khalid 2012:56-65).[29] The variety of contractual setups make evident that this material had, for some time, fallen under the purview of municipal power and authority. For instance, the Punjab Municipal Act of 1884 affirms this fact when it contends that "all dust, dirt, dung, ashes, dung, animal-matter or filth or rubbish of any kind collected by the committee from the streets, houses, privies, sewers, cesspools else-where" will "be vested in and belong to the committee" (Government of Punjab 1884:40-41). Being vested property, this material's "direction, management, and control" fell under the municipality's legal power and authority (Ibid. 1884:40). This vested asset, or what I will later refer to as waste, contained value in itself,

[29] In the case of colonial Delhi, contractors were, at times, from within dalit groups, such as non-caste and lower-caste groups, but more often they were "middle-caste Hindus and Muslims" (see Prashad 2000:13).

especially in the form of manure, but also took on value through its movement and circulation. When this material was taken from households, as mentioned earlier, non-monetized exchange took place between "sweepers" and residents. The taking away of this material to an elsewhere was part of an exchange of money between them and the municipality, in whom the material was vested as property, something that will reappear in later chapters.

In fact, auctions were held in which different caste groups, some of which were "rich sweepers" that were organized as "cliques," made bids to win contracts for various wards. Contractors would offer to clean a ward of the municipality at a specific monthly amount[30]. These auctions were not ones in which individuals paid the municipality for the contract, but these individuals offered a competitive rate to be paid to them by the municipality in exchange for their organization of labor and other resources to remove material things from a specified ward. The municipality thus had direct contractual relations with the individual who won the bid (contractors), not those who carried out the work of waste removal ("sweepers"). Contracts would be renewed throughout the end of the nineteenth and early parts of the twentieth centuries. During this same period contractors came under attack for mismanagement, malfeasance, and poor performance, which was the case in the shifts just noted. This is why the activities and performance of these contractors, as the organizers of labor relations, came to be regulated, managed, and scrutinized, something that weakened their prevalence but did not end their presence. It simply meant that the municipality started to exercise greater control over conservancy.

[30] For one such contract see Prashad (2000:13), where the offer is made of Rs. 110 per mensem to clean a ward and the details of the breakdown of that amount. The contractors come out with earning approximately a fifth of that amount as his salary and distributes the rest among jamadar (a kind of supervisor), bullocks, those who lead the bullocks, and other expenses.

Despite instituting a strong departmental presence by 1931, the Municipal Committee continued to raise concerns about order and control both within its cadre of subordinates and intermediaries and outside its boundaries among the contracts. It reported that waste material was being deposited in filth depots and dumping grounds and then carried away further by municipal carts, zamindari contractors, and/or private cartmen, or what its report refers to as the "contract system" (Government of Punjab 1931:95). Even if equipment and built structures were partly to blame for deficiencies in waste disposal, the contract system as it existed at this time was deemed inadequate. A zamindari contractor or private cartman, due to "no proper check on deliveries from the dump," could be given waste "free of charge" or take away an amount greater than he was supposed to. Moreover, "tales of illicit supply to cultivators" questioned the accounting practices of the sale of waste materials – recommendations for which were made in the report. The sanitation staff that oversaw collection and disposal of waste material were complicit in such illicit practices, as they exerted control over the filth depot or dumping ground. Such mismanagement, disorganization, and even malfeasance necessitated "that the contract system should disappear altogether," as "the merits of departmental management" being "unassailable," and "alleged leakages should be counteracted by stiffer control" (Ibid. 1931:95-6). Concern was however as much about control over contractors, even if they remained outside of the bureaucratic domain, as those who remained within its scope: "sweepers" and supervisors.

At this time, the Sanitary and Conservancy staff had expanded to include 17 sanitary inspectors (supervisors) and 1,050 sweepers under the control of the Health department. These supervisors and sweepers were "subordinate and intermediary agents on the ground" and thus, were "central to sanitation and public health practice in the British empire" (Johnson and

Khalid 2012:2). This category of subordinate and intermediary is particularly relevant to sanitation and public health in both colonial and post-colonial periods. As Johnson and Khalid (2012) suggest, British policy on sanitation and public health, despite being formulated out of imperial concerns and interests, was not only dependent upon "local" or "natives" in its implementation but was actively shaped by those actors and their practices. These practices can be located in a diverse set of institutional and non-institutional settings such as midwifery, hospital, and epidemic and disease control (see e.g. Hunt 1999). Moreover, eschewing the elite-subaltern division that could be easily deployed to understand this class of subordinates and intermediaries, their emplacement within institutions of governance connected to the colonial enterprise means that their relationship to power was more ambiguous than such a binary would suggest.

The work of "sweepers" entailed the disposal of night soil and rubbish. This form of work was on the one hand stigmatizing and polluting while on the other constituted the backbone of the regime of sanitation and public health. These sweepers fluctuated between custom and contract in relation to the department, waste material, and their labor (see Khalid 2012). Attempts were made during this period to shift sweepers who were understood to have "customary"[31] rights to waste material to contractual obligations with municipalities. In other provinces, they would also be entrusted to collect information related to births and deaths. The idea behind shifting from customary to contractual relations was that the uncertainty and irregularity that characterized a customary work regime would be less lessened, and greater control and order could be exerted through a contractual one. This would be done by bringing

[31] As was the case for settlement, "customary" rights were especially protected in the Punjab, a province in which the colonial state organized itself around a rationalized, scientific order that was distinct from but dependent upon the domain of "custom" as affective relations of and kinship that was thought to constitute Punjabi social and political order. Contract, in other words, incorporated custom based on the latter's difference.

their activity into purview of the public and governance institutions. The majority of sweepers however remained "part-time servants," with contractors still being involved in their work. As should be clear at this point, by the 1930s these work regimes, one defined through custom and the other through contract, existed alongside each other, and in fact reinforced one another, within a growing municipality and its institutions.

Supervisors, on the other hand, were the other class of subordinates or intermediaries that were peripherally involved with the work of waste disposal: "To supervise the sanitation of areas assigned to them and attend to complaints by the public: control the jemadars, muster menial staff of sweepers, bhishtis, cartmen, etc., maintain their attendance registers and prepare monthly acquittance rolls" (Government of Punjab 1931:96). The Jemadar, also at times called the darogah or conservancy darogah, was an important figure as they were the supervisor involved at the most local level within a ward. They at times received payments from contractors for ignoring contractual infractions or failures while also serving as intermediaries between sweepers and other staff in the municipal bureaucracy. In the following chapter I speak at some length about the significance of this figure of the darogah and other field staff within this bureaucracy as it has developed since this period, especially in regards to their intermediary positions. The power invested in supervisors, at different levels of governance, arose during this period and was directed very much at controlling, regulating, and disciplining a contingent of subordinates but also provisioning what is now called waste disposal services.

Sweepers, in particular, were described as a "motley throng" that knew "pretty well how to look after themselves" and posed "a difficult problem:" "Now these sweepers are a somewhat independent body. They have a Scavengers' Union: they are much in request and are to some extent able to dictate their own terms. All except 98, employed in the main bazaars, are

part-time servants, engaged at Rs. 8 per mensem. A great part of the day is their own, and it is understood that they make as much as Rs. 25—30 per mensem. The result of this irregular mode of employment are thoroughly unsatisfactory" (Government of Punjab 1931:96). This perspective deemed the work of sweepers irregular and unpredictable. Thus, the desire to control sweepers was an effort to make their work, as well as waste disposal, more regular and predictable. Proper management was thus very much about the department exercising control over labor-power. Sweepers, similar to the "contract system," had organized their work not around the dictates of an institution, with its routinization of work, but in relation to those who are willing to compensate them, in monetary and non-monetary forms, for their services – this being the presumed domain of custom. Though they existed in the peripheries of Punjab's sociopolitical order, the organization of work and its attendant forms of renumeration provided "sweepers" with a limited amount of freedom and autonomy and challenged the power and authority of governance institutions. Despite a clear denigration of sweepers, supervisors were complicit and to a certain text, enabled this irregularity to go on:

> If a sweeper wishes to change his beat, to absent himself for a short period, or to secure the employment of a relative, he does so for a small fee to the Jemadar or Sanitary Inspector. It is even asserted that they pay a proportion of their salaries to these officers, in order to retain their names on the muster rolls and that the rolls contain a great number of fictitious entries, the same names appearing on the muster rolls of other departments. I mention all this not with the object of stigmatizing the controlling staff on uncorroborated evidence, but in order to demonstrate the necessity for better control (Ibid. 1931:96).

In an inspection visit to the Inner City following a complaint related to "untended drains and general neglect of sanitary arrangements," the Sanitary Inspector "had not been in evidence for several weeks, and it was obvious that the needs of their neighborhood, quite modest as they proved to be, had been totally ignored" (Ibid. 1931:96). Education, as part of the colonial rule

of difference,[32] would ameliorate subordinates' "bureaucratic disregard for duty;" however, until then, better control would be necessary to ensure that both sweepers and supervisors do not shirk their duties and responsibilities. Making the work of sweepers more regular, predictable, and controlled required changing their working conditions (whole-time rather than part-time), but also improving their supervision that would "bring some measure of order into what is at present a very loose and disintegrate organization." Bureaucratic reorganization needed to bring an inner domain into its purview but their access to such a domain was circumscribed: "No system, however, can be proof against fraud, unless there is honest supervision." The matter at hand, in colonial accounts, was an inner one, sedimented in habits and dispositions of Indian subjects, inuring them to flout distinctions of public and private that would ensure order and control, whether as residents who throw away rubbish in the streets or workers who do not carry out their public responsibilities. A regime of governance, technology, and value continued to generate certain concerns related to the built environment, as was the case with water, drainage, and sewerage infrastructure, but now the habits of subjects, which were forms of moral conduct, that would repeatedly become a potential site of intervention in colonial India and post-colonial Pakistan.

CONCLUSION

In this chapter, I returned to a historical moment to trace out how the problematic of development became critical to the form and operations of governmentality taking shape in colonial Lahore. Notions of improvement, reform, progress, and development have been instrumental to liberal forms of government. Progress was to be achieved through colonial development "perceived as a systemic change that was to be brought about by purposeful,

[32] See Chatterjee (1994).

rational action, a task to be performed, a goal to be achieved and a mission to be carried out" (Sanyal 2007:108). This problematic has been inherited by the post-colonial state in Pakistan, especially as it continues to be part of a global regime of development throughout the Cold War and up until the contemporary moment. Post-colonial development has been distinguished from its colonial instantiation as a form of action that takes the nation-state (people and territory) as its object. As will become clear in the following chapters, the problematic of development undergirds the kinds of interventions that have been imagined in relation to Lahore's waste infrastructures, has facilitated the expansion of the state apparatus, and enabled those actors who inhabit this apparatus to act as conduits of power, allowing such power to be channeled, distributed, and intensified.

Whether in its colonial or post-colonial instantiation, development bestows legitimacy upon state institutions, projects, actors, and activities. The legitimating principle is that development is being carried out in the name of the people or nation. In other words, the state as the techno-bureaucratic apparatus of government implements policies and puts into practice interventions to develop (i.e. improve, reform, make progress in) the nation as a territory and people. Here, the liberal distinction between public and private becomes an elementary one. As this chapter has demonstrated, the movement and circulation of materialities came to be governed through a series of distinctions. The ways in which the subaltern flouted these distinctions is as important as how these distinctions came to be embedded in a regime of governance, technology, and value. The development of Lahore's waste infrastructures, in which state institutions have been important actors, have upheld, reworked, and expanded these distinctions, which remain important to how a whole series of things, bodies, persons, and spaces come to be distributed and managed. Moreover, in contemporary Pakistan, development

is carried forward in the name of the public, something that bestows legitimacy upon activities, actors, and institutions, and yet, that legitimacy has not gone unchallenged, which I explore in a later chapter on how a public-private partnership has sought to transform waste disposal services as a public good and the challenges it has faced.

As these colonial accounts demonstrate, habits within waste infrastructures raise concerns around productivity, discipline, order, control, and autonomy. In contemporary Lahore, the habits of those who inhabit its waste infrastructures, either as part of the state or outside it boundaries, continue to raise similar concerns. In the proceeding chapters, I will explore how habits have been reworked under distinct regimes of governance, technology, and value. At this point however, I want to emphasize that what makes habits such obdurate concerns are how they confound, on a fundamental level, distinctions between public and private, inner and outer, internal and external, and individual and environmental. The fact that the habits of those connected to Lahore's waste infrastructures have repeatedly become a concern across historical moments is a testament to the fact that these distinctions are fundamentally blurred, entangled, and messy. At the same time, it is exactly the messiness of these distinctions that allow actors situated within them to materialize forms of value out of waste, and this insight raises one last point I want to emphasize before I wade through the messiness that is contemporary Lahore's waste infrastructures.

Why have I focused so much on sanitation and public health in this chapter? Development of Lahore's waste infrastructure has proceeded over the past several decades, out of which solid waste has emerged as an object of knowledge, governance, and management. In the accounts of sanitation and public health I relied upon in this chapter, such an object had not yet emerged. The object was not waste differentiated between sewerage and solid as we know it

today but rather, things such as stagnant water and cesspools, dirt and filth, and stenches and fumes. Sanitation and public health linked the environment to health in its attempt to govern the movement and circulation of these materialities. This is why I focused on sanitation and public health: they make explicit how the materialities out of which waste would emerge are entangled with the reproduction of life itself in multiple, intersecting ways. Even if sanitation and public health are no longer the primary discourses and practices through which these materialities are known, governed, and managed, they continue to inform our valuations of waste, as well as those persons and places associated with it, as non-value. Waste is something potentially defiling, polluting, and infectious and posing certain risks, dangers, and hazards to those persons and places exposed to it. This valuation is key to how and why waste must be kept in motion and circulation through infrastructures, ones that seek to protect the population from those risks and hazards while at the same time exposing others, especially those subaltern groups who live and work with it, to them. This is how waste infrastructures take part in distributive process of reproduction that are profoundly uneven.

Chapter 2

Infrastructures for Development:

Waste, Caste Labor, and the Post-Colonial City

The work performed by sanitation and waste workers is strikingly similar. The materials are shared: dirt, dust, and ash; construction sand, unused cement, and broken bricks; paper notebooks, household plastics, and metal wiring; animal feces, rotting food, and dried out flatbreads. As they collect these and other materials, they separate what has no value for them – dirt, animal feces, and ash – from that which does – papers, plastics, bricks, and metals. Sanitation workers use a municipal handcart to collect these materials but increase its capacity by extending the edges upward with inserted slabs of wood. This lets them collect more waste with fewer trips. When their handcart reaches capacity, they place a soiled sheet on the ground, tip over the handcart so a portion of the waste falls, and then, usually with the help of another sanitation worker, pick up the sheet by its ends and swing it back and forth before letting the waste fly into the containers. Waste workers from the informal sector deposit useless trash onto the back of their donkey cart or refitted motorbike and put a soiled sheet in between layers of waste materials. Then, once having made several layers in this way, they go over to the same containers, stand on top of their carts, pick one layer up at a time, and, also with the help of another worker, dispose of the materials.

Over time I became increasingly comfortable with a few sanitation and waste workers that I accompanied while they performed this work. One day I brought along a camera to document some of the sights I had grown accustomed to seeing over the past year or so. On that day, I was accompanying Mubbashir, who is the brother-in-law of Allah Ditta mentioned later

in this chapter. Both of us knew what to expect from the other: Mubbashir would either go into households to collect waste material or be handed it across the entrance – in both cases, I stood at a distance so as not to raise any suspicion or questions. Mubbashir did not pay much attention to me as I adjusted the camera's light settings and took pictures of his work: trash bins sitting outside households waiting to be collected, Mubbashir throwing materials from these bins onto the back of his donkey cart, his bare hands sorting and arranging the materials, and the layers of waste neatly separated by soiled sheets

On most days, no one in the lower-middle class locality took any notice of my presence either. If they did my response that I am a student writing his thesis on waste workers in Lahore usually satisfied most people. The sizable camera hanging from my neck that day however made me conspicuous. As expected, children from the neighborhood ran up to me, asking to have their pictures taken while residents and shopkeepers respectfully approached me, inquiring which newspaper or television channel I had come from and when they would be able to see the pictures I was taking of their neighborhood. One picture, however, drew unexpected kinds of attention.

After collecting waste from numerous households, Mubbashir went to throw away the trash into nearby municipal containers. The activity I was taking pictures of at that moment was ordinary and mundane. A garbage compactor is parked next to empty containers and is getting ready to leave for the dumping site on the outskirts of the city. Mubbashir and another waste worker are lifting the soiled sheets and swinging them, so the waste is propelled directly into the back of the compactor (Figure 3). While I took several pictures from across the road, an enthusiastic, slightly anxious supervisor approached me. Not asking any questions, he

immediately introduced himself and informed me about his own duties: “My name is Babar Sattar, and I’m the sanitary inspector for UC-107.” I explained I was completing my thesis and had been working with waste workers from the informal sector. This led him to say, “We have tried to stop them from using these containers, Sir, but they just don’t learn.” Though already aware about much of this information, I remained silent, nodding in agreement so he could continue without any interruption. And as he spoke, I realized his concern was not the work that was being captured in the picture but his work of supervision going on outside of it. I informed him, “Yes, the Company is doing its best. And don’t worry, Sattar Sahb, these images won’t be shared with any of your supervisors or media outlets.”

Figure 3: Waste workers from informal sector depositing waste into compactor.

The enthusiasm of this supervisor was in stark contrast to the timidity of the other waste worker that was helping Mubbashir in the images. After we left the compactors, Mubbashir told me that this man was also concerned about who I was and what I would do with the images. Being from the border region of Pakistan and Afghanistan, these concerns were justified:

almost immediately after an attack on an army public school led to the death of 132 children, multiple junkyards owned by individuals belonging to communities from Khyber Pakhtunkhwa or Afghanistan were shut down and their owners disappeared.

Infrastructures in contemporary Lahore have come to be organized, put into practice, and both succeed and fail in keeping these materials in motion and circulation. The image that I captured that day both reveals and obscures aspects of the coordinated activities that makes those infrastructures happen. Not only were the timing of the compactors and the arrival of Mubbashir and others planned, an unseen, secretive exchange of money, in which the supervisor was involved, also took part in orchestrating this activity. Additionally, the images did not account for the relations and exchanges of money ongoing between Mubbashir, Allah Ditta, and the households that they collect waste from, which have been built over nearly two decades, and cannot make explicit how these activities constitute processes shaping the development of space, governance, and infrastructures across urban Pakistan. This image, through what it reveals and includes and obscures and excludes, introduce how infrastructures in contemporary Pakistan have been assembled around waste materials, in which things, persons, work, words, relations, and technology are coordinated in making them happen.

INTRODUCTION

As I showed in the previous chapter, Lahore's waste infrastructures have been entangled with the city's potential for development and aspirations for modernity. These promises of development and modernity that were to materialize through waste infrastructures have gone unfulfilled in post-colonial Lahore, and in almost every account I have come across, these infrastructures are characterized as having failed. The sources of this failure are multiple and interlocked: crises in state power and legitimacy, limited technological and financial

resources, endemic corruption, and individual behaviors and habits. At the same time, this generalized affect of failure is coupled with the fact that infrastructures differentiate urban space: wealthier localities have better, more regular waste disposal services, and thus an absence of waste in public spaces, while less affluent, poorer areas, where these services are irregular or non-existent, are characterized by its public presence. These spaces, and the bodies and persons that inhabit them, remain linked through waste infrastructures: the exhausted materials fueling the population's metabolic processes are moved across the urban landscape through the labor-power of subaltern groups. This chapter presents a historical and ethnographic account that goes against affects of failure around waste infrastructures, without completely disregarding their significance for how Pakistanis relate to these infrastructures. It attends to these infrastructures as giving us insight into the potentiality surrounding waste, what happens to it, and those who work with it, or what I have been calling caste labor.

The state coalesces at different historical moments as a shifting, blurry, and permeable entity that has wider effects across the social body.[1] State institutions, especially in the form of bureaucracies, make themselves present in the everyday life of its citizenry, either through presence of officials, "routine and repetitive procedures," and/or circulating documents (Gupta and Sharma 2006:11).[2] Along with governance institutions, infrastructures and space have been the object of development over the past several decades in Lahore. During this time, the city's population and waste generation have increased in tandem with one another, which has been

[1] For accounts of how the state as an abstraction come to reified through practices and ideas within social life, see Abram (2006); Mitchell (1991, 1999); Appell (2012).

[2] There is a broad range of writings within the anthropology of the state. Poole and Das (2004) have explored how what happens on the margins of the state are in fact constitutive of practices by which the state comes to be constituted and coheres for citizens. Another strand of thinking has sought to look at the state and its boundary being blurry and unstable (see Gupta 1995; Ferguson and Gupta 2002) while others have drawn attention to how bureaucracies work through document of different kinds (see Hull 2012; Mathur 2015; Gupta 2012; Tarlo 2003; Feldman 2008; Riles 2006).

augmented by an increasingly consumptive economy. This chapter argues first that development – of institutions, infrastructures, and space – has facilitated the capacity of the state to remain one conduit for power in Lahore's waste infrastructures. Second, it argues that subaltern groups have inserted themselves within these infrastructures and the concomitant expansion of state power. More so than others, this chapter demonstrates how the position of subaltern groups in these infrastructures have remained essential to processes of development, especially as it bears upon space, governance, technologies, and labor.

This chapter asks a series of interconnected questions about the state, infrastructures, and development in contemporary Lahore. What are the relations, both within the state and at its boundaries, by which this work has come to be organized within Lahore's waste infrastructures? How do promises suffuse infrastructures with a variety of interconnected affects around progress, futurity, failure, lack, or absence? And in turn, how have these affects continually made these infrastructures in an object of development across historical moments, though under distinct regimes of governance, technology, and value? In answering these question, I chart out how these groups have engaged and gained access to power by inserting themselves, through a variety of strategies, within Lahore's waste infrastructures, and the forms of negotiation, resistance, and accommodation available to them.

The materials presented in this chapter may not immediately appear as infrastructures. There are no elaborate technical, automated systems that move and circulate waste as a material thing. Rather, much of what makes up this chapter is the mobilization of caste labor and the sociopolitical relations in which it is embedded, and through their conjunction with techno-infrastructural entities, waste is made to move and circulate. Through that movement and circulation, waste infrastructures materialize certain promises around development and

modernity, and ensure the reproduction of life in Lahore. This is one set of value transformations of waste: how the detritus of a city can be transformed such that it can then signify progress or failure of Pakistan as a post-colonial nation-state. What those transformations and the attendant promises obscure, much like the images I took that day, are the dispensation of value by which that actually happens in contemporary Lahore.

DEVELOPMENT AND THE POST-COLONIAL CITY

Post-colonial Lahore was born out of the partition of the Indian subcontinent. The migration of nearly 13 million people between the newly independent states of India and Pakistan reworked dynamics across the region. Punjab, along with Bengal, was one of the regions through which the border between the two states would be drawn. The violence, uncertainty, and destruction wrought by the Partition reoriented life in Lahore. Most of the city's Hindu and Sikh residents were compelled to leave for India while a mass infusion of Muslim refugees arrived into the Punjab from across India. Christians would also not be unaffected, as it is known that non- and low-caste Hindus converted to Christianity and Islam during this time to safeguard themselves from violent reprisals - a phenomenon that cut across religious groups. The built environment, too, would be transformed: many parts of the Walled City in Lahore that were destroyed in rioting and arson would be rebuilt anew after the dust had settled while a series of residential settlements were constructed on what was then seen as peripheral areas of the city to accommodate these reworked demographics (Talbot 2007).

The newly sovereign state of Pakistan, emerging from the violence of Partition, was confronted with renewed concerns around governing waste, populations, and urban environments. At the end of 1952, 15,000 gagare, many of whom were refugees from east Punjab and had no source of livelihood, found themselves within Lahore's boundaries,

especially rural areas that came under the jurisdiction of the Corporation. Gagare are a lower-status caste group that are placed in same social stat us as chūṛā or changar. The Corporation's Regulations, by treating begging as a crime, had robbed this group of their ability to support themselves. Mehnga Lal Sapoochvi, a member of the municipality at the time, observed that this meant this group "had no source of livelihood," and despite the Undersecretary for Refugee Rehabilitation Lahore (Punjab) and Deputy Secretary Industries and Electricity having "[abided] by government policy to employ them in existing departments," it remained the case that "no possible arrangements have been made to assist these helpless gagare."[3]

That same year, a growing concern had arisen about the deteriorating state of urban sanitation because the conservancy staff had been replaced "by inexperienced hands," "increase in the population of most of the towns without corresponding increase in conservancy labour," "insanitary practices of refugee population due to economic stress," and "lack of proper sanitary workers due to fall in municipal revenues" (Government of Punjab 1952:45). It was thus unsurprising that Mehnga Lal Sapoochvi proposed "these gagare should be employed as sweepers or they should be placed in the post of assistant (naib) dāroghah," and that not being a possibility, a poorhouse should be provided for these 15,000 gagare, "where they should be provided food, shelter, clothing, etc., and those who are able to work should be put to suitable labor." The costs for these interventions should be "recovered by taxing the wealthy through a poverty tax." And finally, "these gagare should be given training in the making of handicrafts." The only objection came from the Health Officer: "If gagare want to be employed as sweepers, he has no objections. On the other hand, for an assistant dāroghah, it is necessary to have experience, personality, and other qualities. If they meet these criteria then he has no objection

[3] City of Lahore Corporation Office, Corporation Proceedings, From 11/25/1952 to 1/20/1953, Record No. 577-785.

to placing them into the position of assistant dāroghah." The question confronting the municipality when 15,000 gagare arrived into Lahore's rural peripheries in the early 1950s was this: how to harness the labor-power of a population such as the gagray to both uplift these lower-status groups and improve the state of sanitation and public health in post-colonial Lahore?

As would be the case with Christians who converted from a similarly placed group (the chūṛā) and Muslims from groups such as a changar, it would be these populations that over the course of the next several decades migrated to Lahore from various parts of the Punjab and found themselves working in Lahore's waste infrastructures in different capacities. The way in which caste labor has replenished the labor supply for waste work has not resulted solely out of state machinations, though they have been important, but from a much wider set of social and political relations that have come together to interweave the reproduction of urban environments with the reproduction of caste difference. This is why caste labor has remained instrumental to Lahore's waste infrastructures throughout the post-colonial period, and changes in the institutions, infrastructures, and work around these infrastructures have not undone that fact. It has simply re-inscribed this form of labor at different historical moments and their particular regime of governance, technology, and value.

Throughout the 1950s and 1960s multiple infrastructure projects related to water, transport, communication, and energy were constructed to integrate Pakistan as a sovereign nation-state (see Anwar 2015; Akhter 2015a). During this period, one that was under the military rule of General Ayub Khan, "building infrastructure was constitutive of Pakistan's material progress and discourses of a teleological modernization helped define the purposes and goals of those infrastructures and the state's role" (Anwar 2015:28). Much of that infrastructure

was meant to facilitate the agricultural and industrial output of the national economy such that it could be integrated into global networks of capital, as Pakistan was closely aligned with the United States in the Cold War and the country was imagined by local and global actors "as a space geared for capitalist accumulation" (Ibid. 2015:28).[4] Citing higher than expected levels of population growth, the second five-year plan (1960-1965) invested greatly into the development of Pakistan's agricultural and industrial sectors in the hopes of ensuring the population's health and welfare through adequate food supply and its productivity through small-scale industries.[5] As part of this five-year plan, master plans were prepared for prominent cities in West Pakistan.[6] In 1961 a Committee was constituted and headed by Commissioner, Lahore Division, and despite limited technical and financial resources, prepared an extensive Master Plan for the city of Lahore in 1966.

The Master Plan opens with an illuminating description of the state of Lahore and other urban centers across Pakistan during the post-colonial moment:

> Detailed analysis of the growing complexities in Lahore has revealed that the metropolitan problems have mostly arisen due to un-coordinated and un-planned growth of the City, both in public and private sectors. This has led to haphazard growth of jhuggi [*sic*] clusters, slums and kachi abadis [*sic*] in the City. The allied problems of poor transportation facilities, lack of sanitation, lack of roads and other community facilities and encroachments on open spaces, children's parks, gardens, have created environmental deterioration in a city which inherited the glory of 'City of Gardens' from Mughal time (Government of the Punjab 1973:i-ii).

[4] In fact, national development in Pakistan was supported, formulated, and implemented in consultation with groups of economists associated with Harvard University (see Rosen 1985). For an account of how treaties around water management aligned with Cold War politics, see Akhter (2015b).

[5] Though the Pakistan state would have to play a facilitating role, especially through its infrastructures, the hope was that private investment would stimulate the growth in agriculture and industry. Undoubtedly, the benefits of these investments did resonate during this period, which owed much to foreign aid provided by the United States and the World Bank.

[6] Prior to Bangladesh winning its independence in 1971, Pakistan was split into East and West Pakistan. The former had a larger population while the latter was dominant politically, leading to Bengal being disenfranchised on political, economic, cultural, and linguistic grounds in the years following partition. This dominance also took the form of war crimes and atrocities committed by the Pakistani army across Bangladesh during its war of independence.

The emphasis on growth being uncoordinated and unplanned and being characterized by a fundamental lack is unsurprising as this was the heyday of state-led modernization and development. Importantly, throughout urban Pakistan, these state-led efforts were as much about coordinating and planning growth of cities, as it was about demonstrating state power and sovereignty over territories and populations (see Hull 2012b; Daeschsel 2011). Unlike the hyper-modernist aspirations of Islamabad or the possibilities of an expanding metropolis like Karachi, the temporality of post-colonial Lahore is saturated by this idea of a "Garden City," something that has continually lent itself to imaging the city's future development as being an extension of an environmental past.

Importantly, this was a moment of transition with regards to waste infrastructures and institutions of governance related to them. The Master Plan described this state of affairs in the following way:

> In general, the older sections of Lahore have a system of sullage drains and night soil collection. Night soil is collected in pails and deposited either in pail depots or cart depots. A pail depot is a covered chamber built above a sewer having a flushing tank located over the road. The night soil dumped inside such depots is occasionally flushed into the sewer below. In localities without sewers, the Corporation has provided cart depots which transport the night soil to disposal areas […] Sullage drain are either lined or unlined […] Sullage drains, though relatively cheap, have many disadvantages. They represent a stage in urban development before the piped water to kitchens and lavatories became common. However, their substitution by underground sewers, in densely populated and crowded sections of the city present a very serious structural and financial problem (Government of Punjab 1973:52).

Sullage drains and nightsoil were not the only component of waste infrastructures that were coming up for discussion during this time. After mentioning how "large bins" made available by the Corporation for residents to deposit their garbage in are also collecting night soil, the Master Plan describes the state of the four dumping grounds being used to collect garbage in

the city. The practices at these dumping grounds were called Bangalore or trench method: "These are approximately 40 feet by 8 feet in area and about 3 feet deep. Layers of garbage and night soils are deposited in the trenches until filled. Many of the trenches are used for abattoir [slaughterhouse] wastes, but not all garbage and rubbish reaching the dump are placed in trenches. There are many acres of refuse dumped on the ground. On the whole the operation is poorly conducted and conditions are very insanitary […] In general, it may be stated the disposal of wastes by the Corporation is a very unsatisfactory operation" (Ibid. 1973:52-53). Even if, as architects and urban planners who were working around these years suggested, the next master plan had a greater impact on organizing Lahore's development, this plan is noteworthy for it combined an affect of overabundance (of people, material things, etc.) with a sense of lack (infrastructures to handle that abundance) to imbue waste and the work and infrastructures surrounding them with the promises of development for post-colonial Pakistan. This affect gestures to how infrastructures were starting to coalesce during this period, would expand and transform in the coming decades, and continue to endure in the contemporary moment. The notion undergirding this indictment of the post-colonial city was very much "infrastructure as development" of the time, in which certain basic services and needs provisioned by the state were to act as the conditions of possibility for development as growth, progress, and improvement in the life of the population. These infrastructures would also go into imagining and organizing the space of the nation-state, in the forms of economy, society, population, and territory. This was thus the moment of transition from colonial governmentality, in which a subjugated population was being prepared for freedom, to a post-colonial one, in which the nation had arrived, and its population and territory were being primed for development (see Gidwani 2008; Sanyal 2007; Goswami 2004; Anwar 2015). Of

course, what was absent in these discussions of infrastructures and its potential promises in relation to waste was the role of subaltern groups.

As suggested by the concerns voiced by Mehnga Lal Sapoochvi, the municipality during this period was taking a steadier and more nuanced interest in its waste infrastructures. There were discussions of the relative dirtiness of various neighborhoods, the number of part- or full-time "sweepers" employed in areas or buildings, demands for constructing filth depots made by neighborhood chairmen and endorsed by the Health Officer, and procurement of vehicles and other machinery to further mechanize the disposal system. Importantly alongside these discussions were ones concerning the construction of sewerage infrastructures, such as the building of outfall sewers, tube wells, storm drains, and other structures that would improve sewage disposal. This conjunction of solid waste and sewage is not unsurprising because on the level of work, infrastructures, and institutions these were very much intertwined and had not yet been differentiated.

Whenever I discussed my research with members of my extended family or others in Lahore, especially those who were born right around partition and came of age throughout this period of national development, they repeatedly recounted how prior to piped sewerage, Christians, changar, gagare, and other lower status groups would either carry away human feces from households by placing it in a basket balanced on top their heads, remove sullage from open drains running along the sides of streets, and/or dispose other materials through sweeping - some of which will reappear in later parts of this chapter. They spoke about this with a mix of admiration and disgust, emphasizing that these workers had a certain degree of power because they were the only ones willing to do so. The underlying assumption to these statements was that this work has changed considerably since then, as have their social status. Setting that

question aside for the time being, I want to shift registers to how waste, while retaining its connections to a regime of colonial sanitation and public health, came to be rearticulated and to what effect? In other words, how did an object that we now refer to as waste get discursively reconstituted out of certain materialities? What were the shifts in regimes of governance, technology, and value that allowed for such an object of development to emerge?

INFRASTRUCTURES OF MANAGEMENT

Throughout the twentieth century, but especially since the 1970s, the management of solid waste at the municipal level has expanded on a global scale and has seen the circulation of practices such as systems of municipal collection, construction of sanitary landfill sites and incinerators, growth of private companies, and experiments in recycling, recovery, and reuse.[7] These practices around solid waste have required investments in institutions of governance such as solid waste management departments and techno-infrastructural entities such as containers, vehicles, and landfills. The expansion of solid waste management on the institutional and infrastructural level was a response to complex, interrelated changes such as the accelerated production of disposal commodities, increasing use of chemicals and plastics in the production process, growing concern over toxicity, pollution, and other environmental challenges, and greater urbanization on a planetary scale.

The formation of the Lahore Development Authority (LDA) in 1975 as the city's primary urban planning and development agency would be a watershed moment for Lahore's waste infrastructures. As mentioned in the introduction, the national government supported the LDA and its developmental imagination for the Lahore. In tandem with the LDA's formation, the Water and Sanitary Agency (WASA) was created, separating drainage and sewerage from

[7] For an assessment of these developments in North America and Europe, see Gandy (1994).

other institutions of municipal government and heralding a further differentiation and unification of waste infrastructures.[8]

In conjunction with these efforts at the provincial level, the World Bank supported Lahore's spatial, infrastructural, and institutional development on multiple fronts. The Lahore Urban Development Project (LUDP), a World Bank funded project, focused on "shelter" and "infrastructures" as the core components of urban development, and one of its main features was "improvement in solid waste collection and municipal management," which would be implemented by the Metropolitan Corporation of Lahore (MCL). At nearly 20% of total costs, the solid waste component of this project sought to improve "collection, transport and disposal of solid waste on a city-wide basis through provision of bins and containers, vehicles, equipment for the municipal maintenance workshops, upgrading of transfer stations and selection of sanitary landfill sites." (World Bank 1994:3) This project would also be debated by elected officials in the municipal assembly.[9] Originally planned to be completed by June 30, 1988, the project was extended almost four years until December 31, 1992. This extension had multiple reasons, part of which were "frequent management staff changes in the solid waste sector at MCL" (Ibid. 1994:4). Moreover, the increased costs by 72% was attributed to "substantially higher costs for solid waste management equipment (Rs. 177 million compared with Rs. 60 million estimated at appraisal)" (Ibid. 1994:5). Most funds were spent on the procurement of "equipment and machinery, storage skips, containers and different types of

[8] The creation of WASA, though expanding water and sewerage infrastructure throughout the city, also raised issues about social welfare. Municipal officials complained repeatedly about how points for the public to access water had disappeared since WASA came into existence. There were concerns about the availability of water to the public, especially the poor and indigent.

[9] For instance, an extended debated occurred between members of the municipal assembly as to whether the Chief Engineer, who would be hired at grade 18 under the Solid Waste Project, would work solely on implementing this project or could take on other responsibilities. Another debate was among various members of the assembly about the taking of the actual loan from the World Bank, how that would be dispersed by the various tiers of government, and what the stipulations on its repayment would exactly be.

refuse collection vehicles, establishment of a modern work-shop, provision of transfer stations, land-fill site, training and consultancy" (Ibid. 1994:15).

Despite greater than expected costs and delays in implementation, the project was described as "largely successful," with "the collection of Solid Waste [*being*] considerably improved under more hygienic conditions. MCL is efficiently running the project and claims the best utilization of funds provided by the World Bank to improve the Sanitation conditions" (Ibid. 1994:16). One metric of this success had been increased disposal capacity, "from 1300 metric tonnes (MT) to 2100 MT against total generation of 2600 MT/waste per day," [10] the procurement of a landfill site at Mehmood Booti, plans for gas extraction plant, procurement of "imported collection vehicles," and a workshop for vehicle maintenance. The expansion of infrastructures around solid waste management also increased the labor-force of sanitation workers, drivers, supervisors, and all those who were involved in the movement and circulation of these materials. Additionally, even outside of governance institutions, there would be an expansion of waste infrastructures I discuss shortly.

Part of the LUDP was a 1.6 million loan from the World Bank to have another master plan for Lahore carried out through the assistance of foreign and local consultants. The Lahore Urban Development Traffic Study was thus compiled in 1980 (Lahore Development Authority 1980). As mentioned earlier, in my interviews with those connected to the LDA and other municipal bodies, this planning document has been very influential in shaping the trajectory of Lahore's development, on spatial, infrastructural, and institutional levels. Despite portraying waste disposal services provided by the municipality in a generally positive light, this planning

[10] These numbers should be kept in mind not only because mediations of waste make it into an object in need of management but also, numbers have taken on greater salience since the public-private partnership I discuss in the next chapter.

document recommended that a separate SWM department be created to focus solely on these services. In light of these recommendations and the investments in solid waste collection and municipal management just discussed, the SWM department was created by the early 1990s, with its own administrative and "field" staff and machinery, and was placed under the control of Municipal Services within the MCL. All these discussions of solid waste management leave the role of labor and the social groups who engage in it undiscussed because they are invested in waste management as a technical problem, not one enmeshed in sociopolitical relations. Nonetheless, the expansion of institutions and infrastructures around waste cannot be ignored, as it would be crucial to how the state came to be a locus around and through which relations among things, words, persons, and technologies came to be organized.

The public-private partnership that I discuss in the following chapter was formed out of this SWM department, which was and continues to be part of the municipality and performs "residual" functions. As should be clear by now but should also be re-emphasized, from the late 1970s onward, waste infrastructures came to be differentiated in the kinds of waste that they are concerned with (sewage and solid waste), and those infrastructures were backed up by distinct institutions (WASA and SWM, respectively). The development of institutions and infrastructures related to waste were also pushed up by global and translational institutions, such as the World Bank but also others, specifically Japanese International Cooperation Agency and Korea International Cooperation Agency. All these investments, both capital and affective, have gone into expanding state-power around waste materials as the city has itself expanded spatially and demographically. Alongside these institutions and infrastructures, in which the state becomes a central, if shifting entity, are several other figures, specifically waste

workers from the informal sector and others with political power and legitimacy within the city, that are entangled with these infrastructures.

The development of Lahore's waste infrastructure was certainly a project of expanding state power, institutions, and actors, but it was also "a knotting or a coagulation of power" (Ferguson 1994:274). It put into practice certain distinctions that maintained a separation, between state and society and public and private, and were crucial to how waste become an object of governance. Previously as a municipal department within local government and now as a publicly-funding Company, the state separates, and continues to do so, itself from the economy and society, disentangling itself from those actors such as political party workers, traders, and waste workers that are still connected to these infrastructures, and in fact, ensure their functioning. What this separation, one that is both discursive and material, achieves is the SWM department, as a state institution, was able to claim its provisioning of waste disposal services as a public good, and makes waste into an object in need of management. The way in which infrastructures are organized, with respect to the state, becomes an issue of management: of waste materials, populations and spaces, and the labor-power of subaltern groups. What the SWM department previously sought to achieve in the name of the public good, something the Company continues to carry forward, is a project of post-colonial development, something shared with its colonial precursor: improving waste infrastructures is an act of care over the population by which its uneven reproduction is ensured.

Moreover, as the work of this department was putatively performed in the name of the public, the work, activity, and even presence of others outside of this department were deemed private. These boundaries between public and private, state and society, and many others are however largely blurred, something that allows all these actors to move across them,

strategically exploit them, and thereby, mobilize sociopolitical relations in their exercise of power (Gupta 1995). This is why, as I will show in the coming sections, the dāroghah comes to play an intermediary role through which power, by those within boundaries of the state and on its para-sites, comes to be exercised. The exercise of power, in this instance, enacts or fails to enact the disposal or circulation of waste materials. Now that I have traced how waste infrastructures have been the object of development across historical moments, the kinds of promises and affect entangled with them, and the institutions that are to manage them, let me now detail the relations, among things, words, persons, and technologies, that come to be assembled around these materials.

ACCESS TO WORK AND ITS CONDITIONS

Lahore's population and waste generation have expanded considerably in last few decades, and that has meant expanding labor markets around waste materials. Although census figures are not very reliable in Pakistan, especially since no census was conducted done between 1998 and 2017, the population between those two decades has doubled from 5.1 million to 11.1 million while the city and its built environment has expanded spatially to reorient the physical growth of the city. The development of urban space, especially through increased waste generation, has expanded labor markets around waste, something that municipal sanitation workers and informal waste workers, many of whom have migrated from across the Punjab to Lahore, are deeply enmeshed in.

This spatial development has meant that waste disposal services are organized through distinct institutions, which cut across "public" and "private" entities. The Cantonment Board for instance falls under the Pakistani Army and looks after waste disposal services for areas within its administrative boundaries while housing societies have several kinds of entities that

they engage with for these services. More recently, waste management companies are becoming common in Lahore and compete for contracts to provision these services in different localities. Nevertheless, the SWM was a primary institutional figure within this labor market, something I get into in greater detail in the next chapter, but it must be kept in mind that waste disposal services are structured around and through labor markets, in which access to and conditions of this form of work become salient issues for those who work with waste materials.

Municipal Sanitation Workers

There are primarily three categories in which sanitation workers could be employed: permanent (pakkā), work-charge or daily wages (kachchā), and contractual (taikedārī). I deal with the first two categories here, discussing the final category in the next chapter as it has arisen since the public-private partnership. Becoming employed as a permanent sanitation worker requires no education qualification, starting off at basic pay scale 1 (the lowest designation for local government employees), but did require the intervention of a figure who either had a connection to this department (oftentimes a kin relation) or was involved with local or municipal government (a Union Councilor, for instance). A sanitation worker who worked in the area I did my fieldwork, Sadiq used to accompany his father who was also employed by the MCL and placed in the area of Icchra, where many of Sadiq's kin continue to work. It was his father that spoke with a dāroghah and had his son and others within his extended kin network employed within this department. Kinship was and remains important within this department and line of work. For instance, the position of a permanent worker who passes away or takes retirement is inherited by their eldest child, if the latter desires it, while others employed on daily wages or through labor contractors still rely on kin and other intimate relations in finding employment. Previously, sanitation workers needed to submit the necessary documents at the

Town Hall building where the offices of the Health Department and Municipal Services were located – these being the branches of municipal government that oversaw waste disposal. These documents were consolidated into a service book, which consisted of biographical information, an order of employment, allowances, and medical exam. Sanitation workers relied upon superiors such as the dāroghah, nazim or naib nazim (elected officials), or another political figure to organize much of these documents.

In the past two decades, the conditions of work for sanitation workers but also for much of the labor force in Pakistan has become increasingly precarious. In the SWM department this took the form of work-charge or daily wage employment. In 1999 Mian Muhammad Nadeem, councilor for the MCL, advised the members of the assembly that "a specific class has established their monopoly on the sanitation department. Metropolitan Corporation has no alternative management for them. This means they have remained successful in their monopoly." Mian Muhammad Nadeem recommended that sanitation workers be employed as daily wage workers who would not be made permanent. Moreover, other Pakistani citizens (i.e. non-Christians) should be employed on daily wages as sanitation workers to demonstrate to Christians that others, specifically Muslims, are also willing to do this work. Only then would their attitude improve, and would they work with care and effort. Despite protest by one or two of the other councilors present, the Mayor decided that sanitation workers would be from then on hired as daily wage workers.

Prior to the public-private partnership it was estimated that nearly half of the labor force in the SWM department were on daily wages. These workers had 90-day contracts with the SWM department that had to be regularly approved. Maintaining such a labor force made these workers into precarious labor that could be fired and easily replenished through the wider labor

supply. Daily wage workers do not see any increases in wages, have no social and retirement benefits (something highly valued by sanitation workers), and frequently worked Sundays. Though the number of documents that they needed to arrange was much less than permanent workers, these categories of workers also relied upon the dāroghah with whom they had some connection to arrange the work order, which was the bureaucratic document (akin to the service book) that ensured their employment in the department and a source of income. Work-charge employees' conditions of work were purposely more precarious than those of permanent employees. This was not a temporary situation: many of the sanitation workers I had met who were or had been daily wage workers had been working under these conditions for a decade or more. Interestingly, the public-private partnership was ending this category by regularizing them into permanent workers and bringing in contractual laborers, which I discuss in the next chapter.

Accessing this form of work was not simply about conditions of employment but also, intertwined with how waste infrastructures have been developing, which shaped the actual kind of effort they engaged in. One afternoon, Rameez, the sanitation worker I opened this dissertation with, sat with me outside a wedding function that was taking place in the locality where he worked and I carried out my fieldwork. Those putting on the wedding had retained Rameez's services for a modest fee. At the end of the function, he would have to sweep the Eidgah and assist in any other cleanup activities.[11] Rameez would be free for several hours before his work would actually start, so as we sat on benches next to the *Eidgah*, I asked Rameez what their work was like when he first started working in this department over 20

[11] Sanitation workers regularly find paid waste-related work around such events because they are municipal employees. The dāroghah acts as an intermediary within such transactions since those putting on these events at times contact him rather than the sanitation worker directly.

years ago. Rameez began by talking about the area of Lahore where he has been working for the entirety of his service: sparsely populated and underdeveloped, Rameez described this area as a village or countryside, one that has been built up as a densely populated residential area, with a noticeable industrial presence. Rameez then began to describe the sanitary and infrastructural conditions of the locality: "It was very dirty, there was [*open*] drainage. The roads were unpaved. It was in a very poor state. We first did not sweep or swept less at least. Those open drains, we cleaned them." I continued to ask about his work, "How did you clean it?" It was only then that he started to talk about the work itself: This, we had a korpā, it was like this [describing a metal trap-like tool], there was big stick attached to it, and we used it like this. The sewage, we removed that. When that dried, when it became dirt, after two or three days, then we'd remove and place it in a depression. The roads were like that, uneven (high-low). In some places there was a pothole, in other places it was elevated, it was like that. Then as we deposited it over and over again, we made it even, then we also deposited trash in it, and we leveled it." Rameez was clearly describing more than the act of sweeping. The work that they engaged in was very much tied to infrastructures of roads and sewerage within this locality.

Yet, I remained wedded to disposal of solid waste, so I continued to inquire: "When did you sweep?" Rameez informed me: "We also swept. But less because what's the point of the jhāṛu […] When the drain broke, some motorcycle passed or some bicycle, its banī (small open boundary drain), the drain was tiny, a tire would hit it so it would break and the (sewage) water spread throughout the *gali*. We first made it pakkā (paved) and only after making it pakkā, we made a much bigger bund (boundary drain). Then after that this galī (street) became fine, clean." Still confused, I asked, "Who did this all?" and then, Rameez responded, "Us." The

work that they did was not limited to collecting and transporting waste. Rameez later clarified for me that sanitation workers in this locality raised the banī by using several bricks and covering them with dirt, which was something they thought of by themselves. As urban landscapes, especially in localities such as the one I am describing, have developed, these open sewerage drains have been replaced by underground ones, though the former remain in other areas of Lahore. The form of work Rameez and other sanitation workers engaged in was not limited to, as it is now, sweeping, gathering, collecting, and transporting waste, but was connected to infrastructures in the built environment.[12]

These changes in infrastructure, the built environment, and work are bound up with institutional ones: "Previously, the system [*of waste disposal*] was not very good. The trash, you know, many piles used to sit in the darmāle. The area was empty, just like how this area is empty, most of the area was empty. Many, many piles used to sit out. Then over time, as the department told us, 'Give us the trash.' Those private trucks, we sent them filled with trash. Slowly, slowly, the dirtiness ended. It didn't happen at one time." Rameez makes evident the fact that this development was something that happened slowly and over time, not at once. One final point to re-emphasize is that many sanitation workers, Rameez included, also collect waste from the households in the locality. After carrying out their responsibilities as public employees, they frequently turn their attention to their "private work" (private kām*)* and collect waste materials from households in exchange for a minimal service fee. Like waste workers from the informal sector but to a much lesser extent, they separate out valuable materials that can be sold to junkyard. Even though this was considered separate from their role as public

[12] There are legal reasons for this. While WASA is the municipal entity that oversees underground sewerage, the SWM department and now the Company is entrusted with the responsibility to maintain drains that are less than 3 feet underground.

employees, this role facilitated their access to waste materials and provided a source of income to supplement their salaries. This was also a point of tension with supervisors and officials at times that would blame sanitation workers for being overly concerned with their "private work" and not fulfilling their "public" responsibilities.

Informal Waste Workers

Waste workers from the informal sector were not employees of the SWM department. Being positioned outside institutions of governance, these workers provide waste disposal as a "private" service to households across Lahore. One of my key informants was Allah Ditta. When he migrated to Lahore in the early 1990s, he lived for a period time with an uncle who resided in a jhuggī placed on an empty plot of government land. That locality had no one collecting waste from households. The domestic staff of this new built housing development were throwing away household waste into empty plots of lands, as much of the area still had not been built upon. These empty plots of lands are infrastructural nodes in Lahore's waste commons, and where many waste workers such as Allah Ditta started to gain access to these materials and thus, the source of income that would become part of their livelihoods. While sanitation workers exercised sociopolitical relations within a locality to gain access to a permanent position in municipal government, Allah Ditta built similar relations first with these domestic workers, who would give their household's waste to him in exchange for a minimal service fee, and later on, a figure such as a naib nazim or president of a trader or merchant's association, figures who will appear later in this chapter.

These sociopolitical relations were also formalized in the form of documents. Manzoor, who I also mentioned in the introduction and was part of Allah Ditta's extended kin network, presented to me a letter dated from November 10, 2002 that was signed by the Naib Nazim (an

elected representative from a Union Council). Despite being written a decade ago and having multiple creases, the letter was kept safe in a plastic sheet. Its contents were deceptively simple:

> As you may know, sanitation (safā'ī kā intizām), with regards to solid waste, was twice given over to contractors in Shadman Colony but due to their poor performance, the said contracts were terminated.
>
> After the termination, the contractor's operatives (kārinde) continued to work independently. These people had unlawfully occupied and built their homes on Shadman Link Road. City District Government, with the help of the local police, evicted them from this area and due to their unlawful activity, I have given permission to an experienced man Manzoor, son of Akram, to take care of sanitation. I request you cooperate fully with him on sanitation matters. Please contact me at the number listed below with any complaints or suggestions.

Getting to this point, in which a letter formalized and legitimized his access to waste, was not a straightforward process. Manzoor, along with his immediate and extended kin, had been collecting waste form this area for approximately a decade and started to do so when only a few homes had been built. Importantly, he had been able to build relations with lower-level staff within the SWM department, most specifically dāroghe. In fact, Manzoor had given almost 10,000 rupees to the supervisor in this area to attain his access to these households, and continued to give much smaller monthly payments so that his access would not be disturbed. Similarly, Allah Ditta, though he had formalized his access through agreements with the sadr (president) of various blocks within a ward, did not hold onto such a letter. He, however, did keep safe other documents in a special folder that formalized and legitimized his access in other ways. For instance, he had a list of all the establishments (heads of households, exact addresses, and phone numbers), and even made customized receipts that were titled, "Allah Ditta, Motorcycle and Rickshaw wale." Each receipt included the date, name, house number, and payment amount. At the top of the receipt, under his title, it states, "Cleanliness fulfills half of

one's faith," and at the bottom, "Note: If you have any complaints because of garbage contact this number."

The relations that these waste workers build with households are not only transactions mediated by money, even if that has considerable significance. Households from which they collect waste would give waste workers cooking items (ghee, rice, flour, lentils), old clothing, and what was most common, food that had not been eaten. Another item that was collected from households was dried out flatbread (rotī) that would be exchanged for milk with a group of Gujjars[13] who kept water buffalo. At times waste workers would even request domestic workers or children who were giving them waste, "Ask for something to eat." The intimacy that waste workers enjoyed with certain households also meant that they would often do other tasks for households.

One afternoon, waste workers, who were kin of Allah Ditta, invited me to accompany them into someone's house to clean up some waste on the roof. As we climbed three flights of stairs, the family remained on the first floor behind closed doors. They saw me pass by, and I could hear them asking whether I was with them or not. We walked up a set of steep stairs onto a second floor, that was not being used and was littered with empty and half-filled soft drink bottles. The room's paint was peeling off and the walls had mold growing on them. We then went onto the second-floor terrace and climbed another set of spiral staircases onto the roof. This was a Shi'i household so there was a small shrine at the back of the roof. Several bricks were arranged with a burnt-out chirāg and empty bottles of oil scattered around them. As we walked through the various parts of the home, I did certainly feel like I was traversing different thresholds of intimacy. These waste workers did not mention any such discomfort, and when I

[13] Gujjar refers to a caste attached to the rearing of water buffalo and the provisioning of milk.

would ask them about, they would stress that they had been collecting waste from these households since they could walk. These households have complete trust in them, they told me, and view them as their sons. It should be emphasized that these relations of intimacy were also present for sanitation workers who also traversed thresholds of intimacy as they did their private work.

Documents of various kinds can grant access to the waste of a particular locality and/or a predictable form of employment while also legitimizing the presence and activities of workers in relation to governance institutions. These documents took on significance through the relations in which they were embedded and mobilized through, many of which are intimate ones. These sanitation and waste workers are embedded in labor markets, which have their own dynamics and conditions, and those markets were also being accessing through these relations and documents. The state, especially through its intermediaries such as the dāroghah, becomes an important actor within the formation and workings of this labor market.

SUPERVISORS, OR THE WORK OF BEING AN INTERMEDIARY

One of my first days of fieldwork was spent with Bhatti Sahb, who was now a zonal officer (the highest field supervisor within the public-private partnership) and was previously an Assistant District Officers (the highest field supervisor within the SWM department). A veteran employee of the SWM department, having given over 22 years of his life in service, he found employment in this department because his father was a Chief Sanitary Inspector. Dressed in a fitted suit that was freshly pressed, we climbed into his sarkārī (governmental) jeep that first day. Dressed in slacks and a dress shirt, I was sitting in the back, perpendicular to the street, while Bhatti Sahb sat with his back to me, turning every once and a while to point out prominent landmarks and other field staff along the way. We were headed to one of the

many makeshift field offices setup by Bhatti Sahb and other supervisors like him. These offices were usually built on occupied land or in a building attached to another governmental department, so for instance, Bhatti Sahb's field office had been constructed over many years on land owned by the LDA. Using bricks that had been thrown away or gone unused, the office was a semi-permanent space that was furnished in a spartan fashion: two secondhand desks, several flimsy chairs, a water cooler, and a metal cabinet balanced on pieces of wood were all its contents. It was here where Bhatti Sahb, along with a clerk, a naib qasid (peon), and an office boy, held court. After the morning rush had passed, a steady trickling of supervisors and sanitation workers flowed in and out, checking in with Bhatti Sahb about all kinds of banal matters: signatures for this order, complaints coming from that prominent figure, and requests for some upcoming special events. This flow of subordinates constituted the lower-levels of this bureaucracy, further subordinated by privatization and reform that had started to take root during my fieldwork. Those like Bhatti Sahb had been part of the administrative and supervisory staff within the municipal department, overseeing those below them – a force of sanitation workers and supervisors – and continue to do this work in different positions within this public-private partnership.

Bhatti Sahb and others like him are the last major figures involved in waste disposal services that I will discuss in this chapter. Prior to privatization and reform, the municipal department had a streamlined hierarchy with different ranks of supervisors, who were separate from bureaucrats, or "higher-level" officers, in their employment designation and their work.[14]

[14] Supervisors, and most of the field staff, were employed through the municipal government of Lahore and as such were governed by the rules found in by the Punjab Local Councils (Service) Rules (1997). On the other hand, officers such as the Deputy District Officer and District Officer who were qualified to serve as part of the bureaucracy at the level of local government because they had passed service exams and were subsequently governed by Punjab Local Governments District Service (TMA) Cadre Rules (2005). These bureaucrats, along with other office staff, were involved in processing files and other paper documents.

Immediately "above" sanitation workers were assistant Sanitary Inspectors, or Sanitary Supervisors, and they were followed Sanitary Inspector and then, Chief Sanitary Inspector. To become employed at the lowest level of supervisor did have an education requirement: they had to have passed their matriculation exams (matric pass) and completed a one-year diploma course from an institute recognized by the Health Department. The diploma course covered basic topics related to sanitation and public health, such as the administration of vaccines and the spread of infectious diseases and illness. Based on service books and interviews, many of supervisors that worked previously in the department and now in the Company were employed as vaccinators prior to moving into this position.

These supervisors were collectively referred to as a dāroghah. Despite the term dāroghah not having an everyday usage in contemporary Pakistan, it remains prevalent within this department. The usage of dāroghah references its past connection with political power: for instance, many explained to me that a dāroghah were close advisers to Mughal rulers and the term populates colonial documents describing the "native" components of the bureaucracy. Outside of this department, the only time I had heard the word dāroghah used was by older Pakistanis to reference a police constable. The dāroghah as a subordinate with political power, by virtue of either the position itself or connections to more senior officials, remains salient nonetheless.

This intermediary position occupied by the dāroghah as a reference to a collective group of persons within the state apparatus has important implications for understanding how infrastructures become the site of localized politics. In all the areas I carried out my fieldwork, prominent figures within a locality, such as those attached to political parties, especially Pakistan Muslim League (N), heads of markets and traders' associations, and housing societies,

remained in continual contact with dāroghe as intermediary figures. The relations that would be continually maintained between dāroghe and actors outside of the SWM department were made clear to me on a regular basis. During a conversation with a supervisor from a neighboring locality about the distribution of antiseptics for Eid sacrifices, Khalid, who was a sanitary inspector, stated quite clearly, “Get them [the bottle of antiseptic] to anyone. All I care about is that they get distributed and political figures don’t bothers us,” and finished by emphasizing, “Get them [political figures] off our backs, they are like barking dogs.” These figures would “interfere” with the routines of this department in order to show their own political power and authority within a locality by ensuring services such as waste disposal are delivered.

For instance, late one morning, Bhatti Sahb was signing attendance registries and dealing with complaints coming in one day when he received a phone call. During this time anti-encroachment drives were being conducted throughout Lahore, which involved the municipality wantonly destroying illegally constructed stalls or shops, so construction waste that formally is not the responsibility of the department needed to be picked up. However, as Bhatti Sahb explained it to me, one of the shopkeepers' relatives was the Minister for Excise and Tax so he had his relative exercise his clout through a series of intermediaries and have this sizable amount of construction waste removed. Yet, another shopkeeper who supposedly had a relative in the Company also claimed responsibility for having the construction waste disposed of. This was when the former shopkeeper called and had Bhatti Sahb announce, on his mobile phone's speaker to a group of shopkeepers that had gathered, that it was, in fact, the shopkeeper whose relative was the Minister that had the construction waste disposed of, not the other shopkeeper. That these were shopkeepers should not be overlooked as a class of merchants, traders, or businessmen are a powerful bloc in Lahore’s political landscape, which has

implications on the national level. The humor of the entire situation was not lost on any us sitting with Bhatti Sahb but neither was its significance.

One distinct category of supervisor was the baildār who was a sanitation worker who had been unofficially placed into a supervisory role. As such the baildār supervised as well as removed waste, unlike other dāroghe who never handled waste material. Their intermediary positioning also enabled the dāroghah and baildār to collect money from waste workers from the informal sector in exchange for allowing the latter to deposit the waste they removed from within a locality into municipal containers. Waste disposal services is a good provided to the public by the state, and as such that provisioning becomes the site of exercising political power and legitimacy, or what has been termed patronage politics in scholarly debates. Waste infrastructures become the site of politics because they are as much about an assemblage of things, persons, and technologies as they are about the relations that bring them together.

The state, in the form of institutions and actors, has without a doubt expanded since Lahore's waste infrastructures have become an object of post-colonial development. Speaking of development in Lesotho, James Ferguson has argued that "what is expanded [in development] is not the magnitude of the capabilities of 'the state,' but the extent and reach of a particular kind of exercise of power" (1994:274). Ferguson argues that the expansion of the state (or "estatization"), especially through developmental interventions, is largely a process involving "distribution, multiplication, and intensification of these tangles and clothes of power" (Ibid. 1994:274). The development of Lahore's waste infrastructure has proliferated state power in the form of institutions and actors, but that has occurred within dispersed relations of power within social life. What invests the dāroghah in particular with such power is

his role as an intermediary figure that functions as a nexus through which power, his own and that of othes, specifically political figures mentioned above, flows through.

The dāroghah facilitates the access that sanitation workers have to this job, and its potential benefits, and waste workers had to waste materials, and its potential benefits. Unlike the relations with political figures mentioned in the preceding paragraphs, these relations did not provide dāroghe with access to power in the same way. However, what it did give them access to was labor-power. When political figures come like barking dogs or want to have construction waste disposed of, the dāroghah mobilizes relations with sanitation workers and even at times waste workers from the informal sector. The access that these relations enable are to labor-power on the one side and political power on the other. Mobilizing these relations are what ensure that waste infrastructures are continually put into practice but also the reason for why they might fail and breakdown.

THE POWER OF MEDIA

I spent a portion of my fieldwork reading Urdu newspapers with supervisors who read these newspapers on a daily basis. Right before the lunch break, Aashique, the dāroghah in one of the areas I did my fieldwork, would tell one of the sanitation workers or attendance checkers to run over to the green belt across the street, where a man with a creaky wooden table would be selling newspapers such as *Jang*, *Nai Baat*, *Nawaiwaqt*, and *Duniya*. I would regularly sit with Aashique and Arif, who was the attendance checker, in the field offices while we read the previous day's events. We would pause to comment on and discuss whichever crisis (loading shedding, a possible military coup, jhalsas and dharnas, terrorist attacks, etc.) was playing itself out on the national stage.

Many of these newspapers have sections that focus on the city of Lahore itself. Late one morning, Ms. Mariam, who was an assistant manager for the Company, had called Aashique and arrived soon thereafter in her passenger van. Aashique walked over, leaving me behind. Then, I saw Ms. Mariam hand Aashique a piece of paper. Aashique then told me to go back into the field offices and wait for him while the two of them went to oversee some work. When Aashique returned he showed me the piece of paper that he was handed earlier. It was a piece published in an Urdu daily out of Lahore (*Nai Baat*) regarding problems with living conditions in the Union Council where Aashique was a supervisor. The headline read, "In Faisal Town, UC 210, piles of filth, open man holes, and non-functioning sewerage." The sub-headlines states, "Residents falling sick from contaminated water, not one water filtration plant installed, sanitation department doesn't dispose of waste for several days, streets and alleys are falling apart, most plots have crops for livestock, despite administrative complaints, no resolution to these problems, say residents." The report then goes into greater detail about all these complaints. At the top of the report were pictures of various figures in the locality that provided information for this report while at the bottom were pictures of the failing municipal services.

Despite this department being mentioned specifically in this report, Aashique did not seem too upset about matter. After the lunch break, he had a dozen or so sanitation workers go to the two main roads of the locality where pictures had been taken. This area fell under two sanitation workers who are father and son. In fact, earlier that day a resident had come to see Aashique and requested that area be cleared of waste. While the sanitation workers went ahead, I joined Aashique to meet with a shopkeeper who owned an appliance store in the area of Peco Road and is the president (sadr) of the Peco Rd. Business Association. This person knew the journalist who had written the piece and said he would speak to him about the entire situation.

Aashique wanted to know specifically who the people named and shown in the article were. The shopkeeper told him that they were mainly residents, shopkeepers, or owners of small industrial units common in this area. It was not quite clear what Aashique was going to do with their information, but at the very least, he could keep abreast about the situation and remain in contact with them in the future over any possible concerns.

Aashique and I then joined sanitation workers who had already arrived. Aashique immediately stated that they would not be working as hard if he was not around - they would be cleaning "weakly and lazily," which he demonstrated by softly grabbing my shoulder. This was the pressure that comes with and exercised through the position of the dāroghah: his very presence supposedly causes sanitation workers to work with greater effort. I am not interested in making any claim about the validity of these claims of Aashique, but what is undeniable is that once Aashique is to leave or is no longer in this scene, sanitation workers would not be working at that same space or with the same vigor. There was also a tension between supervisors over why this waste had accumulated in the first place. Aashique blamed Salamat (the baildār) and Arif (attendance checker), but the latter blamed Aashique, saying that he expects too much and is never satisfied with them when their responsibilities are respectively equipment and attendance.

While the work was being done and supervisors were instructing sanitation workers, Aashique's presence also attracted multiple men from the *mohallah*. They all converged on him at some point, each with their own complaints about Babar (the sanitation workers whose area this is). Aashique agreed with their complaints, throwing one insult after another at Babar, as well as his father. At one point, Aashique turned to me to say that Babar spends most of his time collecting waste from households because he gets money from that - this was a common

accusation against sanitation workers. This instance highlights the way in which distinctions of public and private remain fractal in nature: distinctions in spaces, such as the street and house, are framed through public and private, while the effort of workers are also differentiated along similar lines. These distinctions were causing all the furor about waste remaining out in public spaces within this locality.

Throughout all these complaints however, no one called for Babar to be removed from his position. They could have easily done so since he is not a permanent worker. One of the residents who had arrived, told me in our conversation, "What can say I, *bhai*? He's a weak or poor (maṛā) person. Saying anything makes me ashamed." In the next section, I will spend more time describing how the labor-power of sanitation workers is mobilized through relations and words, but suffice it to say, these infrastructures participate in wider publics within the city through media forms, in which their breakdown, failure, or repair are constantly documented. Moreover, it affirms the power that the dāroghah enjoys through his position, one that he mobilizes in relation to wider political power, whether they be figures within a local or the media. I return to media in the next chapters, as it has taken on greater significance since the public-private partnership, but it should be kept in mind that the state of Lahore's waste infrastructures was something that circulated more widely through media in different forms. Whether newspaper or television report or posts on social media, this attention makes certain demands upon those who inhabit, manage, and develop Lahore's waste infrastructures. Addressing these demands however, as is usually the case, calls upon the dāroghah as an intermediary figure to negotiate labor-power, techno-infrastructural entities, and socio-political relations.

ROOMS, BUILDINGS, AND WORDS

Waste infrastructures are "made to happen by several people and lots of things," in which "[w]ords participate, too. Paperwork. Rooms, buildings" (Mol 2002:25). I have already discussed the people and things involved and even made mention of some of the paperwork. Now I want to describe the rooms and buildings that participate in these infrastructures, and how words become a crucial force for the movement and circulation of waste materials. Specifically, how do words lend themselves to mobilizing some of the relations among things, persons, and technologies that I have charted out thus far? And how does language become the site of blocks, resistance, and failure of these infrastructures as they rely upon the labor-power of subaltern groups?

Similar to Bhatti Sahb's offices built on LDA land, Aashique's field office was located in a ticketing building no longer in use by Pakistan Railways. Throughout the day trains passed by as field staff and figures from within the locality would circulate in and out of the offices. Prominent figures in this locality, despite having Aashique's contact information, would repeatedly stop by this office to make a complaint or request – their appearance was almost always not welcomed. Upon entering one passes under a signboard stating this was the offices of the SWM department of the CDGL in this locality. Though other municipal department, such as WASA, have their own offices, residents in this locality often came here mistaking it for other municipal offices, such as the Union Council offices where deaths, births, and divorces are registered. Other sanitation and health-related activities were at times attached this office as well, such as vaccinators sitting at the entrance during a polio eradication campaign. Attached to the building, though blocked off by locked windows, was a one-room theater and on the immediate right, was a compact room containing basic furniture and a storage closet for equipment – the keys for which were kept by the *baildār*. This then opened to a sizable

courtyard, the back boundary of which was marked by a wall of bricks. A couple of trees in the center offered plentiful shade for supervisors and sanitation workers during the break, a place for leisure for field staff and visitors. Next to this office was an *Imam Bargah* (a Shi'i commemoration hall).

It was in this courtyard, located in an unused ticketing office, that Aashique, Arif, Salamat, Rameez, many other sanitation workers, and myself, passed our time throughout the day. While Aashique, along with Arif, Salamat, and myself would sit on chairs, sanitation workers sat on the steps or boundary wall. A wooden bench would at times be used by sanitation workers, mostly elderly or female ones. Sitting in the chairs was a matter of status and seniority. Regularly, sanitation workers would be seated in the chairs prior to Aashique's arrival – or mine or Arif's – but quickly vacated their seat once one of us arrived. Though Arif and I would at times politely refuse, sitting instead on the boundary wall or stairs, Aashique never sat anywhere else other than on chairs. Even when he sat in the neighboring *Imambargah's* courtyard, a chair would be brought for him by one of the sanitation workers. After the lunch break Aashique, Arif, and Salamat would instruct sanitation workers from their chairs on what needed to be done in the afternoon ("*second time*"). A linguistic exchange beginning with mundane instructions or direction however transitioned to the issuing of orders and commands, and in such a transition opportunities, for both supervisors and sanitation workers, emerged in relation to work outside this building and its courtyard.

Issuing orders and commands – a major component of the work of supervisors – is embedded in language. Whenever I asked field staff what the dāroghah actually does, the most frequent response utilized the causative form of karnā (to do), or karwātā (to have done), which is used both in Urdu and Punjabi. Matthew Hull explains the significance of this verb form:

“The mediation of actions is enacted in the frequent use of causative verbs in Urdu, formed through the addition of the suffix -a or -*wa* to verb stem, which yields the meaning of 'to cause to have done' the action designated by the verb […] The form represents the subject as the agent of actions done by another” (2012b:76). So, for instance, Hull provides the example of “'*chai mangwao'* (Have tea asked for), projects the bringing of tea as involving four persons: the officer, the PA, the addressee of the PA, and the menial who actually brings tea” (Ibid. 2012b: 76).” The relation between superiors and subordinates is linguistically embedded in the causative form but is also utilized when the intercession (sifārish) of someone is needed or work is being demanded from an array of subordinates. The causative form is attached, as Hull points out, to the use of kin terms such as betā (son) that are used in households to refer to domestic workers. Punjabi terms used for kin or other intimates such as, for instance, putr (son), chacha, chachī, and vīr, were also utilized in addressing subordinates while, on the other hand, other terms such as baojī, sahb, sahb bahādur, sarkār, and janāb-e-ali were reserved for addressing superiors. In moments of distress however, non-linguistic gestures were made to enact or perform a hierarchical relation. For example, an elderly sanitation worker was able to get a younger male relative of his reinstated by crying in front of the dāroghah and then, kneeling down to massage his knees and thighs – a performative gesture of submitting to the authority and power of the dāroghah.

One afternoon, Aashique, who was running late, called me to issue an order to Rameez. By that point, I had spent considerable time with Rameez both during the workday and at his home and we had cultivated a certain amount of informality and intimacy. After hanging up the phone, I called over to Rameez, referring to him as “Rameez Bhai,” and he responded, in a show of deference, “Jī, hukm sarkār (“Yes, order sir?). I was caught off guard, as I used an

intimate, kin term to grab his attention. Despite clear differences of status and wealth, he had previously not addressed me in this way, usually using ā*p* or *tum* in Urdu or *tuss*ī in Punjabi, which have their own markers of formality, but yet, in this particular context, he responded in such a way that placed me into the position of a supervisor. Status was a matter of relations in the infrastructural order of things, persons, and technologies, in which words mattered.

The work of the dāroghah being to cause others to work accords with their intermediary position, with speech being the faculty through which such effort was enacted. In addition to repeatedly telling me that the responsibility of the dāroghah is to get work done (dāroghah kām karwātā), the dāroghah's job is speaking (dāroghah kā kām hai bolnā). The use of the imperative verb form, as in jā *(*go) and ā (come), or, as was often the case, uthe jhāṛu mār (sweep over there) was quite common throughout the day, but the straightforwardness of the imperative verb form obscures the challenges that orders and commands came up against.

Aashique's orders were, at times, accepted without argument or resistance from sanitation workers. At other times, sanitation workers argued, opposed, and refused to do what Aashique was commanding. In these instances, Aashique did sometimes give up and accept that the sanitation worker could not be convinced. But there were other linguistic and rhetorical techniques that Aashique and other supervisors deployed to make sanitation workers work. Threats were undoubtedly common occurrences. Direct or veiled threats, about loss of employment, undesirable transfers, or the intervention of a political figure, were meant to intimidate sanitation workers into passivity or docility. These were moments in which power as force was laid bear: accept the order or face the consequences. These threats were real, especially in the case of those employed on daily wages or through labor contractors that lacked job security. However, we should not remain enchanted by the idea of the disposability

of labor. As not everyone was willing to engage in this stigmatizing form of work, sanitation workers, as well as waste workers from the informal sector, were aware that all these figures (the dāroghah, political actors, etc.) depended upon those who are stigmatized by their work, which was something that could be exploited strategically. This is why sanitation workers could resist, argue back, and outright refuse to work – a testament to the limits of power, legitimacy, and control of dāroghe and the institutions that back them up.

The possibility of refusing to work, an acknowledgment of these limits, undergirded the linguistic efforts of supervisors to persuade, convince, or cajole sanitation workers to perform a particular task. Supervisors openly admitted they could not force sanitation workers to do something and were dependent upon them in certain ways. Limits to their power and control were recognized by supervisors when they told me that they only *request* (using the English word) or ask for a favor (ihsān) and at times, beseech or implore (minnat karnā). Minnat karnā has rich connotations that highlight meanings such as plead or entreat. Moreover, those who are making an entreaty are understood to do so with a certain amount of humility and even self-abasement and degradation. This form of making a request demands a lowering of the self in terms of status. The form of address complicates our understanding of issuing orders and commands. It is not a simple matter of imperative verbs but considerable effort.

A donkey had died one night in an empty plot where a cluster of waste containers and an encampment of khānah badosh were located. Clearing the animal's carcass had taken up much time and effort after attendance, disturbing the regular routine, so in the afternoon Aashique had to reallocate workers throughout different areas of the locality. Aashique asked Salamat and Arif what workers were available this afternoon and told Salamat to “grab” Petras and Rasheeda and have them jointly clear the remaining areas. Salamat expressed hesitation as

Petras had worked the overnight shift, causing Aashique to lash out, “If you tell him, he’ll do it. If you say it in this way [*with hesitation*], then it won’t happen. When you remain on top of someone, you can get them to work twice as much.” Salamat continued that Petras would simply refuse. Then, Aashique turned to Arif, who was seated next to us, lowered his voice and, in a tone of disappointment, mumbled, “Again, he [*Salamat*] starts, ‘They worked one or two times.’” Arif disagreed and made the point, “No boss, you know what they [workers] say, 'I worked overnight also, and did that too.' And you know, he speaks like in an uncouth way […] They don't speak back to you but they do with us [himself and Salamat].” At this point, Aashique made a call to Petras: “Walaikumsalaam, may I ask, Sir, you worked last night. Are you going home to rest or do you not want to leave her, keep holding onto her dupatta. No No, if you want to come and stay there, I'll send you two together in an hour or so, what do you say? Fine, grab your jhāṛu and come to al-Badr plot, bringing her with you.” In this linguistic exchange, Aashique entered a joking relationship with Petras. First, he addressed him with a certain amount of respect, using the more formal tussi, rather simply tu, even referring to him as janāb (sir) and then, he teased him about Rasheeda, who were known to be in a romantic relationship though both were married. At the end, with Petras acquiescing to the request, Aashique switched to the informal and intimate *tu* and utilized the imperative verb form (e.g. paṛ ke ā), issuing statements closer to a command or order.

After having gotten Petras to abide by the order, he turned and started scolding Salamat, “This is what I was saying. Someone has sense [*in English*], Salamat. This is what you call sense. If you say to me, Aashique, No one is here. What can I do?” How can I tell you what to do? You haven’t been able to find Illyas (another sanitation worker) the past four times. But he came [*on his own*].” Salamat frustratingly responded, “He *did* come. I looked all over. Where

else can I look? Which kothī should I grab him from?" And Aashique, starting to raise his voice slightly, said, "The first time I go, I'll knock on his door and, look, I'll grab him. This is what I am saying." This is when Salamat acquiesced, "You have *sense,* we don't have *sense*." To which Aashique, raising his voice, made the final point, "You [*should*] have more *sense*! You have thirty years of service. I have less service."

It should be remembered Salamat, though being a *baildār,* was also a sanitation worker. Thus, the fact that Aashique directed his ire and scolding at Salamat is unsurprising. This scolding of sanitation workers was quite common but was not something that went uncontested. In the middle of July, right before morning attendance and as the temperature started rising, Arif and I were accompanying the mini-dumper as it circulated around the locality loading piles of waste being gathered together by sanitation workers. We stopped by Samuel a sanitation worker who, along with his wife, were employed through the labor contractors. These workers experience the most job insecurity, as the terms of their employment do not have specified periods of time. While permanent workers and daily wage workers can resist more openly because their employment is more secure, this group of workers do not have the same freedom to resist the excesses of superiors. A scolding could easily escalate for these workers into a loss of employment.

That day, Samuel had not cleared the main service road allocated to him ("his beat"). Arif wanted to ask why Samuel had not yet cleared the main service road but when he did Samuel responded with a burst of anger: "I don't do my job? I shirk my work? I don't work? I'll tell you, Tell me, I avoid work so you insult me." Arif was at a loss for words, so Samuel continued, "You [*supervisors*] talk a lot. I'm a working man, not a man who runs away and leaves work undone. And neither am I man who listens." Arif, trying to interject, said, "You'll

have to listen." But Samuel remained steadfast, "No I won't listen, I work, I don't listen to any thing." Throughout this linguistic exchange, Samuel was making the point that Arif was acting illegitimately. In particular, he adopted an almost sarcastic tone when he called Arif and Aashique "chunge lokon," or good people. Accusing Samuel of shirking work was an insult to him while being an illegitimate use of power on Arif's part.

Arif later tried to explain matters to me. He said that, "if we talk to sanitation workers with love or tenderness (pyār se), they do not take us seriously, seeing no difference between us and themselves and they no longer have fear. If I to them angrily, then they will abide to my order." Importantly, sanitation workers themselves expressed similar views about speech's affective qualities. They repeated to me that there has to be "heat" in the dāroghah's speech speak. This heat and the attendant affect of anger may be deemed disrespectful but necessary in getting the sanitation worker to do something. On the other hand, other speech has sweetness and is deemed more respectful, along with necessary pronoun usage and affect of love, care, and tenderness. The affective qualities of speech, sweet words expressing love as opposed those hot words said in anger, constitute a range of possibilities in attempts of persuasion. Attached to these linguistic possibilities is the matter of respect *('zzat*).

I make mention of respect only passingly here to highlight another kind linguistic technique deployed by the dāroghah in their efforts to get work done: shaming. Probably one of the clearest case of shaming, and one that was repeated, was calling into question a male sanitation worker's physical strength, power, and virility. If an able-bodied male sanitation worker refused to perform excess work, Aashique immediately attacked their masculinity. Rameez once refused to clear a couple of areas surrounding containers when Aashique approached him immediately after morning attendance. As Aashique was instructing and

issuing orders to sanitation workers, he paused to comment to Rameez in front of a group of female sanitation workers, stating "I asked you because you had a mustache." The mustache has a symbolic connection to masculinity and virility, so when Aashique made this statement, the implication was clear: I asked you to do extra work because you have a full mustache and thought you could handle it but this wasn't the case. Indeed, Aashique, to further insult and shame Rameez, mentioned that a couple of female sanitation workers standing next to him at that moment had carried out the extra work instead. The work had been done, so there was no reason to convince Rameez of anything; rather, the point was to shame him. This shaming depends upon notions of respectability, status, masculinity, and hierarchy that circulate more broadly and yet, within the bureaucratic order of things, this shaming is directed at disciplining subordinates, mostly sanitation workers but also lower-level supervisors, and thus, the productivity of this workforce is maintained.

Orders are can be accepted without any argument or resistance on the part of sanitation workers. At other times however, sanitation workers argued, opposed, and refused to do this extra work, and in these cases, the dāroghah must persuade, convince, and cajole sanitation workers through a variety of linguistic techniques. This constitutes the bulk of the effort of supervisors – it was linguistic in nature. This effort was directed at sanitation workers – getting them to do something. I am focusing on a dyadic relation between a supervisor and sanitation worker, but quite often, the supervisor was carrying out an order that had come to him from someone else, both within the bureaucratic order and outside of it. The culmination of an order or command, in this instance, is work being done, usually by sanitation worker. As the executor of action, especially one that is a stigmatized form of work, a certain power was invested in sanitation workers and as such, the refusal to work, to not be persuaded to work, was a

recognition on their part of that power, invested in the control over their own minds and bodies. Despite retaining a limited amount of power and control, linguistic techniques, especially that of shaming, as well as threats of loss of employment, attempt to weaken that limited power and control. The qualities of speech or the attendant affects are linguistic techniques deployed by the dāroghah to cause work to be done (kām karvāna) that are *limited in their efficacy*. At times, sweet loving words worked, and at other times, they did not – the same is the case for hot, angry words or disrespectful, shaming ones. To be failed to be convinced was not just a failure of the dāroghah's linguistic effort, it was a positive acknowledgment of that limited power.

CONCLUSION

Lahore's waste infrastructures are socio-technical assemblages that are made to happen by a convergence of things, words, persons, work, relations, and technologies. These infrastructures have become the object of development – whether colonial sanitation and public health or post-colonial governance and management – and are thus entangled with experiences and expectation of modernity that materialize themselves in unexpected ways. Naveeda Khan has asked about infrastructures in Pakistan, how have they "relate[d] to Pakistan coming modernity," suggesting they "anticipat[e] Pakistan's future in a mode previously unarticulated" (2006:88). What Khan allows us to see is how infrastructures, which are bound up with the promises of modernity, or what she references as "a new means of anticipating the future" (Ibid. 2006:106), are elementary aspects of social life in contemporary Pakistan. Whether or not that anticipatory future actually materializes is not as significant as the way in which it produces structures of feeling around infrastructures. That promissory affect imbues infrastructures with a potentiality across Pakistan. The breakdown or failure of infrastructures

are not objective commentaries on infrastructures, but rather highlight how the potentiality that infrastructures promise, when unfilled, produces affect around absence and lack, which then may proliferate in the form of other affects such as suspicion or doubt about why such failure or breakdown happened in the first place.

The development of Lahore's waste infrastructure, as I have described it in this chapter, placed the state, especially through the figure of the dāroghah, into a position of intermediary with respect to waste, work, infrastructures, and sociopolitical relations. The failure of these infrastructures has made them once again into an object of development. Suspicion and doubt have been cast on the legitimacy of these institutions and actors, and another regime of development, in which governance reform, improved service delivery, and technological interventions have been packaged together, has been instrumental in transforming Lahore's waste infrastructures through a public-private partnership. What discussions of infrastructural failure, breakdown, and repair might start to take more seriously is not how those situations are definitive of infrastructures as things in the world, but rather, the kinds of interventions they enable, which themselves rework relations between state and society, government and the governed, and public and private. This is why, in the next chapter, I examine how this public-private partnership has sought to remake waste disposal services into a public good, the rippling effects that that has had across Lahore's waste infrastructures, and the kinds of revaluing that this has entailed.

Here, I have sought to make clear how the development of Lahore's waste infrastructures has emerged across historical moments. The development of post-colonial Lahore has been entangled with not only these infrastructures but also, with urban space, governance institutions, and caste labor. As this development has proceeded, these

infrastructures continue to rely upon labor markets in which caste is crucial, making it necessary to account for how the subaltern groups have accessed these infrastructures through a variety of sociopolitical relations and the benefits and challenges that they have faced in that process. Development also made state institutions and the actors that inhabit its apparatus, especially that of dāroghah, into intermediaries that functions as a generative nexus through which power passed and was thereby intensified, expanded, and canalized. As many have noted at this point, power is not something locatable in any particular place but is distributed across the social body and operates through its "capillary" forms. Within Lahore's waste infrastructures this power is distributed across labor, management, and the wider public, all of whom are entangled with one another and reinforce these relations.

Very little of these infrastructures have disappeared since the public-private partnership, and much of these infrastructures remain, endure, and are still instrumental in disposing and circulating waste materials. They are the product of historical accretions. Despite the novelty of a public-private partnership, in what ways have these infrastructures sedimented over time, becoming crucial to the Company's own attempts to deliver on the promises of developing Lahore's waste infrastructures? How has this accretion been appropriated by the Company through legal, financial, technological, and management techniques? How has that enabled the remaking of a public good such as waste disposal services? What retraining of habits has it required among those who inhabit the state apparatus and exists at its para-sites? How does caste labor become revalued within this regime of governance, technology, and value? I turn to the next chapter with these questions in mind.

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Chapter 3

Revaluing Waste Work:

Public-Private Partnerships, Mediation Technologies, and (De-)Valorization

I first learned about Lahore's waste infrastructures in the sanitized corridors of the Lahore Waste Management Company's ("the Company") offices. An oblong structure made of reflective blue glass and silver sheets, the office building houses a variety of private and public entities. I first presented my credentials to two rounds of security guards before I took the elevator to the Company's offices on the fourth floor. At the double glass doors, on which the Company's branding ("Clean Lahore") was etched, an elderly security guard, slouching from the weight of the rifle hanging from his shoulder, expectantly greeted me, asking me softly about the purpose of my visit. "I'm here to meet with Senior Manager Operation, Saad Iqbal Sahb." Satisfied, he opened the glass doors to let me through. After a similar exchange with the receptionist, Iqbal "Sahb" was called and appeared a couple of minutes later. We had met a week or two earlier in the offices of a professor at Forman Christian College, of which Iqbal Sahb was an alumnus. Iqbal Sahb seated me at a conference table surrounded by faux wood cubicles. After telling one of the office assistants to bring me chai, he informed me that Iqra, an assistant manager in Operations, would join shortly.

Iqra had completed her M.Phil. in Environmental Sciences and had been with the Company since its founding. Over the next two hours, she guided me through a 181-slide presentation on waste management in Lahore. By its end, I had been equipped with a compelling narrative: the previous system was failing for a variety of reasons, this was having environmental and health effects on Lahore and its population, the only way to overcome those failings was through a public-private partnership, and these changes, both technical and

institutional, have improved waste disposal services. This narrative emerged out of the way in which images, maps, numbers, charts, and tables were arranged, organized, and presented. The rest of the day was spent in a very similar way: I would have a meeting with the head or assistant manager of respective departments (Human Resources, Communications, Management Information System) in which they would describe the Company, their respective role within it, and how they have contributed to transforming waste disposal services. This was almost always done with the assistance of some form of media. After over five hours of meeting I had a basic overview of what the Company was doing to improve waste management in Lahore without having seen how it was actually happening.

INTRODUCTION

During the time I conducted my fieldwork, a public-private partnership was replacing the previous SWM department and changes surrounding that process were transforming Lahore's waste infrastructures. The Company is one side of an elaborate public-private partnership that has been entrusted with provisioning waste disposal services for the CDGL. Novel institutional forms, especially non-governmental organizations, have proliferated in Pakistan over the past several decades and have both disrupted and reinscribed state power (see Anwar 2014; Qureshi 2015; see also Ferguson and Gupta 2002; Mains 2012). These changes are part of a regime of globalization[1] and technology, in which changing institutions and technological interventions can improve service delivery. Previously, planning, development, monitoring, and operations were all conducted by the SWM department of the municipal government. Because of this partnership however, operations were divested from the municipal

[1] Studies of globalization have for some time now understood how global forms of governance and technology are materialized within particular situations by forming assemblages that articulate distinct scales (Collier and Ong 2005; see also Appadurai 1996). As I recount shortly, global development agencies had been concerned with solid waste management during this time, and the Company was originally to be funded by the World Bank.

department and transferred over to two private contractors. The Company is a separate entity from its contractors. The contractors attend to the private side of things – performance – and the Company as a state entity focuses on the public side – monitoring that performance. Over the next several months, not only did I learn how this disentanglement had been achieved in the first place, and what effects it was having on waste infrastructures, but also, the central role that various technologies were having in attempts to improve waste disposal services. Yet, what became clearer only much later was how these changes in governance and technology were reaffirming the devalorization of caste labor.

In describing the globalization of technologies, William Mazzarella draws attention to mediation as "processes by which a given social dispensation produces and reproduces itself in and through a particular set of media" (2004:346). Whereas Mazzarella's use of dispensation refers to forms of cultural production (e.g. television dramas, family, kinship), I have used dispensation in this dissertation with regards to value, in which inequalities, of which caste is constitutive component, are produced by and distributed across the social body through infrastructures. These media forms were arranged to create a narrative structure around waste: what existed previously in the municipal department, what exists now in the public-private partnership, and the effect that those changes were having on waste disposal services and the city of Lahore. The forms of media - numbers, maps, images, presentations - drew upon a discourse of transparency that sought to make the working of government visible, holding those in power accountable, stamping out a culture of corruption, and ultimately, improving performance and service delivery. The public-private partnership, an institutional setup that could be glossed as neoliberal, reorganized various divisions - state-society, public-private –

that were made then into a reality through a set of mediation technologies, which I argue later in this chapter was made possible through their "recursivity."

The logic of governance, with its emphasis on transparency, accountability, anti-corruption, and performance, were complemented and reinforced by the logic of markets. Not only was governance reform being enacted during this time, waste disposal services were being remade into a public good, in which labor markets, commodification, and legal and financial mechanisms were involved. Despite caste labor being essential to waste infrastructures in contemporary Lahore, the commodification of waste disposal services valorized expertise over and beyond the work or labor of waste disposal. So even if the work of sanitation and waste workers is actually what disposes of waste materials, it is the labor of managers that appears to provision waste disposal as services. The services that managers provide are based on expertise knowledge: they have understood, organized, and improved waste disposal services for the public. The public good they provision is both the disposal of waste materials and the management of the infrastructures by which that happens. Below, I discuss how a price has been set for waste disposal services. The setting of price, being a proxy for exchange-value, then works to commodify waste disposal services as a public good, and management as a form of expertise and immaterial labor is bundled into that commodity as having particular use- and exchange-values. Put slightly differently, the commodification of waste disposal services depends upon the valorization of the work of management and its attendant forms of expertise within this public-private partnership, which is facilitated by its use of mediation technologies.

These forms of media and valorization of expertise bring into relief how the logics of governance and markets are converging in contemporary Pakistan, wherein governance reform, improved service delivery, and opportunities for profit have all been bundled together.

Improving waste disposal services for Lahore, and other parts of the province and country, has involved bringing private entities such as these contractors into a partnership with public ones such as the Company. This would weaken and reform previously existing municipal institutions, improve services through better management and greater discipline, and provide opportunities for profit for both the public and private actors involved. This has allowed those who seek to improve Lahore's waste infrastructures to both claim credit for these changes and their presumed benefits and affirm the legitimacy of this regime of development, technology, and value. This regime devalorizes the actual work of and social relations around waste disposal by portraying them hindrances to be overcome or habits to be reformed and inervsely, valorizes this public-private partnership and its deployment of technology and expertise.

Drawing on these insights, this chapter asks a series of related questions about the ways in which waste disposal services are being remade in contemporary Lahore. How are waste disposal services revalued into a public good through an elaborate public-private partnership? When the state, now in the guise of a publicly-funded Company, comes to occupy a monitoring role, how do these technologies enable the state to make itself present in unexpected ways? What practices and desires are being materialized through the use of these technologies by the Company and its contractors? And what impact does this renewed and technologically mediated presence have on those who inhabit its apparatus? Lastly, how does caste labor become revalued within this particular regimes of governance, technology, and value?

This chapter first describes the legal and financial mechanisms by which waste disposal services are remade into a public good, in which logic of governance and markets overlap and reinforce one another. This has the ultimate effect of valorizing expertise in the revaluation of waste disposal services. I then turn to describe the Information and Communication

Technologies (ICTs) interventions that have been tethered to improvement, how they rely upon measurements and transparency, both as a discursive practice of government and an object of desire. These technologies mediate the labor, social relations, and infrastructures that jointly provision waste disposal services through worker productivity. Here, these technologies come up against the limits inherit in mediation and a retraining of habit becomes necessary. What makes that necessary is the nature of habit, which, as mentioned in an earlier chapter, sits at thresholds of public-private, inner-outer, and internal-external. Habits, of workers, supervisors, and residents, are not just another infrastructure that move and circulate these materials but are what make infrastructures happen. Retraining those habits, especially of sanitation workers, to improve those infrastructures revalues caste labor but such that it can be devalorized within this regime of governance, technology, and value.

LOCATING THE PUBLIC AND PRIVATE

Infrastructures and institutions of waste disposal in Lahore have now coalesced around improving governance and service delivery that has been promoted by global and local institutions and actors. The prospect for a public-private partnership was first circulated in a study conducted by engineering consultants in the 1990s. Data from this study would then come to be cited in later reports by development agencies such as the World Bank, Japanese International Cooperation Agency (JICA), and Korea International Cooperation Agency (KOICA), all of which have offered financial and technical assistance over the years for waste management. All these agencies have carried out studies on how to improve solid waste management for various cities and provinces in Pakistan, and a shared proposition in each of them was the necessity of some kind of institutional reform. Even if these studies were critical in rearticulating waste as an object of governance, state institutions in Pakistan, bound up as

they are with global ones, carried out the reform itself. In this section, I outline the legal mechanisms through which this public-private partnership was implemented, and the impact that it would have on the institutions, infrastructures, and work of waste disposal.

The Urban Unit was founded in 2006 as a Project Management Unit (PMU) within the Planning and Development Department (P&D), Government of the Punjab (GoP). As a PMU the Urban Unit oversaw projects funded by the World Bank and other donor agencies for the GoP related to solid waste, urban planning, GIS, water and sanitation, and municipal finances. In the words of one of their managers, "the government sector does not have the requisite technical knowledge and skill and donor agencies such as the World Bank require a PMU be formed and technocrats be hired that could implement the desired projects." Despite being formed as PMU, it quickly changed to becoming a technical wing of the P&D department and started to provide assistance to the GoP on issues related to these five sectors. Then, in 2012 this PMU was made into a publicly-owned company registered as a non-for-profit company[2] within the P&D department. By then they had carried out multiple projects with GIS, digitizing land and tax records, and other similar work.

Between 2006 and 2008 the head of the Solid Waste sector of the Urban Unit was Khalid Majeed, who also served as the Company's General Manager during most of my fieldwork. Khalid Majeed started his career as civil engineer in municipal government with the Water and Sanitation Agency in Sialkot. A few years later, in the mid-1990s, he joined the Solid Waste Management department in Lahore before going to New Zealand to pursue a Master of Science in Environmental Management. Upon returning he joined the Urban Unit,

[2] The GoP owns 95% of the Urban Unit while the Board of Direct owns the other 5% of the shares. This is the same breakdown for the Company in which 95% is owned by the GoP and the remaining shares are distributed among the Board of Directors.

with a brief stint as a volunteer within waste management in the United Kingdom. Khalid Majeed, along with the head of the Urban Unit, established a PMU within the CDGL and started to implement reforms with regards to solid waste management. They even tried to get World Bank funding to reform the previous municipal department. In my interviews with Khalid Majeed and others at the Company and the Urban Unit, it was never explicated what these reforms were or why funding was not given by the World Bank. However, it was generally agreed that these reforms failed to achieve their desired results because they were piecemeal and "the overall system was running the same way [as before]." At this point, a public-private partnership was first floated around as an idea and soon thereafter, it was approved by the P&D department.

The Company is a company, "limited by guarantee having no share capital and is formed not for profit within the meaning of Section 42 of the Companies Ordinance, 1984 organized and established for the benefit of people living within the area of 'Punjab' and to provide sustainable, efficient, and affordable waste management services for the citizens of 'Punjab.'" The Companies Ordinance grows out of the Charitable Endowments Act (1890) that allowed local governments to manage charitable organizations that worked for the public good. Being registered under this ordinance affords the company certain "freedoms," but also bounds it to invest any profit generated back into the company and/or its objectives as stated in the Memorandum of Association (MoA). These objectives go far beyond the provisioning of a public good, requiring for instance the Company publish materials for greater awareness among the public concerning waste disposal services, provide others with data and information, and make presentations to private and governmental bodies. The MoA also requires the Company employ "experts," or what the SWM department purportedly lacked. Since then a class of

professionals with degrees in environmental sciences, engineering, finance, and human resources have been hired by the Company.[3] These professionals were to remedy the lack of knowledge and skills in the SWM department. I deal with each of these - the deployment of expertise and the dissemination of data and information - in the following sections. At this point, it is important to note that these are embedded within the legal formation of this public-private partnership.

As the Company was being formed, a Services and Asset Management Agreement was instituted between the CDGL and the Company. This agreement transferred the use, maintenance, and control of human and non-human resources to the Company. In other words, the Company inherited much of the infrastructures by which waste disposal services were provisioned to the public within the SWM department. While the Company quickly sold off and acquired new machinery and other mechanical, non-human resources, this was more difficult with the labor force of sanitation workers who engaged in multiple agitations to prevent their dismissal.

The Company then entered into contractual relations with two Turkish companies OzPak and Albayrak.[4] The Company itself was disentangled from both the previous SWM department, which still exists to carry out "residual" functions, and the labor force of sanitation workers and supervisors that were transferred to it. This force was given over to the contractors to carry out everyday operations. Yet, the Company is still a public entity: it is funded by governmental funds while explicitly having to ensure waste disposal services are provisioned to

[3] These professionals, who are employed as managers at different levels, do not enjoy the same security that municipal employees do. The former can and are easily hired and fired while the latter are protected by the Punjab Government Rules of Business and leveraging power within the municipal government. The insecure labor of these professional is important to improve service delivery: employment as contingent upon performance.
[4] Both of these companies have been given multiple contracts related to infrastructure in Lahore and other cities in the Punjab.

the public. Moreover, the contract defines "the work required to be performed under this Agreement" by the contractors (i.e. OzPak and Albayrak) to be "everyday task[s] includ[ing] collection of solid waste, […] its transportation, […] mechanical sweeping, […] washing, […] manual sweeping, […] other works related to city cleaning" (Article 4, Section 1). It was now the contractors, outside governance institutions and the public, that could carry out the operations of waste disposal, which are nevertheless a service provided to the public. Being outside but parallel to these domains would ensure that contractors would provide waste disposal services efficiently and productively and not be brought down by the procedures, corruption, and other deficiencies of municipal government. These series of disentanglements, enacted through these agreements and contracts, becomes the legal mechanisms by which governance reform, improved service delivery, and a public-private partnership were enacted. This logic of governance however also intersected with that of markets as waste disposal services were remade into a public good.

LABOR MARKETS FOR WASTE DISPOSAL SERVICES

The pricing of a good such as waste disposal services are caught up in regimes of governance, technology, markets, labor, and ethics that attempt to calculate, rationalize, and financialize material things such as water, waste, or even tea (Ballestero 2015; Besky 2016; von Schnitzler 2008). Before delving into these contracts, let me clarify one point about how market for waste disposal services are instrumental to the remaking of this public good. An obvious point is that labor markets in Pakistan, especially as they bear upon waste work, are currently structured around caste labor. As we saw in the previous chapter, entry of individuals into this line of work has been facilitated by increased waste generation, spatial development, kin and sociopolitical relations, and governance institutions.

Prior to the formation of this partnership, if you recall, there were two categories of workers, permanent (pakkā) or work charge (kachchā). Permanent workers were protected by rules that govern municipal employees and receive regular raises, social security, and retirement benefits. Work charge employees, whose numbers have been increasing for the past 30 years, receive neither salary increases nor social security and retirement benefits. This was a kind of contractual, short-term labor that turned into a regularized, extended practice, with many sanitation workers being employed on 90-day orders for several years. Based on reports carried out by Turkish consultants, the Company increased its overall workforce by several thousands to keep up with Lahore's estimated waste generation by recruiting them through labor contractors. This last category of worker (taikedārī) have the least amount of job security, easily being hired and fired from their position, enjoy limited employment benefits, and suffered regularly from reduced or late wages. Then, there are waste workers from the informal sectors that have their own conditions of work that participate in these labor markets around waste. I will return to these different categories of workers in later sections of this chapter, but I currently want to clarify how remaking a public good interacts with labor markets.

On the one side, changing labor markets, ones structured by caste, provide the human labor that ensure waste is disposed of on a regularized basis. On the other side however, there is a market for waste disposal services. Unlike markets for waste itself where these materials operate akin to a recoverable resource (see Lane 2011; Reno 2009; see also Zapata and Zapata Campos 2015), the Company and its contractors approaches waste as purely non-value, something to be disposed of and managed to prevent any harm on environmental, health, and/or aesthetic grounds. Importantly, there are other administrative bodies and private entities that are in the market for waste disposal services. For instance, the Cantonment Board, which falls

under the Pakistani Army, looks after waste disposal services for areas within its administrative boundaries, and private housing societies have a variety of entities that they engage with for waste disposal services. More recently, waste management companies have formed throughout Lahore and compete for contracts to provide these services in various areas of the city. At this point, the Company is the largest provider for these services in Lahore and its growing peripheries with a workforce that currently numbers around 10,000 sanitation workers, not to mention other staff such as field supervisors, managers, and bureaucrats. Even before this partnership, the SWM department controlled a larger proportion of the market for waste disposal services, so when the partnership was put into place, that portion was given a monetary value. I now want to describe the legal apparatus by which this valuation became possible and then, examine the kind of calculations that were made such that services were prioritized in that valuation.

(RE)MAKING A PUBLIC GOOD

Both contracts signed by the Company and its contractors list the rates of services offered by the contractors. The contract details daily waste generation (2700 tons) for the specified area given over to the contractor and the area of mechanical sweeping and washing to be performed (950,000 and 10,000 square meters). And as this contract covers a seven-year period it specifies the amount of waste to be generated over that period (6,000,000 tons). The total amount to be paid by the Company to the contractors for carrying out waste disposal services, according to the contract, was 174,005,172 USD over seven years. These rates of service are important for multiple reasons. Waste disposal services are broken down in its constituent parts (see Table 1). The unit is a measurement of that particular item such that it can be treated as a discreet entity, and then the unit price affixes a monetary value to that service

per unit. This price is then quantified based on the measurement for the unit item, and waste disposal services is remade into a public good with a monetary value. But what kind of public good are waste disposal services exactly?

Table 1: Pricing of Contract for Waste Disposal Services (adapted from Ashraf 2013).

Item No.	Short Description	Unit	Quantity	Offered Unit Price ($)
	Collection of domestic wastes with underground and/or aboveground containers and transferring of them to the approved disposal site by using specifically equipped collection vehicles.	Ton	3.500.000	13.4
	Collection of wastes with other vehicles and methods (Door-to-Door) and transferring to the approved disposal site.	Ton	3.500.000	15.80
	Sweeping of concrete and any kinds of asphalt and non-asphalt roads with vacuum or band-type mechanic vehicles.	ha (1ha=10000m2)	316.000	43.82
	Washing of concrete and any kinds of asphalt and non-asphalt roads, market places with mechanical vehicles by using pressure water.	Team.Day	20.000	294.95
	Sweeping and cleaning, etc. of Squares, Parks, Streets and roads.	Team.Day	593.000	25.37
	The management and cost of 3886 employees	Worker.month	359.000	25.11

The public-private partnership is criticized oftentimes on financial grounds. The yearly budget for the SWM department is transferred by the CDGL to the Company, which is around 3 - 3.5 billion PKR. In 2008-09, 2009-10, 2010-2011, the total budget for SWM department was respectively 1.7 billion, 2.17 billion, and 2.5 billion PKR, and after the Company took over, the total budget dramatically increased: 6.7 billion (2011-2012), 7.6 billion (2012-2013), and 11.4 billion (2013-2014). The Company could increase its total budget so rapidly because they now receive a loan from the Finance Department of the GoP, which was 4.38 billion (2012-2013) and 5.5 billion (2013-2014) PKR. According to one study, if overall costs of waste disposal services were 1.7 billion PKR in 2008-2009 and had gone to 11.4 billion PKR in 2013-2014, this means the cost per ton of waste has gone from 2762 to 4140 PKR (see Ashraf 2013:86). Increasing costs has undeniably resulted in greater amount of waste collected, as measured by waste collection efficiency. At the same time however, previously unavailable services are now provided, such as door-to-door collection, increased secondary waste storage capacity, an elaborate monitoring system, and a sanitary landfill site. Waste disposal is more than just disposing waste; it is about the services that are being offered, in which management and labor are differentiated.

The contract rate price determines the total amount to be paid to the contractors to cover costs related to provisioning waste disposal services. Even if waste disposal is broken down into its constituent parts (sweeping, collecting, transferring, washing, and managing), the service being provided is greater than the sum of those parts. The increase in cost per ton of waste mentioned above has occurred not only because more services are being offered but also, because the knowledge, skills, technologies, and relations through which waste disposal services are provided to the public have changed and seemingly improved. The Company and

its contractors provision waste disposal services through a “more” skilled and knowledgeable class of managers and technologies I describe shortly. The services they are providing are separate from but encompass the physical disposal of waste; their services are knowledge based: understanding, organizing, and improving waste disposal services for the public. The result of this immaterial labor is improved removal of waste materials. The valorization of management, especially as a form of expertise, figures into the way in which waste disposal services are assigned a monetary value.

In addition to this amount, the contractors also receive monthly payments based on the amount of waste they dispose of. A senior manager in the Company stated that one contractor receives approximately $13 per ton of waste they dispose of and the other receives approximately $17 per ton of waste. The amount of waste these contractors dispose of ranges from 2,500 to 3,000 tons of waste per day. However, the contractors are guaranteed a monthly payment of 2,300 tons of waste regardless of how much they collect. In other words, if they were to collect 2,000 tons of waste in a day, they would be paid for 2,300 tons of waste based on contractual stipulations. Daily waste generation, which I discussed briefly, take on such significance because the contractors’ income streams are dependent upon them. Calculating services revalues waste disposal services as a public good, in which the valorization of management expertise plays a critical role. These calculations illustrate the mechanisms by which waste disposal services, rather than waste itself becomes commodified, and that commodity mediates a series of exchange, only one of which is monetary, among the CDLG, the Company, the contractors, and the public. But what of measurements – what place do they have in the commodification of waste disposal services and governance of waste itself? Before doing so, how do we understand the role that expertise has within this partnership?

EXPERT MANAGERS

As mentioned previously, planning, development, monitoring, and operations were performed by the municipal department, and divisions of labor across sanitation workers, supervisors, and office staff existed within this department and in their relation to wider figures within a locality, provisioned waste disposal services to the public. These divisions and relations have not completely dissipated however, especially those between sanitation worker and supervisors; the Company has simply appropriated them by building institutional and infrastructural layers upon them. These layers are as much about the institutional and infrastructural reordering as they are about the valorization of management and devalorization of labor.

Entities such as the Urban Unit are predicated upon expert knowledge that can be drawn upon when developing projects, garnering support and funding, and implementing reforms. The Company is a direct outgrowth of that expertise, in which most of the attention was given over institutions, technology, and infrastructures that would be necessary to improve waste management as a technical problem. Once established this expertise has been deployed in a variety of directions – the most of prominent of which has been the design and construction of a "modern" sanitary landfill site. But the presence of professionals from the private sector, with low job security but higher wages, has brought in the requisite technical knowledge and skills necessary to oversee, manage, and monitor waste infrastructures.

Ms. Mariam and Mehmood were two assistant managers that first took me out into the "field," detailed the practical features of waste disposal, and introduced me to the field staff. It was in Ms. Mariam and Mehmood's respective Union Councils that I conducted most, if not all my fieldwork. During our initial visits, both in the offices and out in the "field," they portrayed

waste infrastructure as an object of governance - to be separated from their wider context, to be known and understood, and then intervened upon. The Company does not actually deal with everyday operations, as that has been given over to the contractors, so management professionals such as Iqra, Mariam, and Mehmood focus most of their efforts on monitoring those operations. This entailed almost daily visits by Mariam and Mehmood to those areas where I conducted my fieldwork and inquiries into uncollected refuse, worker absences, supervisor malfeasance, citizen complaints, and any number of waste-related issues. Mariam and Mehmood were also constantly gathering information related to waste generation, either through field staff or through other departments such as HR, MIS (Management Information System), and GIS (Geogrpahic and Infromation Systems), and compiling reports based on that information. For instance, in our first meeting, Ms. Mariam provided me with a copy of a study conducted by outside consultants that was meant to determine whether contractual obligations were being implemented. Much of the study provides information on specific Union Councils in Lahore: location, area and population, land use, prominent sites, "sore points," and "general observations." Similarly, Mehmood handed over to me via a thumb drive Solid Waste Management Plans for various UCs under his jurisdiction. These plans organize information on the labor availability, waste generation, and machinery and other non-human resources allocated to this area (e.g. containers), and based on that information composed a Time and Motion Study for Compactor Vehicle, or a schedule for the vehicular movement through a specified area.

Even though the SWM department composed generation studies, drew up plans for improving services, and to a certain extent monitored waste disposal, the Company and its contractors have far outstripped the SWM department in the amount of studies, plans, and

monitoring. This difference arises out of the legitimacy that expertise bestows upon this public-private partnership: professionals brought in from the private sector have the necessary knowledge and skills improve Lahore's waste infrastructures. In other words, the services offered by the Company are not simply physical disposal, but the design, management, and improvement of these infrastructures. As I stated previously, expertise is included in how those services are re-valued in monetary terms. Valorization of expertise legitimized a development paradigm in which governance reform and improved service delivery are packaged and branded together while, at the same time, enabling a revaluation of waste disposal services into a public good. Such valorization contributes to why this public good appears to arise out of the Company and its contractors - either through the dead labor of mediation technologies or the immaterial labor of expert managers. This appearance of things is important to understanding the role ICTs have had in improving governance and service delivery in the Punjab. These technologies mediate the appearance of waste infrastructures and how transformations wrought by this partnership are understood.

"GET ONE'S HOUSE IN ORDER"

In the summer of 2011 an epidemic of dengue broke out across Pakistan with several hundred deaths and thousands of cases being reported. That year Lahore had the most reported cases (17,493) and deaths (290). A vector-borne disease that spreads through infected female mosquitoes, the threat of dengue emanates from wherever water comes to a standstill - from open plots of land and wedding halls to tire shops and graveyards. According to Ghulam Nabi a software engineer who headed an intervention to combat the spread of dengue, "Dengue related activities [*at the time*] could not be control." Departments were claiming to have carried out inspections of these areas and took the necessary actions to prevent the spread of the infection,

such as destroying tires, draining ponds, introducing small fish in larger bodies of water to eat larvae, and using chemicals (larvicide and fumigation) to decrease the mosquito population. Yet, the continued prevalence of dengue indicated that government officials were not carrying out their responsibilities, something that was oftentimes confirmed by media reporting. Additionally, the political opposition attacked the political party (PML-N) in power at the time in the Punjab. The fact that an epidemic of this scale broke out and continued to wreak havoc on the public signaled a failure of governance institutions, and Information and Communication Technology (ICT) interventions were heralded as a way of resolving those failures.

A seemingly simple initiative was designed and implemented to get dengue under control. At the time, Ghulam Nabi and other designers had observed that junior staff spent time on their phones while at work to help pass the time. They gave out phones to this "junior rank staff" as they were the ones who went out to conduct site inspections. These phones were equipped with an application designed to monitor dengue-related activities. Its interface was straightforward: icons with Urdu written below would indicate the site - for instance, qabristān would be written in Urdu (قبرستان) below an image of a graveyard - and the user would click the icon to activate the phone's camera. The image, like data collected by the Company, would be stored temporarily on the device before it, along with metadata (e.g. GPS location) was automatically forward to servers. These images, in Ghulam Nabi's words, were "proof as evidence that [the inspector] went to this specific area and did work there, and anyone can submit any number of pictures."

The Punjab Information Technology Board (PITB), formed in 1999,[5] has been instrumental in spreading the use of technology across different governmental sectors. The "idea" behind the PITB, according to Ghulam Nabi who now serves in a prominent position within it, was to create an "IT arm" of GoP through "capacity building." The question at hand, for Ghulam Nabi and the PTIB during this time, was how to mobilize information technology to improve governance. Specifically, how could technology be utilized to improve the relationship between government and the governed? Automation and monitoring could get the government's "own house in order."[6] What is striking about these technologies is the central role that monitoring plays in improving governance. Ghulam Nabi noted, "We [*Pakistani officials*] are very good at documenting stuff but we are very poor at monitoring our own plans and our own orders." He continued, "The Government of Punjab would declare, 'This work should be done and this amount of people need to do this work, this amount of people have to be in their places.' We have no proof of whether the execution on the ground has exactly happened or not. So, people come to meetings and inform us that, 'All is well. The world has become great. Punjab is running very well, all the roads are clean, the people are happy, less people are coming to police stations […] Conditions have changed.'" The expansion of media, especially in the form of private television and social media, was instrumental in shattering this

[5] Once again, the PITB is a semi-autonomous entity setup under the P&D Department of the GoP, with its chairman appointed by the Chief minister and funds provided by the GoP. The employees, unlike those of the Company, are governed under Public Rules of the GoP but are still given "competitive" salaries.

[6] The experience of the Education and Health Departments are telling in this regard. A form compiled by McKinsey & Company and used by the Education Department to monitor and evaluate schools across the province is now compiled through an android application. All the necessary information to be collected by the Education Department (e.g. number of books, student and teacher attendance, etc.) is entered through the application, which is stored on servers and later accessed and compiled automatically into its necessary report form with an additional image of the actual school. The Health Department has targeted their Basic Health Units with a similar initiative. Deputy District Officers (DDO) were to go out to these units and collect information such as the staff attendance and medical supplies through a standardized form once a month. Android phones were given to the DDO in 19 out of 36 of Punjab's total districts and this information was collected through an android application in 850 out of 2,496 total BHUs. The collected information was uploaded automatically by the DDO to more senior health officials and could be accessed through a dashboard by the Chief Minister.

image of effective and efficient government. Indeed, Ghulam Nabi mentioned that, by providing another seemingly independent source for information about governmental departments, the growth of the media has led to a "different form of politics in the country." This form of politics has made the failings of government, as was the case during the dengue epidemic, into a mediated concern. To recall, mediation technologies act "recursively," being brought back to bear upon that reality that they purport to "only" represent and bring that which is mediated into relation of "close distance" (Mazzarella 2004:348). Recursivity here becomes a representational technique by which that which is being mediated is made into an object of knowledge, critique, and transformation. These technologies have made the everyday workings of government into such an object: these images reveal and rework that which is being represented. The media that are then produced by these technologies can be brought to bear upon the reality that they purport to represent transparently. These levels of recursivity is what allows for the potential transformation (remedying, reforming, improving, changing) of what is being represented.

These technologies mediate exchanges between the state and its citizens and have been productive on multiple fronts. First, these technologies are perceived as improvement in themselves. For instance, using a smartphone for attendance purposes is an improvement over a rudimentary technology such as handwritten attendance registry. Second, they are viewed as mechanisms by which monitoring of the government, specifically a public-private partnership in this instance, can be done. Monitoring would then improve service delivery to the public through governance institutions. Lastly, the media produced out of these technologies (images, maps, number) are materializations of transparency as a practice of government (see Bear and Mathur 2015; Mathur 2012; Ballestero 2012). These mediation technologies are mobilized to

improve waste disposal services through monitoring, but they are themselves seen as signs of improvements.

MONITORED IMPROVEMENT

As part of a USAID-sponsored initiative called Lahore Vision 2035, a seminar on waste management and its future development was held at a prominent private college in Lahore. First, the general manager of the Company presented a series of numerical figures quite common amongst those connected with the Company when highlighting their achievements: it was estimated that the previous municipal department collected 60% of the city's daily waste generation while the Company was now operating at more than 90% collection efficiency. The general manager then continued to highlight the multiple projects, from a sanitary landfill site and waste-to-energy (WtE) schemes to revenue generation and formation of companies in other municipalities. Increased collection efficiency was intertwined with other plans that the Company has had for improving waste management in Lahore. Waste disposal efficiency here operates as an indicator for measuring how the public-private partnership has improved waste disposal services, and in that same moment, materializes the impact that this partnership is thought to have (Merry 2011; see also Shore and Wright 2015).

The metric of collection efficiency must be situated within a series of ICT initiatives directed at monitoring. Worker absenteeism was formulated as a major failing of the municipal department that needed to be address. Worker absenteeism resulted from human intervention, and its potential for malfeasance, so minimizing such intervention would be accomplished through a specific ICT intervention – "Android-based attendance." The Company has equipped UC Coordinators, who are employees of the contractors and whose role I discuss later in the chapter, in each UC with android phones. These coordinators take attendance of sanitation

workers twice a day - once at the beginning of their shift and once at the end. Through an android application, these coordinators select an attendance point, tick off those present workers whose names are pre-loaded, and then take a picture of the group of sanitation workers assigned to that point. Once taken, the image, along with its metadata, are sent to the Company's databases. It is not only sanitation workers that become the object of these monitoring technologies, so do supervisors themselves. It was repeated to me that the person who takes the picture is "an active employee."

Throughout the day, especially after the morning attendance, these same coordinators also roam localities throughout their respective UCs, taking pictures of important points to be cleared, such as main roads, empty plots, choking points like drains, and areas around containers. These are in the form of before (waste accumulated in an area), during (the sanitation worker in the act of removing the waste), and after (an area now cleared of waste) images. These images are similarly sent to the Company's databases, and as every android phone is registered through its International Mobile Equipment Identity (IMEI) number, the images are attributed to specific coordinators taking these pictures. The location of these images can be mapped through GPS coordinates, and through a web-based portal, assistant managers can view these images on a map of Lahore in which images can be brought up by clicking location markers. This is what the Company has termed "Android-based monitoring."

The Vehicle Trip Counting System (VTCS) and Vehicle Tracking and Monitoring System (VTMS), on the other hand, are two mediation technologies that require less human intervention and are more automated. The contractors have the capacity to pick up 1,550 and 1,159 tons of waste respectively at once through a fleet of over 600 vehicles. Hardware that collects information continuously has been attached to each of these vehicles. As the hardware

is linked to the vehicle's electronic systems, information is being collected through electrical pulses in the vehicle's wiring: whether the vehicle is turned on, seatbelt in use, door open, speed, and fuel consumption. All this data is stored temporarily within the device for a brief period before it is sent to the company that designed and implemented this system, and then copied to the data servers located in the Company's offices. As this data is collected and organized, it can also be accessed by those within the Company and contractors through a web portal.

Importantly, a GPS device is part of this hardware, so each vehicle's movement is tracked in "real-time." This movement is displayed through a series of colored dots: black (stopped), green (in motion), and red (speeding) (see e,g. Figure 4). A dot is generated every two minutes. Clicking on one of them brings information such as the vehicle number, location (mohallah, UC, Town, City), GPS coordinates, speed, and date and time. VTMS is used in conjunction with the VTCS, which tracks the amount of waste being picked up by that specific vehicle. VTCS does so by weighing the vehicle upon arrival to the dump site through a weigh bridge, then again when it leaves, and then subtracting the weights to determine the amount of waste picked up and deposited. This weighing is key not only for monitoring purposes but also, since the contractors are paid based on the amount of waste they collect. Once again, the portal enables them to organize data based on, for example, UC or zone:[7] they can see which vehicles collected how much from these areas and trace their movements. When this information was presented to me (once again through a power point presentation that had been delivered to other concerned parties and stakeholders), it was emphasized that managers could use this data and information to monitor, organize, and improve waste disposal services.

[7] A zone is a unit created by officials in the Urban Unit and the Company to divide up Lahore for waste management purposes. This was distinct from the SWM's use of the administrative units of the TMAs.

Once these initiatives were designed and implemented, monitoring of waste disposal could go uninterrupted, without too much worry about human intervention and malfeasance, and regular and reliable flow of data could be collected, organized into information, and disseminated both within and outside the Company, which, as I mentioned earlier, is part of the MoA. To be clear, much of this data and information depends upon human labor. For instance, to track and surveil vehicular movement, the route needs to be loaded through GPS locations. This means that someone needs to go out and collect GPS coordinates of that movement and load it into mapping software that can then be loaded in these systems. Nevertheless, it was this flow of data, turned into information and presented in different contexts, that functioned as an indicator of improved governance and waste disposal services. In other words, monitoring itself was improvement. These improvements had two potential effects. It first potentially demonstrated better waste disposal services. Second, it enabled a kind of infrastructural fetishism: it made it appear that that improvement (e.g. better waste disposal efficiency) emerged out of not those who actually carry out the work of waste disposal but those who manage it through these technologies, data and information, and publicizing their efforts. The appearance of a particular order of things hinges upon this monitoring being a mediation technology, one that seeks to represent an already mediated reality as unmediated. These mediations moreover enable the valorization of management and the devalorization of caste labor. Before turning to the latter process, the transformative aspects of these mediations need to be unpacked.

THE TRANSPARENCY OF MEASUREMENTS

0.65 kg/per capita/per day is the dominant number used to measure Lahore's waste generation. Authors of an article on waste management in Lahore (see Batool and Nawaz 2009)

mentioned this number (.65) came from a report prepared by the Japanese International Cooperation Agency and has been in circulation for some time now. Reviewing that a joint report by the Pakistan Environmental Agency and JICA, no mention of Lahore's waste generation is made and the estimates for other cities in Pakistan are presented, in the range of .283 (Sibi) to .613 (Karachi) (see Pak-EPA 2005:9; see also KOICA 2007). Another source for this estimate could possibly be found in another study conduct by engineering consultants for the national government in 1996 that collected data for prospects of privatizing waste disposal across urban Pakistan, which I have yet not been able to locate. Setting aside the origins of this estimate of .65 kg/per capita/per day, it remains the building block for a variety of measurements made by different actors connected to Lahore's waste infrastructures.

One afternoon in October 2014, I travelled to transit station for waste, operated by one of the contractors, that is in a growing housing society on Lahore's peripheries. I regularly went there during my fieldwork, either accompanying field staff on a variety of errands or meeting with managers who worked in the offices there. Newly built homes, those still under construction, and employ plots of land waiting to be developed create an odd pattern in this urbanizing landscape. Crossing the two-way road and turning onto the service lane, the transit station is not entirely misplaced here. It abuts a lane of shops that provide any number of goods and services for those who reside in or are passing through this housing society. As I walked to the offices at the back end of the site that afternoon, trucks full of waste were lined up and dumping their contents onto a conveyor belt, which slowly deposited the waste into a container that would eventually transport it to the landfill site. I had come to speak with Jameel Sahb, who was an assistant manager for this contractor and was responsible for overseeing daily operations in one of the two Union Councils in which I conducted my fieldwork.

At one point in our conversation, Jameel Shab made a series of measurements to illustrate the kind of calculations they make in provisioning waste disposal services. After he mentioned the various resources (human labor, containers, compactors, etc.) used in waste disposal, I asked, "How do you decide how many compactors will be needed in this UC?" He responded immediately:

> First, we look at the population. How much is the UC's population? We then multiply that population by per capita waste generation. Out of that we get what the total waste generation is of that Union Council, OK? You get waste generation; how much waste is being generated. For instance, write a quantity, 30 tons. Convert this into kg. Multiply it by a 1,000 […] When we have a small container, it can hold nearly 250, 250 – 300 kg. What is our total waste generation? 30,000 kg. When we divide this by 250, we get this, the total number of required containers. 120 containers. One big compactor can pick up on average of 30 – 35 containers per trip. If one compactors makes two trips, how many containers will it pick up? 60. The meaning of this is, what? How many compactors do you need? Two compactors for two trips each.

After this hypothetical situation, I asked about the specific UC where I conducted my fieldwork, to which he responded by determining its estimated waste generation – multiplying its population by .65 kg per capita per day. Intermixed with these calculations, Jameel Sahb detailed how such "characteristics" of the urban landscape as types of buildings (commercial, industrial, residential or a mixture), existing infrastructure (transport and sewerage), population density, and traffic patterns influenced waste generation and thus, disposal by sanitation workers - whether labor is organized individually or in groups. What Jameel Sahb was illustrating to me that afternoon was that contractors use these measurements to make calculations that will then impact how labor and infrastructures are distributed in such a way that waste disposal services are adequately provisioned to the public. One can easily dismiss these measurements since numbers are not the only consideration made when distributing these services across the city – a testament to this is the fact that wealthier areas of the city are

provided with better waste disposal services than poorer areas. Regardless, his calculations and measurements were meant to demonstrate that expertise was being brought by the contractors to bear upon the provisioning of waste disposal services to the public. In this moment Jameel Sahb deployed not only calculations and measurements but also his expertise as a manager. As I mentioned earlier, this expertise is part of the services that are now being offered through this public-private partnership, but it also was meant to demonstrates why waste disposal services have been improved since the partnership was formed. However, when we were discussing these matters, an assistant manager, who oversaw mechanical sweeping and washing, seated nearby interjected that this was simply the "on ground reality" that they were almost helpless to change.

This term, "on ground reality," reveals much about waste disposal services. Here, it might be necessary to descend into the social, material, and technical relations that are involved in provisioning waste disposal services. The Company provisions waste disposal services through the labor of sanitation workers and a series of sociopolitical relations among various tiers of government, the Company and its contractors, and a specific locality - all of which I have described in previous chapters and this current one. Additionally, non-human resources such as machinery, containers, a dumping ground and now, a sanitary landfill site with a weigh bridge are also involved throughout this process. Labor, sociopolitical relations, and other techno-infrastructural entities are what provisions the good of waste disposal services across the urban landscape - something not lost on those within the Company or its contractors who repeatedly dealt with the vicissitudes of this labor force, demands from within the government and specific localities, and breakdowns of non-human resources. Through their integration, waste disposal services produce something greater than the sum of its part: the removal of a

potentially harmful material, bundling a good that has environmental, health, and aesthetic value. These measurements are crucial to commodification of waste disposal services and governance of waste itself, in which transparency is prioritized.

As I mentioned in the previous section, waste disposal efficiency is a key indicator of improving waste disposal services, and is similarly based upon the figure of .65 kg/per capita/per day that Jameel Sahb deployed. Lahore's estimated waste generation is calculated by multiplying .65 kg/per capita/per day by its total (estimated) population. As the Company now tracks waste generation through a weigh bridge system, they can now calculate their waste disposal efficiency by dividing the estimated waste generation by the actual amount collected during any particular interval of time (daily, monthly, yearly, etc.). This metric, and all of the techno-infrastructural entities that make it possible, is a highly abstracted and quantitative, in the words of the General Manager, and must be situated within other technological interventions that have sought to improve waste disposal services through monitoring and surveillance, ones that were seen as less abstract and more qualitative.

One afternoon Jameel Sahb came to discuss the door-to-door collection initiative with the field staff. He brought with him a printout of a map[8] (Figure 4) culled from the VTMS system that showed the tracked movements of all the vehicles throughout the locality where I did part of my fieldwork and he oversaw operations. The inner parts of the colony on the map were devoid of green dots (indicating a particular kind of vehicle was moving at a regular speed) while the surrounding roads had a clear route of green dots, indicating that it had not moved within the colony but only its outside. The dāroghah claimed that another kind of vehicle had collected waste from the inner areas of the colony instead. At this point, the

[8] These maps are a graphic artifact and as Matthew Hull (2003) has demonstrated, are crucial to the functioning of the state and governance.

manager flipped the page to reveal another printout of the same area but with blue dots, which indicated the route of another type of vehicle, and then proceeded to show the supervisor that both printouts showed that neither of the vehicles had serviced the inner parts of the colony. The supervisor, who had made the initial claim that one kind of vehicle rather than another had collected waste from this area, had no response to this evidence and sat embarrassed and quiet. In his scolding of the supervisors seated there, the manager instructed them to put more pressure on sanitation workers. Only by improving their work habits would they be able to implement the door-to-door collection initiative.

The immediacy of these technologies promises to do away with corruption and other kinds of public and private malfeasance by making such acts visible and knowable to a public. Transparency reorients the relationship between government and the practice of government

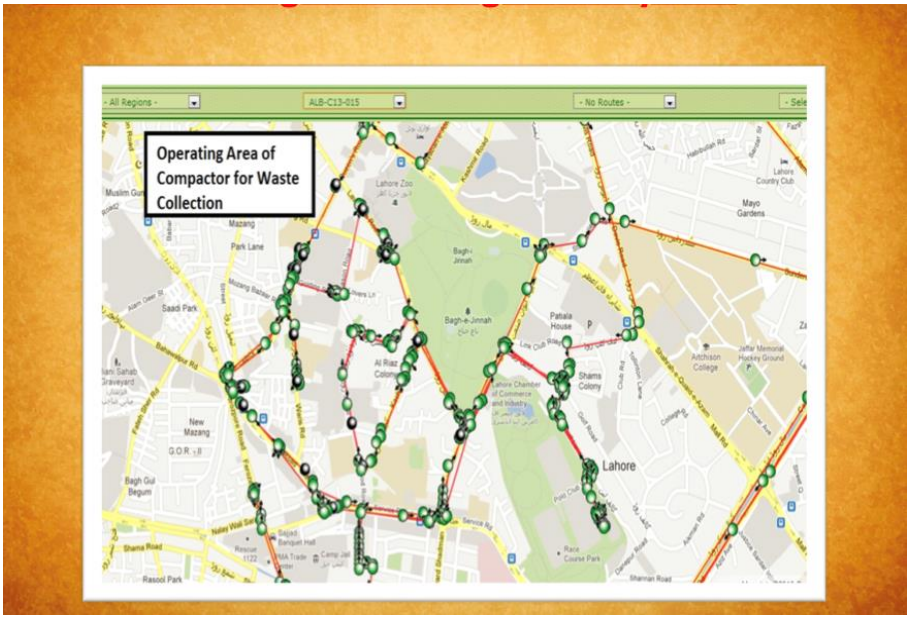

Figure 4: Map showing the tracked movements of a compactor

Transparency, as a desire for an ummediated reality, comes with its own paradoxes, shortcomings, and possibilities (Mazzarella 2006, 2010). This map, along with the images and numbers produced through monitoring, present themselves as completely transparent: as an

unmediated, privileged vantage point from which to gaze over the work, infrastructures, and institutions of waste disposal services. Such a view enables an evaluation of waste disposal services that can treat Lahore and its waste as an object of governance and management. This Archimedean point of an unmediated reality has been criticized rightly by anthropologists and others as itself being a limited. Yet, what is important to consider is how those limitations, first, can be productive within a particular cultural and political context and, second, reveal what is at stake in this deployment of technologies. Those within the Company recognize limits to transparency and the mediation technologies that make it possible. This is why, despite all the institutional, infrastructural, and technological changes, the figure of the sanitation worker with their habits continue to haunt the Company and its contractors, as does the informal sector.

OUTSIDE THE PARTNERSHIP

As I mentioned in the previous chapter, waste workers from the informal sectors are a constitutive component of Lahore's waste infrastructures. I speak at more length about the informal sector in the next chapter, but as of now, I want to describe the ways in which the partnership I highlight in this chapter threw into question the relations waste workers from the informal sectors had entered in through waste materials and their disposal and circulation. As a reminder, these relations were with figures - from domestic workers and local politicians to sanitation workers and field staff - that granted them access to these materials and the work and money surrounding them. These waste workers are important actors in Lahore's waste infrastructures, but their legitimacy, partly because they were outside of governance institutions and partly because of their disposal practices, was always precarious.

Another point that needs to be reemphasized, and one I will elaborate upon in the following chapter, is that the informal sectors concern itself with the physical qualities of waste

materials itself since waste is operating as a resource to be recovered and capitalized on (see Lane 2011; Reno 2009). On the other hand, the Company locates little to no value in waste material itself, at this point in time, but value is materialized through the management of waste - a potentially harmful and polluting object to be carried away and the benefits of such disposal. These distinct valuations are necessary to understanding the way in which the informal sector and the Company were entangled, even if they had different relations to the material itself. Since its formation the Company was interested in expanding waste disposal services by establishing a system of door-to-door collection, which was one of the many contractual obligations. Implementing this collection would increase the amount of waste disposed of, thereby demonstrating improved services and increased institutional capacity - all of which would legitimize this public-private partnership and those institutional actors that have backed it. Even though by all accounts waste generation has risen sharply, the Company's tactics, which aligns with prevalent theories of economy, have made waste into a finite and thus scarce resource (see Rajagopal 2004). Discernible in daily generation, waste as a finite resource aligns with the fact the Company pays its contractors by the amount of waste collected. Yet, more was at stake than the monetization of waste disposal services.

When I started my fieldwork in March 2014, the Company has started to implement this system of door-to-door collection. With a new fleet of "mini-dumpers," Company officials were ready to collect waste from households and demonstrate their renewed institutional and infrastructural capacity. Their "awareness" cells, part of the Communication department, were sent out to inform residents about the timing of putting out one's waste and how to actually do that. Blue plastic bags were also distributed out to residents, which functioned as advertisement for the Company since their branding was written on them. The contractors also placed fliers on

walls (see Figure 5). On the top right, the flier stated, “For cleaning solutions, dial the helpline, 1139,” which is the complaint cell for the Company. In the center, the flier emphasizes, “We request Lahore’s residents please place tied up garbage bags outside their homes by 7 o’clock in the morning. Our sanitation staff will collect waste from the doorstep of every house.” At the bottom is the branding of the OzPak, its website and Facebook page, and the branding of the Company (“Clean Lahore”). The Company and its contractors sent out specially designed machinery called “mini-dumpers” to access narrow alleys that are dominant in many parts of Lahore. Company officials, managers, and field staff repeatedly voiced frustrations that Pakistanis were not disciplined enough to wake up in time to place their waste outside of their home in the designated fashion.

The major challenge this project encountered was the fact that for several decades now, waste workers from the informal sectors have been collecting household in exchange for a minimal service fee. The concern among waste workers during the conflict was their access to waste, work, and income was being disrupted and in danger, which would further worsen their already precarious livelihoods. Waste workers were able to stave off dispossession and the Company has been unable to implement a system of household waste collection because of the relations that I traced out in the previous chapter, in which waste workers have built strong connections to a variety of actors within a particular locality. Additionally, reporting on this conflict in the media tended to muster up sympathy for waste workers, who already living in abject poverty, were now being bullied around by a much stronger institutional actors. Nevertheless, this conflict over access to waste highlights a larger question haunting this public-private partnership.

The Company estimated that the informal sector is responsible for 40% of the waste

Figure 5: Leaflet instructing residents to place trash bags outside of home at 7 am

collected by the Company. They chalked up their success in establishing, maintaining, and ensuring collection of household waste to their flexible organizational structure and their political savviness – they can mobilize political connections and sympathies as they did during their conflict with the Company. Company officials openly admit their own failure while valorizing the successes of the informal sector. In fact, they have now started to entertain other prospects with regard to the informal sector such as coordinating their activities, offering them credit, or setting up a recycling center to purchase their materials. Still, they also regularly castigated them as being too loosely organized, using anachronistic technology, and exposing themselves, others, and the environment to potential harm. If the informal sector is characterized by a messiness, which can at times be useful, the Company is portrayed inversely: organized, efficient, and orderly, almost to a fault. It is exactly the separation between the Company, which provides a public good and service, and the informal sectors, where this same good or service is private, that makes them entangled. As much of the

Company's daily waste collection depends upon them, and thus its efficacy and legitimacy, it will remain entangled with that which stands outside its power and authority. They cannot discipline their habits as it can with those who work within the apparatus of Company and its contractors.

WORKER HABITS

After several months of trying to arrange an interview, I sat down with the general manager of the Company one afternoon in his offices. I had seen him multiple times on his impromptu trips to check in on field staff, but this was our first formal meeting. These field visits doubled as media events, with local news reporters being present to publicize the trip. In fact, that day our interview would be disrupted half an hour in by a reporter and cameraman who were interviewing the general manager about the Company. I turned off my recorder and sat on a black leather couch alongside the Company's head lawyer. I listened to the reporter ask straightforward questions about the Company's current and future projects, and paid attention to the responses that the general manager gave. His responses were not very different from the ones I heard on other instances.

Just as he had shared on stage at the USAID seminar several months ago, he described the Company's efforts by starting our interview with the following description: "Quantitatively, we are going very good. The City District Government put their waste collection at 60%, without any data to back it up. They had no weighbridge system, nothing. Fine, I'll abide by their 60%, I'll accept their numbers. Now at this time, we are standing at 90-94% waste collection. So there is a huge leap as far as quantity is concerned, right? We have achieved much improvement in regards to waste removal." After mentioning improved collection efficiency however, the general manager switched to something that was mentioned neither at

the seminar nor in the reports but does highlight a figure beyond that of numerics: "Where we are still struggling is quality, in the streets, sweeping…Perhaps, I should admit, we have not yet been able to achieve the qualitative improvements we had researched." He went on to explain, "[…] all work related to quality, that is manual sweeping, is human dependent." This was where the agreements described earlier became relevant: "The contract was designed in such as a way that the *lethargic* old staff of the City District Government was transferred to us [*the Company*] and we transferred them to the contractors. This is where we are having some minor problems, with their habits of coming to work late, leaving early. We have faced certain challenges in addressing these *habits*."

One way in which habits have been targeted is through the conditions and relations under which sanitation workers labor. Based on reports carried out by Turkish consultants, the Company increased its overall workforce by a couple thousand of workers to keep up with Lahore's estimated waste generation by recruiting them through labor contractors.[9] For the most part however, this partnership has not rendered sanitation workers who are permanent (pakkā) or work charge (kachā) employees any more precarious than they were before. In fact, during the course of my fieldwork, the Company pushed regularizing work charge employees as permanent ones retired. As many of these workers had been on 90-day contracts for several years by then, they were relieved to know that they would now enjoy multiple benefits that come with regularization.

Nevertheless, contract workers (ṭhekedārī) have the least amount of job security, easily being hired and fired from their position, enjoy limited employment benefits, and suffered

[9] There were two labor contractors at the time of my fieldwork. Contract labor is a widespread practice across Pakistan and has had major shortcomings. One of which is the fact that though minimum wage is paid to the labor contractors that then take their own fees and then pay the remainder, which is below the minimum wage, to employees.

regularly from reduced or late wages. Moreover, threats of loss of employment are used to persuade contract workers to carry out extra or more arduous tasks. These workers certainly occupy a position of greater relative precarity compared to the rest of the workforce. They are regularly brought in to replenish the pool of workers who had left, either of their own accord or as a result of being fired. These workers, who did not enjoy the security of municipal employees, could not afford to demonstrate the same "lethargic habits" of municipal employees. Though it would be easy to fall into the myth of worker disposability (see Pande 2014), the Company and contractors alike recognized that worker presence was paramount. This meant that the constant threat of loss of employment could not be the only tactic for persuasion. This is where the Union Council coordinator, which I have alluded to previously, becomes an important figure.

TRAINING ACTIVE SUPERVISORS

UC coordinators are much younger than dāroghe from the SWM department. Unlike the latter that had to complete a year-long course from the Public Health department, UC coordinators have only passed their matriculation exams ("matric pass"). They also generally do not deploy the same linguistic techniques to persuade sanitation workers, which I described in the previous chapter. Similar to ṭhekedārī workers they do not enjoy any job security, with minimal employment benefits. They are an important component of this public-private partnership as they were to replace the dāroghah as an intermediary figure in Lahore's waste infrastructures.

Over the course of two weeks, between December 2014 and January 2015, a series of training sessions were put on by one of the contractors to educate UC coordinators on the system of solid waste management. Each session consisted of a two-hour lecture on a topic

(e.g. vehicles, containers, manual sweeping etc.) and a review assignment to be handed in at the following session. In one lecture titled "Urban Planning and Human Resources," a senior bureaucrat, who had helped form the Company and was at the time involved with waste management departments in other cities in the Punjab, lectured on the privileged role that UC coordinators had within improving the current (mojūdah) system of waste management. The lecturer emphasized that those "in the field" know much more about waste management than those sitting in offices. He recounted how, unlike the municipal department that utilized the TMAs as their administrative and operational units, the Company went "into the field" in order to understand waste generation within Lahore and based on that generation split the city into its own administrative and operational units – the zones mentioned earlier. He spoke of this planning process to encourage UC coordinators to similarly be in touch with the "public," and know and understand as much information as possible about their respective UC such as waste generation, settlement patterns, populations, and available resources (i.e. labor, equipment, machinery). He affirmed that UC coordinators are not like the governmental sectors, with their dāroghe and ADOs, where the intervention of someone (sifārish) is the only way to get promoted. Promotion did not depend on sifārish or having a likable personality, according to this bureaucrat, but rather resulted from demonstrating one's ability to do the work. Promotion was based on performance. It should be kept in mind that performance is also the dominant metric in this public-private partnership (e.g. as measured by waste disposal efficiency). Promotion based on performance here was meant to incentivize coordinators to be more invested in their work, learn about solid waste management, and be proactive in integrating themselves into the system of waste management.

The bureaucrat emphasized, "You [*UC coordinators*] should not be lax about the solid waste management department, which works in every alley and neighborhood. Those who work in solid waste are the most world's most important people. They fulfill half of one's faith…They also provide environmental facilities to the general public. Yet, there are very few hard working and thinking people in this field. We have let the quality of our work fall because we haven't understood it, haven't learned about it, and haven't discussed it. This is why we are ignorant." UC coordinators must be aware of how responsibilities, authorities, and resources are to be distributed within this system of waste management, and only by doing so could various actors be held accountable for their performance. Less than the meanings of terms such as responsibility, authority, and accountability, which have figured prominently within this public-private partnership, I want to emphasize that this training session was educating coordinators about the system of solid waste management and changes introduced into this system since the partnership. As they were being educated about this changing system, one that I was learning about during this same time too, these coordinators were being brought into these changes as active participants, being incentivize to take control of their own responsibilities and show initiative about these changes and how to ensure their success. This class of supervisors were to be trained such that their habits would be distinct from their municipal counterparts: active rather than passive, concerned rather than apathetic, motivated rather than lax. Thus, changes in the work, infrastructures, and institutions of waste disposal moved beyond mediation technologies and penetrated worker habits, both of supervisors and sanitation workers.

REVALUING CASTE LABOR

At one point in the lecture however, the figure of the sanitation worker returned. The lecture mentioned the Punjabi phrase "chūṛā dī akar." Chuhra is a slur used for sanitation workers and Christians more generally, and with a portion of the audience being Christians themselves, the response to this phrase was understandably not one of comfort. This phrase was meant to encapsulate the attitude or behaviors of sanitation workers, one based on a stubborn pride about doing or not doing this work. The lecturer introduced this phrase simply to illustrate the importance of persuasion within productivity. The audience did not seem to get his point, focusing on the power of the phrase itself, and he then asked them, "You all understand this, right?" Some chuckled while others simply nodded. The lecturer then continued with his point: "They are a part of our system. You first need to understand who these people are. What impresses them, what upsets them, how to deal with them…You have seen that these are the type of people that will shut down the entire city based on a tiny misunderstanding…It's evident that a few individuals will take these small things in the wrong way and block the entire city." As striking had been deployed as a powerful tactic in the past, the Company and its contractor needed to create conditions under which sanitation workers would not resort to such tactics.

He then posed the question, "Why have we not treated these people as our workforce?" and then clarified, "All of this is to say you need to understand sanitary worker's psyche. There are three basic reasons for their actions." The reasons were their lowest levels of respect, reward, and literacy, or in other words, their marginalization and stigmatization was the root cause for their "psyche." The lecturer then made clear, "Getting illiterate and ignorant people like this to work is no simple task. This is why you need to infiltrate them and these are the type of people that reward you doubly for doing so." Penetrating this workforce was necessary

because no amount of external force, such as human supervision or technological monitoring, can ensure the quality of work. Simply put, the habits of sanitation workers arose out of the fact that they occupied the lowest status in society. If UC coordinators understood the origins of their habits in their lowliness, then they could start amending those habits and making them better, more productive workers.

What coordinators needed to do was "meet with them [*sanitation workers*], sit with them, drink chai with them, eat with them, share their concerns, and help them improve their life standards." This is the only way that coordinators could understand the behaviors, habits, and psyche of sanitation workers, thereby motivating them internally to improve the quality of the work. Empathy was consciously being cultivated among these coordinators, one that was being deployed to extract work out of sanitation workers from within, not externally through the use of force or persuasion.

In a session later in the series, a slide was projected for the audience. Titled "Work with Dignity," it had an image of a uniformed sanitation worker walking away from a household entrance with a box in his left hand and the following dialogue captioned below:

> A child said to this father: "Father, the garbage man (koṛā wālā) has come."
>
> The father responded, "Son, we are the filthy ones. He is the cleaner (safā'ī wālā) who has come to help us.

I had heard similar sentiments expressed by others throughout the course of my fieldwork. Statements such as these prioritize cleaning (safā'ī) rather than trash (koṛā) to describe those who engage in this work. They also recognize that trash, though produced by one person, is then attached to the person of another who disposes of it. There is an attempt to detach the materials (waste) from those who remove and reattach it to those who produce it, and in doing so, those who engage in this work are identified with the morally-laden act of cleaning (safā'ī)

rather than the material and its disposal. Oddly, the bureaucrat mentioned that in another city, they started to use “waste worker” rather than “sanitary worker” - the former being a less value laden term.

Koṛā wālā, safā’ī wālā, sanitary worker, and waste worker are all terms with their own moral valence. Koṛā- or safā’ī wālā reference a relation of selling and/or possessing the material itself. It is often used to refer to someone who carries away this material from households or shops in exchange for fee. These exchange relations are also quite often long-term, intimate ones. Sanitary worker, on other hand, prioritizes the impact that this work has on conditions that affect health and hygiene and its placement within a municipal department. Lastly, waste worker returns to the material itself but the relation is less one of selling and/or possession and more how work mediates the relation with the material. It can also be used for those both within and outside state institutions. Though each of these terms are used in different contexts and thus express distinct meanings, what they all share is their reference point: a particular kind of caste labor. These terms attempt to (re)value this devalued kind of work. All of this - changed terms, greater empathy - sought to make sanitation workers more productive and in this sense, participates in this regime of governance, technology, and value. Caste labor is revalued but such that it can reinscribed within this particular regime.

CONCLUSION

A couple of months after starting my fieldwork, in May 2014, sanitation workers in Lahore went on strike. Consecutive months of reduced salaries resulting from flaws in the android-based attendance precipitated this strike. In the days and weeks leading up to it, sanitation workers regularly aired their grievances to me. Their hope, I imagine, was to find in me a powerful figure with a sympathetic ear that could leverage his clout to assist them. The

strike in any case was called off after two days when Company officials agreed to the demands of the Jardookash Mazdoor Union - the trade union that represented sanitation workers at the time of my fieldwork. The Company would compensate those workers whose salaries had been reduced without reason. This caveat - *without reason* - gestured to the fact that a contingent of workers deserved to have their pay reduced, and if upon investigation it was revealed that they had not actually shown up to work, they would not be compensated. Despite accusations that union officers had sold themselves to the Company, most of the furor among sanitation workers subsided as salaries were adjusted over the next several months. What was really at stake in the strike was neither money nor the android-based system; it was the legitimacy of a regime of governance, technology, and value that has emerged in contemporary Pakistan. Even if the regime itself did not fall under the pressure, the strike as a refusal to work did reveal the fragility of this all.

This regime, by bringing together logics of governance and markets, has revalued was disposal services as a public good. This public-private partnership was created to improve waste disposals services for the CDGL, and in doing so, it located a domain for the private (performance by contractors) and the public (monitoring by the Company). Improvement is as much about better performance as it is about better monitoring. Mediation technologies become critical because they bring together performance, monitoring, and improvement. As should be clear by now, mediation is not limited to a representation of reality; it is predicated in this case as transformative, which gives it political potential. These technologies were meant to transform sanitation workers and other field staff in the municipal department who were viewed as a united front in the lower-level bureaucracy. Their habits were portrayed as a primary reason for not only petty corruption but also, governmental inefficiency and failure.

The public-private partnership was to weaken this united front, begin the process of retraining habits, and thereby, make government more productive and efficient. In other words, this partnership was to improve service delivery. Mediation technologies I described above however only go so far in retraining habits through surveillance and discipline, as they attend to an external domain (e.g. whether a sanitation worker is present, if a vehicle was in motion, or daily waste collection). Habits demonstrate that internalities – dispositions, tendencies, and attitudes of these workers – are made through externalities – their living and working conditions of these workers. Here, the sanitation worker, as the subject of caste labor, returns in light of markets for waste disposal services.

This chapter has argued the logic of markets and governance have converged in the commodification of waste disposal services. Much of what I described in this paper is now spreading across cities in Pakistan, especially the Punjab province, and similar partnerships, calculations, and measurements are being implemented to remake waste disposal services as a public good across the country. It must be kept in mind that markets for labor and waste disposal are the basis for commodification of these services. In a crude sense, a form of fetishism has been at play: this commodity appears to arise out of the Company as a state entity and its contractors as its legitimate partners, which has required considerable financial and technological investments, but the actual disposal of waste arises out of material social relations, which I have described in the previous chapter. While being attentive to measurements, transparency, and their technologies goes a far way in revealing how this public good is revalued, state institutions and power are transformed, and the boundary between governance and markets becomes blurred, they remain insufficient for our understanding of the role that the commodity-form itself has to these processes. This chapter has demonstrated the

work or labor involved in provisioning waste disposal services, but suffice it to say that analyzing the commodification of goods must consider how labor of different kinds appears, or doesn't, in measurements and the commodity now being offered up as waste disposal services. Only then can we imagine how deep the effects of commodification are, and how revaluing a public good such as waste disposal services comes to mediate a series of exchanges among the state, private entities, and the public. But also how it does or does not revalue caste labor.

Part of what the training sessions I mentioned were attempting to do - other than herald coordinators as dedicated, active, and responsible supervisors that could be human extensions of these mediation technologies - was to rework the habits of sanitation workers by revaluing their work. This work is devalued and those who engage in it are stigmatized and marginalized because of the work itself, education, income, status, and other social markers, which were all covered during the sessions. Their presumed "lowliness" was the root cause of their habits. This revaluing was not meant to undo caste labor itself, but as I have argued, simply situated within this particular regime of governance, technology, and value. The problems at hand were nothing more than the distribution of authority and responsibility within the Company and its contractors, the utilization of available resources (human and non-human), and other technical components of urban planning and waste generation. Revaluing situated caste labor as just another one of these problems - human resource management. Though the Company and its contractors have sought to de-stigmatize and thus revalue caste labor, they continue to devalorize it as being irrelevant and disposable, and valorize the work of others such as managers, technocrats, and politicians. The devalorization of labor and and valorization of management is partly made possible by mediation technologies I analyzed earlier. As the latter seek to harness the labor-power of the former in improving Lahore's waste infrastructures, the

legitimacy of this public-private partnership and the development regime of which it is a part hangs in the balance.

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Chapter 4

Marketizing Waste, Circulating Value

My discussion of waste infrastructures in Lahore has been skewed first toward a focus on disposal and management, especially how this valuation of waste materials as non-value impacts what is to be done with them. Moreover, though moving across historical moments, the space of the city has remained the orientating object of analysis. In prioritizing circulations, this chapter decenters both the valuation of waste as an object of disposal and management and the spatial scale of the city. Even when done through localized, intimate relations, as I describe in this chapter, the circulation of these materials is embedded in a global economy in which markets are organized as derivatives of each other. These circulations are essential to how value is captured, materialized, and realized as these objects moves across regimes of value, markets, and governance.

The spaces through this chapter tracts - jhuggīān, junkyards, warehouses, shops, furnaces, manufacturing plants - are ones through which waste materials circulate by being accumulated and exchanged. These spaces and materials put on full display how desire, demand, and consumption are mediated through discarded commodities in contemporary societies. Previous chapters examined how waste infrastructures become the site of value transformations across historical moments for Lahore, but this one shifts its attention to how commodities, especially once they are exhausted, deformed, and discarded, move across regimes of value through their exchange, which allows for a rethinking of what is at stake in the informal economy.

One January morning in 2015, I arrived to Umair's makeshift junkyard (kabāṛ) located at the intersection of an upper middle-class area in Lahore. A variety of customers (gāhak) -

residents, shopkeepers, waste workers - came here to sell used things such as plastic and glass bottles, notebooks, and cardboard boxes or purchase repaired ones such as furniture, water tanks, and kitchen appliances. That morning, Umair and I sat on wobbly plastic chairs underneath a roof made of bamboo and re-purposed materials, disassembling and sorting through waste as we talked. Being only my second visit to the junkyard, my hands were still too delicate for the pummeling and thrashing required of disassembly and I had not yet picked up the necessary knowledge for sorting. Thankfully, we took intermittent breaks that day when Umair started to bargain with argumentative customers who inquired into rates for different materials as they passed by.

In the junkyard waste work was as much about disassembly and sorting as it was about exchange. At that time, I did not have the requisite expertise for either though, so I mostly just presented Umair with questions. At one point that morning, Umair brought out a netted sack, packed with so much plastic waste that it took on a rectangular shape, to have it weighed on the iron scale that sat out in front of the junkyard. On one end the sack would be placed and on the other, weights of different measures. After it came to a balance, Umair set it aside for the bīopārī (trader, broker, or middleman) to purchase when he arrived shortly. This is when, peaking inside this bag, I turned to Umair to ask, "What kinds of plastics are in here?" This bag, he told me, contained mixed goods (darā māl) while another bag in the back contained PET (Polyethylene Terephthalate). To my eyes, the PET bottles were similar in shape, coloring, and branding while the mixed items shared no physically discernible qualities. The mixed goods would be split into the higher quality and more expensive clean items (sāf māl, lit. clean goods) and the lower quality and less expensive dirty items (kālā māl, lit. black goods). Sensing doubt on my end, Umair pulled out multiple pieces to hand me. "Can't you see?" he asked

emphatically. No, I couldn't, "But how do you tell the difference between sāf māl and kālā māl?" I responded. Breaking off a piece of plastic, Umair placed it in a bucket of water. The first piece of plastic remained afloat – this was sāf māl. The next piece he placed in the bucket quickly sank to the bottom – this was kālā māl. Each of these would fetch a different rate among bīopārīan. This demonstration of relative density cleared up some of the doubt on my end. I took solace in the fact that even a kalākār (artisan) who has considerable experience working with and knowledge of these materials often has doubt about what a particular material actually is.

Though still curious, I sensed some frustration on Umair's part, and decided to focus on disassembling a VCR and sorting the metals inside - a task that kept us busy for most of the afternoon. Through flying shards of plastic and rising particles of dust, Umair emphasized that nothing will be thrown out. The electrical board, for which he had neither the necessary tools nor knowledge, would be sold through another bīopārīan to the city's main electronics market. Then, grabbing a piece of wire that had a thick rubber-like covering, inside of which was foreign (valā'ītī) copper – one of the most expensive metals that circulates – he said, "it takes too much time and effort to extract, so I'll sell it at a lower rate." I nodded, indicating I understood, but knew I wasn't recognizing any foreign, higher quality copper as I removed belts, motors, and coils from the device.

Hammering, unscrewing and even tearing our way through it, very little was left of the VCR in an hour or two. The only remains were metals (silver, zinc, copper, brass, nickel) in different forms we had extracted out. By the end, a chill in the air and the physical force required to break down the device had made my fingers grow red and tender. Massaging and blowing warm air on them, I inquired naively, "Tell me all the kinds of plastics you have."

Umair indulged me. As he listed them off, with their rates, he nonchalantly mentioned that there was one plastic called celluloid that, when snapped, releases a rose-like fragrance (gulāb kī khūshbū). He didn't have any that day but promised that whenever some celluloid came in, he would make sure I had a sniff. And sure enough, a few weeks later I found myself sitting in the same wobbly plastic chair, holding a soiled piece of plastic that had been snapped in half with rose-like fragrances entering my nasal passages.

WHAT IS INFORMAL IN THIS ECONOMY?

Umair's junkyard would be considered part of the 73.3% of non-agricultural labor in Pakistan that is employed informally[1] and the 30-35% of economic output, as measured through Gross Domestic Product (GDP), done in the informal economy.[2] Company officials would describe the discarded materials passing through this space as being a component of the 40% of waste generated in Lahore that is disposed of by the informal sector and as an example of informal recycling done across urban Pakistan. Others have studied how the economic activity of the informal sector can be tapped by bringing in "stakeholders" such waste workers, junkyard owners, and non-governmental organizations to improve working conditions, organize their activities, and generate environmental and economic goods (see e.g., Majeed et al. 2017). These articulations view informality as something organized outside the parameters of contract (i.e. waged labor), so that it can be reorganized within the parameters of legality, state power, and waged, contractual work. Informality, in this instance, cannot be understood to constitute "new social space outside […] where sovereignty of the state did not hold sway" (Elyachar 2005:70). Many things remain outside the state (society, non-governmental

[1] "Informal economy in Pakistan." International Labor Organization. March 23, 2018. http://www.ilo.org/islamabad/areasofwork/informal-economy/lang--en/index.htm.
[2] See Shehryar (2014).

organizations, or even citizens), so what other ways can we understood the informal economy that does not situate it in relation to state authority, power, and institutions?

In the 1970s, actors involved in a global regime of development (researchers, urban planners, journalists, activists, bureaucrats, development experts, and non-governmental organizations) discovered the informal economy out of and applied it to the developing (non-Western, post-colonial) world that was thought to be in a liminal phase of transition from traditional forms of exchange to modern capitalism. Many of these actors cuts across boundaries of the Pakistani state, civil society, and transnational institutions such as the World Bank, International Monetary Fund, and the International Labor Organization. Since then the term informal has specifically been used to refer to separate, though interconnected sets of issues facing urban Pakistan. The first was what are called "slums," "informal settlements," or kachī ābādīān that are prevalent across Pakistan and many parts of South Asia.[3] Based on the designation informal, one that overlapped with that of illegal, the Pakistani state put into practice policies and institutions that provided opportunities for these settlements to become "formalized" by transferring rights of ownership to those who resided on the land itself, which was oftentimes governmental land. Despite efforts of formalizing these settlements, they have continued to proliferate and are pervasive across Pakistan's urban landscape. As may be obvious by now, Manzoor, Allah Ditta, and many other waste workers I have spoken of in this dissertation reside in settlements such as these or did at some point. The second set of issues was related to forms of employment that exist outside of agricultural and industrial sectors – two of the primary components of state-led development in post-colonial Pakistan. Informal employment is not regulated by contract, as is the case of waged labor in industry or

[3] See Alvi (1997) on how informal housing and economies are intertwined in Lahore.

manufacturing, and thus, unfree, bonded, and/or child labor are endemic in informal work relations, which can then be undone or reduced by formalizing those sectors of the economy. Lastly, transactions done in the informal economy occur outside or are peripheral to legality, so even if the informal economy is the reason for a sizable chunk of the Pakistan's economic output, it could be much greater if those transactions are brought within the ambit of legality, especially in reducing tax evasion, benefiting the state exchequer, and ending the use of "black money."

A teleology of transition with a presumed end undergirds all these articulations of informality. The assumption underlying the informal economy was that, by organizing a modern, capitalist economy by the nation-state and assistance through transnational financial and development agencies, surplus populations from the "traditional sector" would transition into and be absorbed as wage labor governed under "free" contractual relations, making these populations productive and increasing economic output of the nation by increasing profits and driving down the relative cost of labor. In other words, the informal economy was posed within the problem-space of post-colonial development: how to organize economy, society, and labor such that a transition can be made and capitalist modernity be achieved? What happens to our understandings of the informal economy however if we divest it of this trope of transition? By disentangling the informal economy from the trope transition, the informal economy can be understood through the question of value. By doing so, I make clear how those things, persons, and activities cast outside the limits of capital remain its internal other that nevertheless return.

Kalyan Sanyal has reexamined the informal economy from the perspective of capitalist development in post-colonial India. The overarching problem is how capitalism attains and ensures its global hegemony while at the same time incorporating economic heterogeneity, or

other forms of exchange and production that would be placed into the domain of non-capital.[4] This domain can be referred to as the informal economy, which he posits as a need economy:

[This economy is] an ensemble of economic activities undertaken for the purpose of meeting needs, as distinct from activities driven by an impersonal force of systematic accumulation. It is a system of petty commodity production but—and it is an important "but"—not the one that precedes capital in the historicist narrative of transition. *It is an effect of capital, its inescapable outcome—a non-capitalist economic space that is integral to the post-colonial capitalist formation*" (Sanyal 2007:209, emphasis added). Within the need economy "producers are estranged from the means of production as a result of primitive accumulation" (Ibid. 2007:209), which means that actors in the need economy begin with commodities as their mode of subsistence. Commodities are both the things that they consume to reproduce themselves and their social relations, and that which they produce (in the form of petty commodity production) and then exchange to acquire money, in order to purchase more commodities. Sanyal describes this kind of activity in the following way: "…the producer purchases materials with his initial stock of money; he then adds value to them, sells the produced commodity, and uses the proceeds to replenish the initial stock and to purchase commodities for consumption" (Ibid. 2007:210, quoted in Gidwani 2014:42). In the informal (need) economy, actors are simultaneously estranged from their means of production and have control over them; in other

[4] Keith Hart reformulated informality in the economy as "an economic variant of the general theory of formal organizations" (1985:58). Anna Tsing (2013, 2015) has taken up this question of economic heterogeneity in a slightly different light when she speaks of non-capitalist exchanges, specifically the gift, being constitutive of processes of capitalist value transformation. A similar, though distinct set of issues is explored in the work of Julia Elyachar who has examined how a vacuum between state and society has emerged, in which non-governmental organizations and other actors from civil society have entered to take on issues around informal housing and poverty alleviation (2005, 2012). Others (e.g., Panella and Thomas 2015) have sought the ethical and evaluative practices that take shape on the peripheries of legality, as moving across what is deemed legitimate and not.

words, primitive accumulation has already proceeded but not brought these surplus populations into waged labor, leaving them in what he describes as the wasteland.

How can we understand the activity of waste workers and traders in the informal economy as part of a need economy? Reworking Marx's general formula of capital, Sanyal presents the circuit as M ~ C ~ C' ~ M'. That initial stock of money is used to acquire goods (labor power and materials, or C) and that is transformed into C' that then will be exchanged for money (M'). In the accumulation economy, "the production activity is undertaken for the sole purpose of expanding the volume of the circuit by using the surplus to augment the initial stock. It is an activity driven by a relentless urge for accumulation and expansion" (Ibid. 2007:211). On the other hand, the informal or need economy has a distinct purpose: "Here the purpose of production is consumption for the satisfaction of need, although production and consumption are both mediated by the circuit of money. Production is undertaken with the goal of obtaining money to purchase a consumption basket, and the money obtained must also be enough to replace the initial stock so that the activity can be self-reproducing (Ibid. 2007:212)."

The circuit of need and accumulation appear on the surface as the same: money to purchase and produce commodities that are then sold to acquire more money and the circuit starts over again. Yet, Sanyal clarifies that the informal economy is directed at satisfaction of need, not accumulation. Many of the waste workers and traders engage in this circuit of money and commodities to meet needs, and with a few exceptions, they do not engage in the circuit of accumulation and its expansion. Moreover, one who works with waste also tends to be one who trades in waste. The distinction between need and accumulation is key because it differentiate the circuits, *internally,* through which waste circulates. These circuits of need and accumulation both ensure that waste, discarded as non-value, can be transformed and reincorporated into

capitalist production and value determination, and along the way, it presents possibilities for reproducing one's self and social relations for waste workers and traders within this economy. This chapter traces out how waste infrastructures circulate money and waste materials, something that highlights, first, how waste comes to be marketized and, second, how non-capital, both as that which is outside of value and exchanges of need, remain the internal other to capital.

INFRASTRUCTURES FOR MARKETS

Waste infrastructures, as I have described them in previous chapters, dispose of *and* circulate waste materials through an assemblage of things, persons, relations, words, and technology. The infrastructures I describe in this chapter are organized around circulation and have marketized waste within the informal economy, in which relations, forms of payments, and work materialize value in particular forms. Actors in these infrastructures performing actions (collecting, transporting, sorting, disassembling, weighing, processing) engage in (re)valuations and practices of evaluation such that material things labelled waste can move across regimes of value and reenter circuits of capitalist value determination. Infrastructures of circulation have the effect of marketizing waste.

Çalışkan and Callon define "markets as socio-technical arrangements or assemblages (*agencements*)" enabling the "conception, production, and circulation of goods" that bring together through technical, infrastructural, scientific, and other epistemological systems, and become a site of power and struggle over the relative worth of goods and persons (2010b:3; see also Çalışkan and Callon 2010a; Muniesa et al. 2007; Stark 2009; Boltanski and Thevenot

2006).[5] A crucial feature of markets is what they call economization, or the forms of knowledge (quite often, from disciplines of economics, sociology, and anthropology but also laypersons or market research firms) and technical interventions that make things, activities, behaviors, or affect into something labeled economic.[6] One "modality" of this economization is marketization. This is particularly relevant for waste in the informal economy. Plastic, paper, junk and scrap are not economic in any ontological sense. Indeed, discarded as no longer being of worth, waste must be brought back into the "pale of value" (Gidwani and Reddy 2011:1625). This chapter traces out the circulation of these materials to examine how materials things labeled waste move across regimes of value, markets, and governance in Pakistan and beyond. It argues that the economic *aspect* of waste is brought out through processes of marketization, in which waste infrastructures enabling circulation are instrumental. What are the infrastructures by which waste is brought back into circuits of capitalist production and value determination? How do these infrastructures enable the marketization of waste? And in what ways does that transformation of value become an enduring concern about the informal economy for those who seek to understand and harness its value?

Rather than reinscribe or dissolve the distinction between "global" and "local" markets, "the interaction between [*them*] is a relationship of derivation, not of encounter" (Çalışkan 2010:18). Through circulation, markets at different scales are enacted and materialized. The price of these materials is particularly important in this case because they are derived from global markets. Non-recycled plastics are derived from crude oil, which means the price of

[5] While I do not situate this chapter within the tradition known as economic anthropology, which is invested in the pioneering work of Malinwoski (1961), Mauss (2000), and to a lesser extent, Simmel (2011) that distingtuished between gift and commodity exchange, this line of thinking informs much of the analysis throughotu the chapter.
[6] This body of literature has not taken the insights from feminist scholars of labor that have actively engaged a similar question, specifically how does unwaged labor, existing on the peripheries of value, get brought into its domain, or become a site of capitalization, or the possibilities of imagining an outside of capital in contemporary economic forms (see Gibson-Graham 1996).

non-recycled and recycled pellets are pegged to the price of crude oil. Since pricing of crude oil is done in dollar, or what is called "petrodollars," the circulation of plastics I describe in this chapter, even if they move through highly localized relations, are derived from global markets for crude oil, plastics, and even dollars. Similarly, since 2003 the price of junk and scrap metals in Pakistan has been attached to the London Metal Exchange (LME) when these materials started to be exported to other countries, specifically the United Arab Emirates and China, and this has been the case with paper as well, which is pegged to the price of wood pulp as a commodity. The rates I highlight below, for instance, are calculated based on or derived from markets for commodities such as crude oil, metals, and wood pulp, and are used in the production of more commodities.

INTERMEDIARY ZONES OF CIRCULATION

Sorting, disassembly, and exchange of waste materials are part of an informal economy of recycling, in which waste is a potentially valuable resource to be recovered and circulated such that it can reenter production processes or be repurposed - in other words, waste materials remain open to revaluation as worth something else (see Reno 2009; Lane 2011; see also Alexander and Reno 2012). The series of relations through which waste materials circulates are instrumental to how value, *in different forms,* is captured, materialized, and realized as these materials moves across regimes of governance, markets, and value (see Lepwasky and Billah 2011; Lewpasky and Mather 2011; Herod et al. 2013; Gregson et al. 2010).[7] Circulation and revaluation are conducted through "brokered governance," in which intermediaries and trust are

[7] Scholarship done on global networks of recycling have sought to understand how waste in different forms (e.g. ships, secondhand clothing, or e-waste) circulate from points of consumption in more affluent countries (i.e. the Global North) to their points of destruction and disassembly in poorer countries (i.e. the Global South). It remains an open question of how much of this material will be utilized in production processes that returns these goods to affluent countries in Europe and North America, since regional dynamics are important, and these materials are put to use domestically or exported to regionally affluent countries such as China or Korea (see Gregson et al. 2015:162).

crucial to the flows of waste materials. Crang et al. state, “intermediaries bridge the societal embeddedness of local actors and the expertise needed for network embeddedness in global transactions” (2013: 22). In contemporary Pakistan, relations of brokerage are exemplified in intermediary figures such as the kabāṛī (junkyard owner) or bīopārī (middleman or broker), who I have elsewhere referred to as waste traders. These intermediary figures acquire materials from one direction to sell in the other direction.

ACCUMULATION AND DEBT

The moment of discard is formative for the circulation of waste that will ensue. As mentioned earlier, waste and sanitation workers, upon collecting waste from a “private” space, will separate trash (kachrā or koṛā) from that which is considered the profit, saving, remainder, surplus, gain, or excess (bachat). The former will be disposed of in containers, dumped in empty plots of land, or burnt in small piles while the latter will be taken elsewhere to accumulate. At that moment, an act of valuation takes place by which these materials remain open to possibly being worth something other than discard. The term bachat also has rich associations built within in it of not simply residual things but also, the reuse or repurposing of those things in unexpected, creative, productive, and thus potentially valuable ways. The series of relations, sorting and disassembly, and payments I examine in the following sections are the playing out of these possibilities. Bachat sheds light on how that which is not initially recognized as value (things, persons, activities) comes to take on value, and that tension between residual things and creative action, mere excess and potential worth is why this informal economy continually reappears as a domain of activity to be reckoned with for those who want to harness its potentiality. The potentiality of value is what makes these materials into something to be accumulated.

Manzoor had set aside a corner in a cluster of the five jhuggīān (see Figure 6) that made up the residence for accumulating, sorting, and disassembling waste materials that he collected from households in an upper middle-class locality in Lahore. These piles of waste contained all kinds of items: shopper bags, cardboard and paper, glass (kānch), PET bottles, plastic toys, copper wiring, nylon shoes and soiled clothing, shampoo bottles, and milk cartons. These materials had to prepared in some way (sāf karnā, lit. to clean) to ready them for the waste trader who would purchase them. Cartons used for packaging milk called by the English "milk pack, for instance, were burned so that only the aluminum lining on the inside would remain, which could then be amassed and sold forward. Many of the waste workers in this settlement also started off as paiṛī lagāne wale (hawkers). Ali Bhai, who is a bīopārī I introduce shortly, described paiṛī lagāne wale in the following way: "Some of them are going on bicycles. Women are carrying baskets on their heads. Others are going on a motorbike or a pickup truck. They go from village to village announcing themselves, and ask each and every home. Some have a tape recorder announcing what things they'll purchase." He mentioned that they come from a "class of poor people" (gharīb tabqe log), and this is their mazdūrī (labor). These paiṛī lagāne wale have different relations with junkyards - some are given advances to purchase materials while others work independently. Nearly all the waste workers in this settlement, not to mention sanitation workers and paiṛī lagāne wale, accumulate waste for periods of time such that it can be exchanged with junkyards.

Waste has liquidity. It becomes a store of monetary worth, where it can be held onto for periods of times and act as short-term savings. Waste workers can thus potentially exploit price fluctuations that frequently occur in this market. Usually when I would visit Manzoor, a group of workers would be there collecting plastics that had been collected by him or his brother,

who, as I mentioned in the introduction, had experienced some upward mobility and resided in a built structure nearby. Because of the growth of plastic commodities for consumption in Pakistan, plastics of different kinds was the most ubiquitous waste material that circulated in these jhuggīān and nearby junkyards. Manzoor and his brother sell their materials separately and adopt different strategies. As Manzoor has more financial difficulties than his brother, he

Figure 6: Inside of jhuggī with accumulated plastics

must sell part of his waste on a regular basis to cover everyday cost, such as food (both for his family and donkey) and fuel while holding onto others in anticipation of changes in the rate. Unlike his brother, who could hold onto the waste and sell them once the price shot upward, Manzoor was constrained in his ability to accumulate waste and strategically exploit these fluctuations in rate because he was indebted to a nearby junkyard.

Following the illness of his mother and returning to their village to care for her, Manzoor lost the area he collected waste from to someone else. Upon his return, those who had

taken control over this area had incurred a debt of nearly 100,000 PKR.[8] They no longer wanted to collect waste from this locality, so Manzoor took on their debt to the junkyard and received control over the area again – part of this process was attaining the letter legitimizing his presence described in chapter 2. So, once the area was transferred to him, so was the debt. This debt has only steadily increased over the years for a variety of reasons and further indebted him to the nearby junkyard to whom he sells his waste. Any waste that he gives this junkyard does not lower the debt he has incurred, though. The junkyard will give him a lower rate on his materials, that reduced rate acting almost as interest. Another waste worker residing in this settlement, Sadiq took on debt worth 35,000 PKR from his māmūn (mother's brother), specifically for acquiring a donkey cart - something crucial to waste disposal and circulation. In exchange for this, Sadiq had to give his māmūn the waste he collected. "My māmūn took 200 PKR as a weekly commission," Sadiq clarified, "This is why I stopped working with him" and started to give his waste to another junkyard owner Chaudhary Billah. By paying off the debt of 35,000 that Sadiq had, Chaudhary Billah receives those materials but takes a lower commission of 100 PKR, which is deducted from the total cost of the profit (bachat). None of the commission goes into reducing that debt however. It remains intact until the total can be paid off. Figures such as Chaudhary Billah are important ones, especially as they are the source of money through which waste materials circulate.

FIGURES OF TRADING

The kabāṛī is a well-known figure across Pakistan and South Asia. In the novel *Khudā Kī Bastī* by Shaukat Siddiqui, one of the main characters is a lecherous shop-owner named Niazi who buys and sells old and used items. At one point in the novel, Niazi convinces one of

[8] Approximately, $1,000 USD at the time fieldwork but taking into account inflation, this would have been a much greater debt when it was taken out about two decades ago.

his worker Nosha to steal a car part from the mechanic that he works with, and then visits Nosha's younger sister Sultana, with the pretense of checking in on their widowed mother. Niazi is a morally dubious character in this novel, especially with his attachment to greed incited by money and materials like used car parts that can be stolen and sold. The figure of the kabāṛī is bound up with their presence in a locality. Zubair's customers range from sanitation workers, janitors, and others who receive advances from him to bring him valuable waste to residents from the area who regularly came to him to sell plastics and papers for small amounts of cash. These junkyards are localized sites for the circulation of all kinds of persons, things, objects, and money that enact markets in a globalized economy.

In the early 1990s, Chaudhary Billah shifted from his brother's home in Icchra in Lahore to the area of Wahdat Rd., where these settlements of jhuggīān were being shifted at the time. Though he had much hatred for this work, Chaudhary Billah overcame any resistance he had upon a friend's encouragement and started the work of sorting and disassembly. After an initial stint in his friend's junkyard, he shifted to another in the area, where he remained for several years. Billah said to me one day, "I have not learned any other kind of work." This knowledge however allowed him to transition in his relation to this kind of work. Despite a failed attempt to open a factory (kārkhānah) that manufactures plastic pellets, Chaudhary Billah's position changed around this time from a waste worker to that of an intermediary. Because of an influx of money, he was becoming a wealthy figure (seṭh), and all he would do all day sit. Chaudhary Billah, though he still did the work of sorting and disassembly at times, had become a kabāṛī, buying from those who collect waste and selling to those who purchase it.

From waste workers in this settlement, Chaudhary Billah either purchases the entire sack of waste or specific items or, for those who are indebted to him, gives them their agreed

upon commission for the entirety of their profit. Chaudhary Billah prefers the materials be slightly sorted as that reduces the amount these materials that need to be "cleaned," or sorted, dissembled, and prepared in such a way that the bīopārī to which he supplies these materials finds them acceptable. Chaudhary Billah repeatedly emphasize that he must be aware of the materials being sold to him because there is a lot of cheating in Pakistan. For instance, sllers often put dirt in some plastics that are already of lower quality. If Chaudhary Billah purchases these materials and tries to sell them to a bīopārī, he will incur a loss, either because they will not be sold, or he will have to sell at a lower than expected rate.

Although Sadiq's estimates were slightly higher, Chaudhary Billah estimated that anywhere between 25 to 30 people are indebted to him in the way that Sadiq is. This debt comes to about 700,000 - 800,000 PKR and has accumulated over the years through lending small amounts to waste workers in this settlement. Chaudhary Billah described these waste workers as becoming his customers when they become indebted to him. The fact that Chaudhary Billah described waste workers as customers is significant. The figure of the kabāṛī is not one of brokerage as I explain in the case of the bīopārī. When a waste worker sells their waste to Chaudhary Billah, the latter is buying it from them. He is not arranging exchanges between two parties. These waste workers are his customers. They come to sell their materials to and/or take on debt from him because he is a source of liquidity in this area.

Chaudhary Billah himself is indebted larger junkyards or warehouses to whom he sells his goods, though his debt is fundamentally different. Chaudhary Billah admitted to having taken at least 200,000 PKR worth of debt from warehouse that he works with, and later on, working in a warehouse where some of Chaudhary Billah's goods arrive, I was informed that these warehouses give advances to junkyard owners such as Chaudhary Billah from whom they

receive these materials. These advances ensure specific kinds of materials will be supplied by the junkyard to the warehouse. Though there is always suspicion about adulterated or low-quality materials, advances introduce trust by creating indebtedness between junkyards and warehouses. Throughout these exchanges, waste materials are moved along the supply chain through a mixture of immediate and delayed payments, in which forms of indebtedness create relations of trust and suspicion across differently situated actors.

Let me pause to clarify how these relations as I have described them are situated within circulation in the informal economy, where circuits of need and unequal exchanges complement each other. Primitive accumulation, Sanyal recounts, involves the accumulation of money by merchants that is converted into capital (means of production), the making of "directs producers into free wage-laborers," and "[creation of] an external market for the product produced under the capitalist mode of production" (Sanyal 2007:114). Here, Sanyal uses his own inverted version M ~ C ~ M to represent the activity of the merchant. The merchant has initial money, procured through a variety of means, and uses this to purchase commodities that will then be sold at a higher than initial price to make profit. Sanyal explains the implications of this at some length to show that the profit of the merchant does not come from excess of labor being performed over and above necessary labor, as is the case with surplus value derived from capitalist production and accumulation, but "arises from unequal exchange exclusive in the sphere of circulation" (Sanyal 2007:116). Transforming the profit into capital, the merchant is then able to potentially penetrate the domain of production, something previously closed off to him as accumulation was done in the domain of circulation. This is not the case with many of these intermediary figures. They have not used their capital to penetrate the domain of production, which, in this instance, refers to the collection, sorting, and

disassembly of waste materials or the production of more commodities through the recycling of these materials. They remain in the intermediary zone of circulation, in which need, rather accumulation remains the circuit for these unequal exchanges.

Ali Bhai is a bīopārī who, along with his brothers, rents a one-room warehouse in Gujrat city.[9] Here, they collect and sort the paper waste or goods, they purchase from the surrounding area. The bīopārī is an important figure across these markets, whether for paper, plastic, or junk and scrap metal. A bīopārī is anyone that buys waste from one person to then sell to another, or a broker of exchange. In this instance, Ali Bhai sells the goods he purchases from approximately 52 junkyards in and around Gujrat city to a group of trustworthy bīopārīan in Lahore that then supply these materials to paper mills near Sheikupura. Ali Bhai has built up relations with junkyard owners and bīopārīan over several years in this market.

Ali Bhai was introduced to being a bīopārī through a person from his mohallah in Lahore whose family had been doing this work for the past 25 years. This person and Ali Bhai's brother put money in together while Ali Bhai worked with the person to get a basic understanding about being bīopārī. In the first few months, he neither knew anyone nor recognized the materials; "I had more losses than gains," Ali Bhai told me in our first interview. He would go to junkyards with money in his hand, ask what the rate was, and then try to purchase these materials. When he and his brothers first came to Gujrat, no one gave them goods. That is because all this depends upon the junkyard who sells him waste materials. "Look, if you go to buy goods from a junkyard owner and so do I, he can sell it to you or me or

[9] Gujrat is the capital city of Gujrat district and lies about 150 km almost directly north of Lahore. On the way to the city from Lahore, one passes through the core of the Punjab's agro-industrial landscape. It cuts through cities such as Gujranwala (a city I return to later in this chapter) and Sialkot, both of which are major centers of industrial production in Pakistan while a steady stream of fields makes evident the region's agricultural economy. Though not as populous as other cities in central Punjab, it is renowned for its electrical fans and furniture (see Anwar 2015:71).

both of us. It depends on him, not us." He continued, "But now, there are plenty of junkyards that sell only to us."

Following up on this, I asked, "Well, how did you get them to sell only to you?" It wasn't quite clear. Ali Bhai paused, thought on it momentarily. It had to do with personal characteristics. It was small things such as their style of speaking (bolne ka lehja) and method of working. These things potentially demonstrate honesty (āimāndārī) and allow trust (ā'tabār) to be built up, only then would can one person believe another (yaqīn ho gayā). "It's really just these things, what else is there?" But, I interjected, "what do you mean, style of speaking?" Slightly excited, Ali Bhai affirmed "Yes, exactly that point again! Just like now, you come to me, I speak with you with love (pyār) and respect ('zzat). I show you respect… Business doesn't run on cheating." Cheating does happen but rarely is it done knowingly, he continued, and then gave me the example of when he purchased goods from a nearby city. They weighed these goods at a much larger warehouse, with a weighing device that is used for several tons. The floor of this weighing device was not working properly. When they brought the goods to their warehouse and weighed it, they had received more goods than they had paid for. Ali Bhai then went back to this man and made up the difference. "This was honesty, that's all," Ali Bhai finished. Since then, this person sells his goods only to Ali Bhai. "When cheating does happen, which certainly does," Ali Bhai concluded, "you have to end up tolerating it."

Ali Bhai contacted bīopārīan to sell his goods to by going through paper mills. He would to go the mill and speak with the munshī. The munshī is the figure at the mill who makes receipts (parchī) for the goods that the bīopārī supplies. The munshī would give Ali Bhai the contact information for a bīopārī that he would then contact and start to work with. In the case of one bīopārī, with whom he has done exchanges worth several hundred thousand rupees,

neither of them has ever seen each other. They have only been in touch over the phone. Every two or three days, a bīopārī will get in touch with Ali Bhai on their own accord to ask if the goods have been collected, sorted, and are ready to be delivered. The goods will then be sent by consignment (biltī): it will reach the aḍḍah (station), where the bīopārī will have the truck of goods weighed, and then delivered to the mill. Once the goods are received by the mill, the bīopārī will deposit money into Ali Bhai's bank account.

When I asked him what he will do when payments are not made, he expressed helplessness: "What can I do? If I say anything, then we'll get into a fight. If the bīopārī gives money out of love (pyār se), then it's fine. Otherwise, we can't do anything." They have not entered into any legally-binding agreements. Ali Bhai affirmed, "They usually give us money on time, but even if they don't, it's not an issue. If money isn't received after a few days or even a few months, it's not an issue." Noticing my confusion, Ali Bhai clarified, "Look, the higher rate someone gives you, the longer it will take you to get the money […] That's what happened to us. We got a rate that was two or three rupees more than expected, and we haven't gotten paid in five months." So, while he has built up relations over several years, he must do much to maintain those relations, and that sometimes require incurring losses for periods of time.

Adeel is also a bīopārī but one who deals in scrap and junk metal in the Misri Shah area of Lahore.[10] His father and maternal grandfather owned a crockery shop (bartan ki dukān) in the Dharampura area of Lahore, and bought and sold old dishes, something that provided Adeel with knowledge about these materials and relations for their circulation. Adeel repeatedly

[10] Originally meant for labor migrating to the city who were finding employment in industries such as the railways in the first half of the twentieth century, Misri Shah has become a major hub of the junk and scrap metal market in Pakistan. Materials arrive here from across the country and abroad and depart on their way to other areas of Lahore, Pakistan, and foreign countries to be reused for a variety of purposes.

stressed that he has only been able to become a bīopārī because the connections that his father and grandfather had created. Though one of the bīopārīan was his māmūn, which makes Adeel more willing to give advances for goods, the majority of bīopārīan are non-kin who he has sedimented relations with over several years or others who he has recently started working with.

Adeel often said that bīopārīan are not strangers (ajnabī) but acquaintances (wāqif). They are relations that are formed around brokerage, in which materials and money are exchanged but also enlist certain moral demands on persons. One afternoon, in his refitted passenger van on the way to Darogahwala (another industrial area of Lahore), he asked me about my research, and what field my Ph.D. was in. I told him it was anthropology (ilm-e-bashrīāt). Confused, I explained that it was the study of culture (shaqāfat) or societal relations (samājī t'luqāt). Adeel grabbed on this point about societal relations, as he had mentioned it himself before. He stressed that making a relation is not difficult; the difficulty lies in maintaining them. As was the case with Ali Bhai, trust was cited as a major component of maintaining relations, emphasized relations are broken through cheating (dhokā se toṛ jate), and then described three methods by which that can happen. The first is through the exchange of money or give and take (lain-dain). In exchanges when one breaks one's promises (v'dah khilafīāt), this reduces and diminishes trust and weakens the relation (t'luqāt men kamī ātī hai). The second method by which relations are broken are when more money than is necessary is taken for doing something. When someone has another person do something for them, especially the case with governmental departments, a dhokā occurs when more than is required is taken for doing that task. Adeel mentioned this in the context of sifārish, which is one way of saying giving a bribe for favors but generally, when the intercession of someone is needed to

perform governmental work. And the last technique by which relations are weakened when one reacts poorly or wrongly to what another is saying (kīssī kī bāt se ghalat react karte). According to Adeel, all of these disturb and deteriorate societal relations (samājī t'luqāt kharāb ho jāte hain).

While trust, belief, and other personal traits are important to building and maintaining relations, these relations are meant to circulate waste and money. On one of our rounds to purchase junk and scrap metals, we visited a bīopārī from whom Adeel was supposed to purchase copper. When we did not purchase any, Adeel told me, "We had made a verbal agreement that night over the phone (rāt ko saudā zabān se ṭe huā thā)." The bīopārī then called him again in the morning to ask when he would come. He even told him to transfer the money into his bank account, so that he could hold onto the goods. We did not make it to the bīopārī until well after 3:00 pm, by which time he had already sold the goods to someone else as he needed the money. That is when Adeel returned to the point that many others often returned to: the most powerful and important thing in these exchanges is money. Whoever has money will it get it to whoever needs it, and that is the nature of these relations. The actions of this bīopārī did not undo those relations of trust. Adeel shrugged and said it was perfectly reasonable (m'qūl) for him to sell to someone else even if they had an agreement.

The kabāṛī and the bīopārī are both intermediary figures within waste infrastructures that ensure the circulation of waste and money, such that these materials can be exchanged on the market and reincorporated into circuits of capitalist value determination. Though they converge in that respect, they diverge in others. The kabāṛī is a figure that exchanges these materials for money. Though they sell them forward, they are not acting as brokers between two parties. The kabāṛī exists as long as the relation of purchasing and selling does. A

particular kabāṛī can also become a bīopārī. Once a kabāṛī acts as a broker, they transition into the role of a bīopārī. Bīopārī is thus a relational category of actor that one inhabits through entering relations of brokered exchange. The bīopārī endures only insofar as the relation of brokerage does. These relations create forms of indebtedness, must be built up and maintained over time, and demand trust, forbearance, and restraint. These exchanges are also unequal ones that entail differential access to knowledge and information of rates.

UNEQUAL RATES OF EXCHANGES

Sorted and disassembled waste is the "value-added good" that is being sold on this market. By buying materials that are not sorted or disassembled (mixed goods) at a base rate, intermediary figures sell the sorted materials at a variety of rates. Intermediaries exercise an important "role in the construction of market information because key to their social practices is that they broker these categories between other agents" (Beuving 2013:4). When intermediaries are out looking for goods to purchase, they will look for mixed goods that seem to have high quality materials in them. As should be evident, this is not always clear, so there is plenty of negotiations that go on during these exchanges, especially around information and knowledge of rates and materials. The identity of materials, as I show in the next section, requires much effort to clarify, so a degree of uncertainty or ambiguity is built into these zones of circulation, something that intermediaries will negotiate and exploit in their search for marginal gains. Even if a kabāṛī or bīopārī buys completely sorted materials, which they do at times, profit materializes from the minimal difference in the rate materials are bought and sold at. For instance, if the going rate for a particular kind of copper was in the range of 550 PKR per kilo, which it hovered around during my fieldwork, the bīopārī, who is supplying them to a factory, will buy these materials at 540 PKR per kilo from Adeel while the latter will have

purchased them at around 530 PKR per kilo. The bīopārī will make profit by setting the rate slightly higher with the factory to which he supplies materials. Unequal exchanges are elementary to way in which waste materials circulate through a series of relations within waste infrastructures in Pakistan. The work of sorting and disassembly, which is a form of production, facilities their circulation, and knowledge of rates are distributed in similarly uneven ways across actors involved in this series of exchanges, such that marginal gains can be made on waste at each level.

The closer one gets to a factory, mill, or plant, knowledge about the rates becomes well-established. In an interview with a bīopārī in Gujranwala,[11] he pulled out his smartphone to show me the rates of various metals on the London Metal Exchange (LME), and at other times, in Adeel's shop, bīopārīan who purchased his goods would check their own cell phone on which they would receive updates about rates on the LME via SMS message. The introduction of technology such as mobile and smart phones has given bīopārīan access to the rates on the global market that can then be used to negotiate in their exchange practices. That same bīopārī mentioned that this has reoriented this market by allowing anyone to contact traders in Gujranwala to check in on the rate of metals to then adjust their prices. Technological shifts, especially around transportation, has also meant that bīopārīan can increasingly come to Gujranwala to sell their own goods, as opposed to those in Gujranwala going elsewhere to purchase the materials that they need. A global market for junk and scrap has to a certain extent standardized much of the rates and dispersed knowledge about them in the market, which also shapes the sorting, disassembly, and exchanges that ensure.

[11] Gujranwala is an industrial hub for the Punjab, contains one of Pakistan's largest dry ports, and is the place that these materials are exported to foreign markets, especially China. The city has become a major destination for these materials coming from across Pakistan.

Nevertheless, knowledge about rates are dispersed within these intermediary zones of circulation. The kabāṛī has contact with a bīopārī such as Adeel or Ali Bhai, so has partial knowledge about the standard rate being offered in local and global markets. Those below the kabāṛī, or those who collect these materials (waste workers, paiṛī lagāne wale, and sanitation workers), do not have relations with a bīopārī and thus have limited knowledge about the rate being offered in these markets. At this level of circulation, not much is known, in the words of Adeel. As one moves away from the bīopārīan and their factories, knowledge and information about materials and rates is limited and fragmented. This knowledge and information however does *not* take on significance because these materials at initial points of exchange are not being sorted to be resold; they are simply gathered and then sold. Thus, sorting is knowledge about the materials themselves and their rates on local and global markets. This knowledge takes on significance for those who are placed in the middle of circulation, moving along these materials through exchanges. This is because, in this intermediary zone of circulation, sorting as work or labor is utilized to recognize qualities within these materials, identify its type, and thus potentially materialize profit through marginal gains on exchange.

IDENTIFYING MATERIALS: ORIGINS, QUALITIES, WORDS

Innumerable kinds of metals move through Adeel's shop in Misri Shah, the most ubiquitous being various types of copper (see Figure 7). Indeed, copper became a material I grew accustomed to seeing and touching. The copper pipes, wiring, parts, and any number of other forms that arrived here were from a variety of sources – one of the most common being public utilities such as Water and Power Development Agency, Sui Gas, Pakistan Telecommunications Company Limited, Lahore Electricity Supply Company, and Water and Sanitation Agency. Public utilities utilize large amounts of copper in their infrastructures, so

rumors about illicit exchanges regularly circulated. The most common story being public officials receiving kickbacks for supplying junk or scrap to dealers in Misri Shah. When I asked Zubair who sorted and dissembled for Adeel, why copper was so ubiquitous, he responded in a matter-of-fact tone, “copper can bear and control the load of electricity.” The ubiquity of copper was because of its prevalent usage in things, objects, and commodities of all kinds to conduct electricity.

As should be clear by now, sorting and disassembly go hand in hand with trading. While Adeel traded, Zubair sorted and disassembled. One of the first things that Zubair taught me was that you can tell the kind of copper by its break. At first, I thought this meant how easy or difficulty the copper is to break or snap will tell you the kind of copper it is, as this is the case with plastics. Then, Zubair showed me what he meant exactly by the break. He took wire cutters and snapped the copper wiring to reveal a brighter inner portion. If the copper on the inside is red, then this would be valā’ītī (foreign) and purer - Zubair would call it 99.99%.

Figure 7: Shavings of different types of metals (copper, brass, and silver)

If the copper on the inside was yellow, then it was desī (local) and was impure or mixed - no exact number was given by Zubair. In other instance, Zubair put a piece of desī māl next to one

of valā'ītī māl to show me a slight difference. This piece of desī māl had coloring (rangat) of brass mixed into it, which made it closer to the reddish-orange color of copper we usually imagine, but when set aside a piece of valā'ītī māl, it was not nearly as sharp red (surkh). Noticing the recognition on my face, Zubair said, "this makes the coloring nice and changes its quality." In addition to these valā'ītī and desī copper, a third category was russa, which was used for telephone wiring and thick cables for factories, is soft and heavy, and was also 99% pure in his words. Russa copper can bear a larger electrical load and mitigates the risk of burnt wiring.

In the act of sorting and disassembly, metals would be cut to inspect the inside, scratched to reveal the actual coloring of the metal, cleaned to remove any dirt that had built up on the materials, or heated to detach one metal from another. These were all techniques for getting at the identity of a particular thing. In addition to sorting and disassembly, extra effort was necessary to prepare these materials such that they could be exchanged, and potential profit be made. Once, when they had acquired copper rods used in mobile phone towers, Adeel spent most of the day trying to figure out if it made sense for them to process them. Since there were two layers of copper - on the inside was a thin copper rod that was insulated with foam and surrounded by a thicker, ribbed rod - Adeel had Zubair weigh the rods, then burn a few of them to remove the foam on the inside, and finally weigh them again. This would give them sense of how much weight they had and whether it made sense for him to hire workers on diharī (daily wages) to prepare the copper for being sold to the bīopārī. They were willing to hire labor and reduce the weight because these rods were valā'ītī māl and would fetch a good rate. They needed to be careful however since direct fire would burn the copper, removing the varnish, changing the color, or making it brittle and frayed. Even if copper was foreign and of high

quality, mistreating the materials could move it from the category of valā'ītī to desī, reducing the rate at which it could be sold and potential profit through exchange.

Quite often, I would hear Adeel or Zubair state, "this bīopārī takes away the lightest goods." Lightness (halkā) was one of the primary qualities through which different kinds of coppers were recognized, not to mention other metals. For instance, lightness was often used to describe soft (naram) silver or aluminum that had a flexibility about it. Its rate during my fieldwork was 175 PKR per kilo while the rate of hard silver is 140 PKR per kilo. Thus, weight or density was the evaluative criteria for this material and connected to other ones such as flexibility and coloring. These qualities were pegged to rates for specific types of metals that are needed in the production of more goods. As is the case with other materials, these evaluative criteria established the material's monetary worth alongside its physical properties. The break, color, density and weight are all properties of these materials that are arrived at in the process of sorting and disassembly. These are organized through the properties of materials themselves, the uses to which they are put, and the exchanges through which they circulate.

A bīopārī who was passing through the shop and buying some items, commented to not put less valuable items in the bag since "my reputation will be dirtied." Here, reputation is about his status as a good bīopārī. The bīopārī was voicing a basic feature of the relations through which these sorted materials flow: they needed to be a certain kind because that is what the factory demands for the production process. If the bīopārī is purchasing high-quality and foreign copper and some lead or zinc is found in these goods later (either as items themselves or attached to copper), this will be useless for the factory, which will remove its weight from the goods they are purchasing and a loss will be incurred by the bīopārī. Maintaining those

relations requires that materials are sorted properly. In other words, the quality of these materials is connected to the quality of persons and relations by which they move and circulate.

Similar to Adeel, Ali Bhai brings back to his warehouse mixed goods (darā māl at the rate of 18 - 21 PKR) that contains mainly the following kinds of paper: kitāb (books, 18-19 PKR), ākhbār (newspaper, 15-16 PKR), boxboard/title (cardboard, 13-15 PKR), copy notebook (notebooks, 30 - 33 PKR), parchā (23 - 24 PKR). He will lose a few rupees per kilogram on cheaper items (ākhbār, boxboard, and possibly, kitāb) and make profit on copy notebook and parchā. Ali Bhai said on multiple occasions that copy notebooks is where most of the profit is made. The source of copy notebooks is mainly from the notebooks used in schools, which means they are most abundant in cities across the country. Copy notebooks are less common in cities in Balochistan and Sindh while kitāb is lesscommon because there are fewer schools there. Ali Bhai unequivocally stated, “Goods come from Sindh too but we don’t buy Sindhi goods.” When I asked why, he responded, “It has more worthless trash (kachrā).” The same goes for goods from Quetta. These statements make clear how geographies of development, inequalities, and lifestyle are reflected in waste from different regions across Pakistan. The differentiation in newspapers is especially noteworthy since the quality of paper and its language are connected. English newspapers use higher quality paper than Urdu newspapers, which is then reflected in their price, socioeconomic class of their readership, and educational background. Social differentiations are thus dispersed in differentiations in waste.

The weight of the paper is important: the heavier the paper, the higher the quality. This weight ranges from 50 to 80 grams depending on the quality of the paper. Generally speaking, paper that is light (halkā) or thin (bārīk) is of lower quality. Ali Bhai demonstrated these differences by tearing a sheet that gave resistance. Then, he tore another one that gave no

resistance. He had me listen to the sound of the tear to hear that resistance. Then, he made me feel the paper: it was rough, meaning it was lower quality, and it had a higher ratio of recycled paper to pulp. This paper was made of a mix of recyclables and pulp and was not of an even texture or color. Ali Bhai pointed out spots or stains (dāgh) on the paper. He put the paper up to the light, showing me how the sun shone through and revealed the uneven yellow texture: it was not as smooth as the "pure white" paper. This is the paper that the GoP uses in its school exams, and its texture comes from a mix of pulp and straw of wheat.

On another occasion, Ali Bhai and I sat in the back of my car after I had returned from a trip to the United States during fieldwork. During that time, I picked up a few books to read. Ali Bhai grabbed one such book, which was a recently published ethnographic text, and after briefly explaining the basic premise of the book to him, we started talking about the materiality of the paper that composed the book. This paper was not available in Pakistan, Ali Bhai said. It would fetch only 18 PKR per kilo despite being of high quality. This low rate was because there was no demand for this paper, not about the quality of paper. No one was willing to purchase it. It has been treated with minimal amounts of chemicals, Ali Bhai told me. The paper in my notebook, also purchased in the United States, was one of the most valuable and demanded papers in Pakistan. Ali Bhai pointed out that the paper I was writing on at the time was "pure white," which was made of paper manufactured by Clairefontaine. This paper is made of entirely pulp, had chemical treatment, and has no recycled paper in it. He said there is pleasure in writing on this paper (likhne kā mazah). Ali Bhai ripped a small piece of the notebook's paper, which did not reveal any fuzzy texture when ripped. Finally, Ali Bhai grabbed a journal I had been given as a gift many years ago, and described it as being bleached

card and having lamination, or plastic infused into the paper to add thickness. This gets one of the highest rates however, approximately 150 PKR per kilo, and is used in wedding cards.

The warehouse to which Chaudhary Billah supplied his plastic goods was placed strategically near this settlement jhuggīān. Being further along the supply chain, this warehouse supplied a variety of plastics to industrial units that manufactured pellets, which were subsequently sold to manufactures of plastic commodities. At the base of a mountain of mixed plastic trash (Figure 8), a group of kin and non-kin workers sat on plastic stools and as items tumbled down, tapped pieces against the ground once or twice, listening to the sound and then either place the item in its respective bin or pass it down the line. There were mainly three categories of plastic: poly, hard, and lota. Lota made a deep, flat sound when struck against the ground while hard made a sharp, piercing sound. Hard reverberated like shutters being lowered and clanking against one another, having almost a metal-like quality. Poly produced a sound located somewhere between the two; similar to lota its sound was quiet but audible with little to no reverberation. This tapping was a technique for sorting by which they were able to discern differences in plastics' physical qualities.

One afternoon in this warehouse, Javaid, the youngest brother working on the disassembly line, pulled out a piece of plastic that he called hard māl. Hard māl, already mentioned earlier, is a category that was commonly used by workers and traders alike to refer to the lowest grade of plastic. Javaid snapped this particular piece in half to show me the bubbles on the inside. He then clarified, "This is Chinese-made goods (China kā banā huā māl) and it also contains calcium." This plastic had a brittleness about it. Unlike some of the other plastics that bend without tearing or snapping, this plastic broke in half, like hardened Styrofoam, with little to no force or effort. It would not be able to bear much of a load in use.

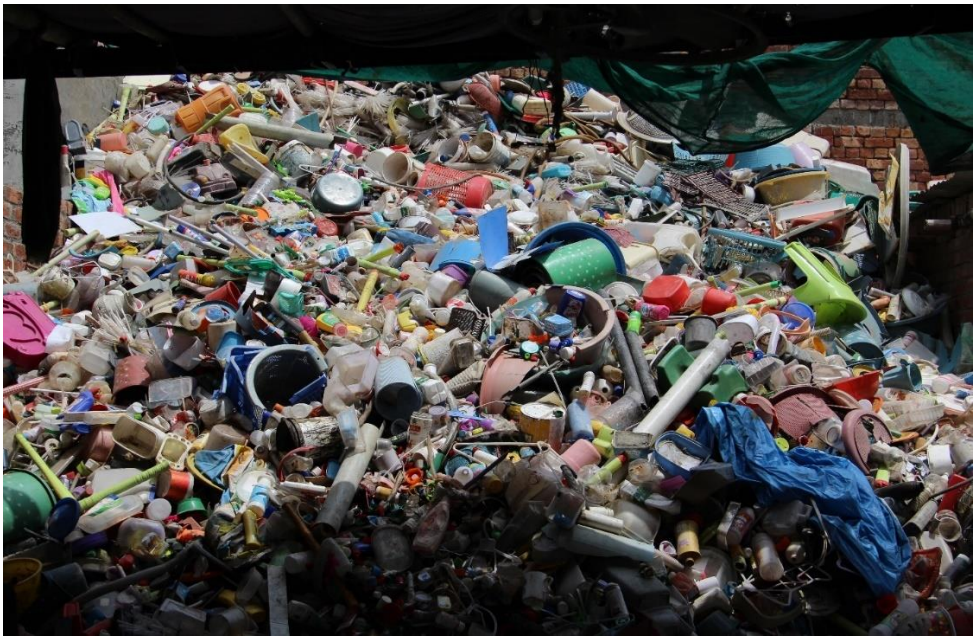

Figure 8: Unsorted plastic in warehouse near settlements of jhuggīān.

He then brought my attention to another plastic. This one looked as if it had dirt on it, but Javaid clarified that the material itself was deteriorating – the physical qualities of the plastic were changing. In fact, both could easily be considered trash.

Plastics also have certain molecular properties as polymers, so only plastics very similar in molecular composition can be blended when heated. Akin to recycled paper, the melting involved in remaking plastics changes its molecular properties such that the materials become harder and less flexible, something that will be evaluated as being lower quality. If plastics are not sorted properly, the different polymers will not bind seamlessly, making the resulting product brittle and cracked. In other words, plastics (and paper) can only be recycled so many times before they reach their "end of life." This is different from junk and scrap metal or even glass, where impurities can be easily removed when the metals are heated and before being placed into the mold and have a much longer life. This trash was not yet non-recoverable or end of life, as Javaid was still handling it; rather, it is simply those materials that have deteriorated

in their physical qualities and waste workers are less willing to sort through them because of the extra effort and low prices.

Later in an interview, the head of procurement for a manufacturer of plastic furniture informed me that both pellets made outside the country (valā'ītī māl) and those made of local plastics (desī māl) were utilized in making plastic furniture. Desī māl, in particular, lowers production costs while at the same time, due to its low elasticity and flexibility, adds the necessary rigidity and stiffness to these items. To emphasize this point, the head of procurement took the plastic pellets of valā'ītī māl used in their molds and chewed on it. The relative ease by which he could flatten the pellet with his teeth demonstrated its higher ductility and malleability relative to desī māl. When recycled multiple times different polymers become mixed, shaping the resulting materials' elasticity, softness, and malleability.

These categories for waste materials have textural, aural, and even olfactory qualities (recall the plastic that when snapped releases rose-like fragrances) that are evaluated as relationally different. These evaluations are practices by which potentiality is recognized and realized in these materials, such that they can then circulate through monetary transactions. These evaluations are thus constitutive of marketizing waste, as the economic aspect of these materials become discernible and are distilled out through sorting and disassembly. Before I proceed to the next section when I clarify the forms of payments by which this happens in the informal economy, let me make one important distinction between money and value.

In the informal economy, money in different forms is the dominant form of value and the standard against which these materials are evaluated and exchanged (see Turner 2008:49-50). Money does not *just* express the value of these qualities in a form of a price or rate; it partakes in process of commensuration. The sorting and disassembly as I have described them

thus far, are evaluative practices that are constantly being performed to establish a series of equivalences between money (price or rate), object (waste), type (physical qualities), and categories. This commensuration takes into account how materials that have undergone changes in their physical qualities are evaluated as lower grade and often given the label of being local - this also fixes their price at a lower rate. These categories – foreign goods, local goods, Chinese goods, English newspapers (āngrezī ākhbār), pure white – exist alongside a scale of nominalization that speak to their historical arrival, are connected to changes in the global economy, reflect geographies of uneven development and social differentiation, and attach relative quality to presumed origin (see Guyer 2004:83-94). Evaluative practices recognize the abstract qualities of objects not simply as present in the waste material but as having a particular use- and exchange-value with potential to be realized at some later point - for instance, in the purchasing and consumption of plastic commodities such as a chair by consumers. While the object themselves have potentiality, the money for which they are exchanged allowed waste workers, junkyard owners, and bīopārīan to make a life possible in a rapidly and unequally urbanizing landscape like Lahore. Those uneven exchange are directed, as I have mentioned, at circuits of need that make up the informal economy. These evaluations do not do away with other qualities such as stickiness, putridness, and fetidness that devalue waste and justify the treatment of the subaltern groups that perform the infrastructural work of waste disposal and circulation. They simply open one possible evaluative relation to waste, which is crucial to how waste workers, kabāṛīan, and bīopārīan access value, perform their infrastructural work of carrying away discards, and circulate them as objects. As these materials circulate and re-enter the domain of production, their value will also be accessed,

captured, and materialized in the form of more commodities for consumption, and thus, this need economy is embedded within circuits of accumulation.

FORMS OF PAYMENT

Sitting in the back office of a warehouse for junk and scrap metal in Gujranwala, a relative of mine who is a businessman in the city arranged a meeting with Babar Anwar. Before discussing all the changes that have impacted his business, Babar began our conversation by stating, "The first thing you need to be successful in this business is money." Almost everyone I had done fieldwork with had made some version of this statement. You need an initial amount of money, or capital, to enter these markets, and you need to ensure that money is always accessible. Money remains accessible and kept in circulation through payments. Bill Maurer describes payment as "*the act and infrastructure of value transfer*, not the creation of that value itself, or even the value of that value. Payment is orthogonal to exchange. To put it in other terms: there may be a pyramid of money, but there is scaffolding and infrastructure extending from each level of the pyramid outwards and inwards, holding it up" (Maurer 2012:19). Payment in a variety of forms becomes the vehicle for transfer of a particular form of value, specifically its money-form. Moreover, payment is orthogonal to exchange in the sense that many things, persons, work, infrastructures, technologies, and organized collective action go into making that exchange happen by transferring value in the form of a payment.

Ali Bhai purchases waste materials by paying in cash (naqad) or credit, debt, or advance (udhār). When goods are being bought and sold, Ali Bhai purchases twice the amount of goods he has money for, making up the rest through credit. Ali Bhai often expressed hesitation and suspicion about taking on debt, paying with credit, or taking an advance because of the obligation to repay in time, especially if an unexpected fall in rates holds this all up. At the

same time, junkyards push him to purchase on credit because they want to keep the materials they acquire in motion. According to Ali Bhai, they say, “If you don’t have money, you can pay after a few days. No worries, pay whenever you get the money.” If the mill to which the bīopārī supplies paper waste decides they do not need any for a period (demand drops), there is greater amount of waste on the market (supply is high) and the rate falls, which means no one wants to or can sell their waste. All of this will delay the rate of payment in the market. This was exactly the situation that Ali Bhai found himself throughout the time of my fieldwork: he was sitting on several tons of waste, worth several hundred thousand rupees, and could not pay the junkyard owners for their waste because he had not received payments from bīopārīan while continuing to take on further debt as junkyards pushed more of their goods on him.

Just a month or two before I had met him, Ali Bhai had purchased 9,500 kgs of copy notebook (one of the more expensive items I described earlier). The rate at which Ali Bhai was expected to sell this waste was 35 PKR per kilo, which meant he would get 335,500 PKR from the bīopārī. But the rate the bīopārī was giving was 24.5 PKR per kilo, bringing the expected total down to 237,500 PKR. On top of that, Ali Bhai had to pay a transportation cost of 1 PKR per kilo, and the bīopārī was not going to give him the entire amount immediately, probably around 50,000 - 100,000 PKR and the rest at a later point. In another case, Ali Bhai had given 500,000 PKR worth of goods to a bīopārī, but the check he was given in return was not being cashed because the bīopārī was not being paid by the mill. Paper mills extend lines of credit to bīopārīan in exchange for the waste they deliver. It is this line of credit that the bīopārī, attached to the mill, will use to purchase materials from bīopārīan such as Ali Bhai, who was purchasing waste materials by accumulating debt from junkyard owners. Mill owners receives advances from paper wholesalers in exchange for the paper product. This advance allays some

of the mill's operating costs while ensuring that the paper will be given to wholesalers. The wholesaler's advance is like putting in an order for a certain amount of paper that they will then provide to publishers (of books mainly), printers (everything from cards to advertisements), copy-makers (school notebooks), and retailers. This was the chain of payments that needed to happen such that Ali Bhai can make the payments that he needs to. But this being held up was causing his margin of profit to fall. All he could hope for was that he could get *enough* from the bīopārīan to keep junkyard owners comfortable such that they do not lose trust in him to eventually make payment in full. Udhār, as a form of payment, thus has delay built into its very expectation, one that dovetails with the way in which materials and money circulate within this market.

Unlike Ali Bhai who was under the constant duress of non-payment, payment was not of concern to Adeel. He received and made payments with regularity. This is not to say he had no financial difficulties. When a horse became unhinged and the cart came crashing down on Adeel's refitted passenger van, he asked me to make a 100,000 PKR investment in his business to allay some of the costs of repairs. Politely explaining to him the nature of research ethics, I gave Adeel 12,000 PKR to allay some of the costs. In our exchange, payment took the form of cash, but it was the ubiquity of the check form that was most pronounced in markets for junk and scrap.

On our way to Daroghawala to purchase junk and scrap metals, Adeel would stop by one of the multiple banks he had an account in to deposit and/or transfer money. Adeel received payments for the goods he provided to factories through a mix of cash and checks. He gave me the example that if a payment was for 520,000 PKR, the factory or bīopārī will give him 20,000 PKR in cash immediately and then the remaining 500,000 PKR on udhār. This

means that the factory will manufacture whatever item it needs to, sell it to the wholesalers and receive that payment, and then, the payment would be made to Adeel in the form of a check. Adeel himself makes payments to those he purchases from in the form of cash and checks. Even though Adeel told me that udhār does not work in this market because the materials are expensive (the rates for most metals far exceed those of paper or plastic), it was quite clear that Adeel bought and sold these materials with the expectation of delayed payment or a later resettling of accounts.

When I asked him why he had so many checks, Adeel describe some of the ways in which checks are used in the act of payment. It was common to give and receive what were called "self checks" and "open checks." The self check would have the name of the person for whom the payment was meant while an open check had no name but simply an amount and signature of the payer. Adeel would take open checks of a certain amount given to him, pass them to another bīopārī he was purchasing materials from, and then make up any balance in cash or another check. Whichever account the money was coming from did not matter to Adeel or others; all that matter was that the payment was processed, and money and waste remained in circulation.

The other kind of payment was a "cross check," which had two parallel diagonal lines on the upper left corner of a check. A cross check transfers money directly from one account to another but cannot be cashed themselves. Babar Anwar expanded upon cross checks. Prior to the government of Shaukat Aziz, there was a .3% tax on any check above 25,000, and the rate for any amount above 50,0000 had increased at that time to .6%. Doing a cross check avoids any payment of tax because the transfer is done between accounts within one bank. As we had this conversation, a bīopārī arrived to Babar Anwar's warehouse and asked the owner why a

check he was given would not deposit. Babar Anwar opened the desk of his drawer and pulled out a stack that contained checks from what seemed like every bank in Pakistan. As he wrote another check from a different bank account for the bīopārī, I asked him about why he had so many checks. Babar Anwar paused, looked at a relative of mine who brought me there, and asked if I was going to note this. I realized the sensitivity of the question that I had asked, especially since most of these establishment are not registered with the Tax and Excise Department, and told him to ignore that question. During my fieldwork these forms of payment were coming under threat by the extension of withholding tax on banking transactions. This withholding tax applied to withdrawals and payments more than 50,000 PKR through all financial instruments or account-to-account payments. This extension of withholding tax also doubled the percentage tax from .3% to .6%. The cross check was one technique for avoiding and manipulating the infrastructure around value transfer. Rather than a percentage of the transfer going into the public exchequer, this would be kept in circulation in the informal economy. This circulation is what is normally described as "black money" but are what enable the circulation of waste and money within its circuits. By ensuring that those materials, whether plastics, paper, or junk and scrap metal, return to the domain of production, these intermediary figures utilize various forms of payment to ensure circulation while also making marginal gain that are directed at need *and* accumulation.

CONCLUSION

A study on the informal economy around waste in Pakistan concludes the "actual economic potential [of the informal sector] is more than generally realized" (Majeed et al. 2016:693).[12] Recognizing that "money is a living wage for many deprived people," the authors

[12] For instance, this study estimates the economic contribution of the informal sector in a smaller urban center such as Bahawalpur to be $6 million USD per year.

holds that "recovery can be enhanced if the process is adopted formally," and "advancements in waste management practices" can be enhanced through "formal-informal waste management sector alliance" (Ibid. 2016:693). What is being presented by these authors is different from privatization of solid waste management I described in the previous chapter. In that public-private partnership, waste disposal services were being transformed as a public good, in which an elaborate public-private partnership was imagined and materialized to rework that good for the public. Here, the services of waste disposal and management are connected to the recovery and recycling of waste materials as a resource. As I mentioned in the previous chapter, the Company has entertained possibilities of how to get more involved in the recycling sector, specifically by setting up Materials Recovery Facilities that would acquire waste materials from waste workers such as Allah Ditta, Manzoor, and others I have spoken of throughout this dissertation. Interventions and schemas that are meant to transition the informal sector to a formal one reproduces the marginality and abjection that many of these waste workers experience by prioritizing a bourgeois environmentalism and technical solutions to improving solid waste management practices (see Reddy 2015). Those who imagine these interventions are unable to see how those things, persons, activities, and places cast outside the domain of value remain essential to the reproduction of social, political, and economic life in contemporary Pakistan. The informal economy remains a site of potential value because it continually is cast outside its domain, such that it can then be reincorporated in denigrated ways, and therein lies its political stakes.

Even if the authors of this study and Company officials are dealing with different objects (i.e. waste itself as opposed to services around it), they continue to return to informality as a site for the capture, materialization, realization, and accumulation of value. In circuits I

traced at the beginning of this paper, the desire motivating these studies and interventions is to expand the circuit of accumulation, not the meeting of need. On the other hand, much of the work, relations, and forms of payment I described throughout the course of this chapter, are directed at meeting need. Such statements should not be taken as a defense of the informal economy, as a site of possibility and freedom outside coercive state power since the informal sector is itself fraught with relations of inequality and dominance. Rather, it is a statement of the fact that many of those involved in the informal economy, especially waste workers, sanitation workers, and paiṛī lagāne wale, are not engaging in circulation to accumulate but to meet needs. Yet, that circuit of need is embedded within another, that of accumulation. This chapter has first demonstrated how the domain of non-capital (things, persons, activities, and places) are embedded within and essential to the reproduction of capital, especially accumulation, production, and value determination through the commodity form.

Second, this chapter should make clear how infrastructures have come to be organized to marketize waste, or how its economic aspects come to be distilled out such that value can be realized in different forms. The notion of bachat as the creative, unexpected, and productive use of remaining things should shed light on both that potentiality of these materials and the way in which infrastructures for marketization have come to be organized in ad hoc and contingent ways – features that recall the notion of bricolage (see e.g. Jauregui 2014; see also Levi-Straus 1996). Those who collect these materials (waste workers, sanitation workers, and paiṛī lagāne wale) have situated themselves within these infrastructures for marketizing waste and circulating value. Yet, so have a whole host of other actors such as kabāṛīan and bīopārīan that facilitate this process through building and maintaining relations, knowledge of rates and materials, access to money, and forms of payment. Even if there is considerable cooperation

across these actors, there remains a tension between circuits of need and those of accumulation, which is one site upon which inequalities are reproduced.

Conclusion

In October 2017 I returned to Rameez's home. Two years ago, the alley was made of uneven dirt and rocks. Now it had been flattened and the lanes were made pakkā. Rameez and his family previously lived in a one-floor house with only two rooms: a living room in the front and bedroom in the back. The first floor had since then been reorganized into multiple rooms, and a heavier gate had been installed to make the house more secure. The most remarkable addition however was an entire second floor under construction.

Rameez and I walked up recently finished cement stairs and sat on a charpoy in one of the two rooms on this second floor. We were surrounded by construction materials strewn about, one or two fans not being used, and two men who were finishing another flight of stairs leading to the roof. Rameez brought over one of the men, who was much older, and introduced him to me: it was his father. Though Rameez earlier told me that, for part of his life, his father worked on households as a mistrī,[1] this impromptu meeting presented me with an opportunity to ask his father directly about his own past: the village where he was born, his migration to the city, and finding different kinds of employment. Rameez, his father, and I then talked about building up Rameez's home. As Rameez gets a lump sum of money - for instance, through a rotating credit system called "committee" in Pakistan - he will buy materials for an extension to the house, which will be built by his father, along with someone from the area they pay on daily wages (diharī).

After having a cup of chai and speaking a bit more, we went back downstairs and sat on a mattress in the back bedroom. By then his son Waseem had joined us. I had met Waseem a few years back when he occasionally accompanied Rameez to work, something he only did if

[1] Here mistrī refers to bricklayer. More generally, mistrī refer to anyone doing manual, physical labor. Thus, one could also use the term mistrī to speak about a car mechanic.

he was idle. Otherwise, Waseem was taking classes to become a lab technician. Unfortunately, these classes had not panned out, as I learned. While Rameez and I had an early dinner, Waseem took out a laptop and some papers and started to enter information into a spreadsheet. I asked what he was doing, and Waseem clarified it was the attendance of sanitation workers. Then, Rameez chimed in, "Aashique got him employed with one of the contractors as a UC coordinator."

* * *

A month prior to meeting Rameez, I had called Manzoor. He told me that I was more than welcome to visit, but after nearly two decades in the previous settlement, the jhuggīān Manzoor shared with his immediate and extended kin had been shifted elsewhere. Still nearby, the jhuggīān were in an area called Jatt Chowk. Manzoor no longer resided on a piece of land along with hundreds of other families. That land, he told me, had been sold by the owner to buyers that then split it up and sold it to multiple individuals, who have built their own homes on what is now several plots of land. A settlement that once housed thousands had been turned into homes for just a few families. The owner of the land had let Manzoor and others reside there over the years out of self-interest: having such a large amount of people residing on the land prevented anyone else from taking control over it through quasi-legal or illegal means (qabẓah). Manzoor was surprisingly empathetic; it made sense for the owner to sell the land once the price had increased.

After being shifted, they had to cut crops on the new land they were to occupy and prepare the ground with reused debris, building clay, and cement for placing the jhuggī. Like many other settlements, there would be clusters of jhuggīān in which related kin resided in a separate jhuggī. In between individual jhuggīān comprising a cluster were open areas used for

sorting waste materials, washing dishes and clothes, preparing food, and children playing. Despite the settlement being only a couple of years old, plastics, cardboard, and clothes had already accumulated and laid strewn out on paths between jhuggī clusters.

While Manzoor does not collect waste much anymore, his sons still do: they gather waste from an upper-middle class locality in Lahore, sort these materials, and then sell them as recyclables to nearby junkyards they are indebted to. While his brother had been able to build his own home on land after experiencing financial success, Manzoor's access to land remains tenuous. He and his social relations can be easily displaced, as they had been once already between my fieldwork visits. What ensures a place for them in the city was access to Lahore's waste infrastructures and the work that makes those infrastructures happen. As they engage in this form of work, they also gained access to money as one particular form of value, and thus built a life for themselves and their social relations in Lahore's urbanizing peripheries. This too was the case for Rameez, who also made a life possible on those peripheries by performing waste work, and it was starting to become one for Rameez's son, Waseem, as well, though for the latter it would be through the work of supervision rather than disposal.

These possibilities were realized within the inequalities that characterize urban life in contemporary Pakistan. I want to conclude by situating these waste infrastructures and the subaltern groups that make them happen within the wider context of life across urban Pakistan. In doing so, this conclusion illuminates the ways in which infrastructures reproduce the social body through processes of distribution.

THE UNEVENESS OF URBAN LIFE

Unchecked population growth, deteriorating infrastructures, and absence of social services define urbanization across Pakistan. One study describes the situation as follows: "The

infrastructure deficit is clearly visible in traffic congestion, uncollected garbage in residential areas, flooding in the rainy season, loss of green spaces, and many other environmental annoyances" (Khan et al. 2011:298). Another study affirms the link between governance and infrastructures: "The urbanization in Pakistan is likely to pose new challenges in governance and urban service delivery. The current appalling state of most urban centres may worsen with time if the development challenges are not recognized and dealt within a planned and systematic manner." (Haider and Badami 2010:82). These accounts are not misleading - a suffocating smog now regularly envelopes urban areas of the Punjab and a deadly heatwave took place in 2015 in which approximately 2,000 people perished in Karachi. Urban life has undergone rapid changes in contemporary Pakistan, in which environmental deterioration is undeniable.

The demographic and geographical expansion of the city since the 1980s has reworked urban life and environments.[2] Ammara Maqsood (2017) has documented changes in class relations in contemporary Lahore, where a new middle class has emerged that increasingly fashions its self-identity through practices of consumption and Islamic piety. Part of these self-making projects has involved speculative real estate markets that have grown up in the city, which have made land into a valuable commodity through housing construction. An ascendant and aspirational class in urban Pakistan now desires suburban-style housing with all of the services, amenities, and protections expected of a developed, healthy, and secure city.[3] The

[2] Since the 1980s Lahore's population has more than tripled from 3,544,942 (1981) to 6,318,745 (1998) to 11,126,285 (2018), and its area has also increased from 1,772 sq. Km. (1981) to 2,306 Sq. Km. (LDA 2004:5-1).
[3] The most prominent and expansive of these settlements is the Defence Housing Authority, which is formally separate from local municipal authorities such as the LDA and CDGL and is headed by high-level military officials falling under the Lahore Cantonment Board. The LDA has also pursued development of Lahore's peripheries through housing since its founding in the 1970s, which now extends to the city of Raiwind 40 kms away.

spatial imagination undergirding this development of urban space has brought together an environment cleansed of waste, filth, and refuse of all kinds and a spatial order safeguarded from the threats of crime and terrorism.[4] That imagination seeks to control and surveil the movement of things, bodies, and persons across spaces and territories.[5] Infrastructures - of roads, water, electricity, surveillance, and waste disposal - are the socio-technical assemblages by which this spatial imagination and relations materialize themselves in contemporary Lahore.

Alongside these changes, civil society has become increasingly active around environmental issues such as reduction of "green spaces" and trees, construction of large-scale transport infrastructures, destruction of heritage sites, and worsening air and water quality. This environmentalism at times falls short in diagnosing challenges facing urban Pakistan by obscuring how these challenges reproduce, if not worsen social inequalities across the country. For instance, the Company draws upon waste disposal services as an environmental good to legitimize their own labor practices and disciplining of labor. And its branding – "Clean Lahore" – offers its activities the aura of corporate efficacy, efficiency, and productivity, something that allows it to sell its services to other municipalities across the Punjab. Even when they put on "awareness campaigns" directed at de-stigmatizing this waste work and restoring dignity and respect to those who perform it, their activities are limited to the performance of reversals - having children or political figures perform sweeping and picking waste - and are meant to demonstrate the inherent value of this work and those who perform it. This bourgeois environmentalism[6] is what enables the devalorization and stigmatization of waste work and

[4] For an account of how urban environments are transformed within such spatial imaginations, see Teresa Caldeira's book (2000) on São Paulo.
[5] The Punjab Safe Cities Authority, for instance, has been recently established to utilize monitoring technologies to integrate emergency response, traffic monitoring, terrorism surveillance, and law enforcement.
[6] This is a term borrowed from Amita Baviskar who describes it in the following way: "Bourgeois desires for a clean and green Delhi have combined with commercial capital and the state to deny the poor their rights to the environment" (2003:95)

those subaltern groups who perform it to exist alongside their revalorization by restoring the inherent dignity and respect for the work and those who engage in it. Moreover, it does not consider how the development of urban space has reworked social life, in which class and caste relations are overlapping, and has placed these subaltern groups on the urban peripheries, in both physical and imaginative terms. This dissertation has pushed against such an approach to environmentalism by tending to infrastructures themselves.

Infrastructures are what allow spaces to be posed as other to one another - the controlled spaces of the middle classes being placed within Lahore but also separate from other spaces within a city inhabited by the urban poor (see Foucault 1986). Jhuggī clusters and growing localities like the ones in which Manzoor and Rameez reside have proliferated at a much greater rate since the 1980s and have arisen alongside and in conjunction with those spaces inhabited by the emerging middle classes (see Alvi 1997). The development of urban space, infrastructures, and governance have been techniques by which the exclusion of these settlements and those who reside in them has been materialized in Lahore's landscape and built environment. Infrastructures of different kinds give particular shape to the urban environment in Lahore, in which spaces exist alongside each other but remain other to one another. On the one hand, infrastructures are the socio-technical assemblages by which these spaces are differentiated through a series of absences and presences – circulatory flows of things, bodies, and persons. And on the other hand, infrastructures are what allow for the linking of these spaces - the performance of waste work by subaltern groups that moves and circulates waste materials across the city and country. A productive contradiction emerges around waste infrastructures: how does the movement and circulation of these materials both differentiate and reproduce forms of life in contemporary Pakistan?

Infrastructures are especially rich sites for exploring changing dynamics across urban Pakistan because its promises – of development and modernity – continually present Pakistanis of different backgrounds with a set of contradictory possibilities and ambivalent prospects. Crucial to these processes are a series of value transformations enacted to and through waste materials and the particular groups involved in effecting those transformations. These infrastructures are directed very much at reproduction, and not just of individuals and communities but of an entire distribution of life, death, and value.

PROMISES RECONSIDERED

One of threads that has woven this dissertation together has been the essential role played by waste infrastructures in imagining and materializing modernity and development across urban Pakistan. This dissertation has moved across historical moments in order to emphasize how waste, infrastructures, and work are contingent upon the particular moments in which they emerge, take shape, and transform. In colonial Lahore, sanitation and public health were instrumental to the valuation of waste materialities as presenting certain dangers, risks, and harms to the health and welfare of the territory and population, and technologies of water, drainage, and sewerage, governance distinctions of public and private, and the habits of workers and supervisors were being brought together to organize the movement and circulation of these materialities across the urban landscape, thereby protecting the population and territory from those potential harms. These valuations and infrastructures have not gone away; they have endured into the present through a series of historical transformations, and in doing so, this past has receded into the horizon of our thinking about waste and the work surrounding it. This past needed to be unearthed to make clear not only how certain infrastructures and forms of work emerged at a historical moment but also, to destabilize our thinking about waste, work, and the

infrastructures surrounding them. The fact that waste must be disposed of or recycled is something that goes unquestioned in the contemporary world. Historicizing this line of thinking however reveals the elementary, though contingent role that waste infrastructures have in constituting Pakistan's modernity and development.

At the same time, this dissertation has interrogated the relationship between waste infrastructures, modernity, and development. Infrastructures' part played in Pakistan's modernity and development has been two-fold. Colonial conditions framed affects of promise, futurity, and potentiality surrounding infrastructures: colonial rule, through a technical and administrative apparatus, would improve the health and welfare of a subjugated and alien population under the sign of freedom, reason, and civilization progress. Following independence, Pakistan emerged as a post-colonial nation-state, in which modernity and development were to be pursued in the name of the land and people. And yet, it has also become quite evident that the promises of infrastructure - an *anticipatory* modernity and a *potential* development - have not materialized, and affects of lack, absence, and failure have come to saturate infrastructures, not to mention the state itself and social life more generally, in contemporary Pakistan. This is the dual nature of waste infrastructures: they present Pakistanis with certain promises that are oriented toward a future possibility while at the same time producing suspension, absence, lack, and failure. While this dissertation has emphasized how affects come to imbue infrastructures in contemporary Pakistan with certain promises, it has also partly argued against being beholden to these promise, especially as an analytic framework. These affects tend to obscure how waste infrastructures through their promissory nature reproduce a disposition of things and persons and thus, a dispensation of value.

Across urban Pakistan, infrastructures are not distributed evenly across the social body, something that has differentiated things, bodies, persons, and places. These questions of distribution and differentiation can be pushed further when moving out from infrastructures themselves and focusing on the lives of those subaltern groups who perform waste work itself. Doing so would elucidate not the unfulfilled promises of infrastructures themselves - as their absence, failure, or breakdown - but of how these infrastructures facilitate the reproduction of social inequalities.

One way of pursuing this line of inquiry would be through the analytic of infrastructural violence (Rodgers and O'neill 2012).[7] Infrastructural violence can be active, in which infrastructures of policing, surveillance, and other explicit forms of violence are exercised upon particular bodies, populations, and territories, usually ones that are marked by racialized forms of difference, or passive, in which disconnection from infrastructures becomes the technique by which violence is exercised.[8] While the former makes itself apparent in public, spectacular ways through the visible functioning of infrastructures, the latter is embedded in everyday absences, breakdowns, and failures, and thus population suffers forms of violence through a disconnection to that infrastructure (e.g. abject water) that shapes and is shaped by extant social inequalities. Similarly, a multi-authored article reminds us that "infrastructures are, in a sense, reproductive systems that owe much of their capacity to human design, organization, and enablement" (Howe et al. 2016:552). Indeed, mitigating risk (or dangers and harms) is

[7] Infrastructural violence brings to the fore the structural nature of violence being exercised (see Farmer 2014), in which violence and suffering are dispersed across social structures that are bought together through forces that escape individual intention and agency.

[8] For instance, Nikhil Anand (2012) has demonstrated how water infrastructures, despite being shared across the Mumbai, produce abject residents who must nevertheless mobilize socio-technical relations to make connections to that infrastructure, and Hannah Appel (2012) has emphasized how the absence of infrastructures enables transnational oil companies to disentangle themselves from their wider surroundings in Equatorial Guinea, thereby abdicating responsibility for such violence.

elementary to the valuation of waste materials through their infrastructures of disposal and circulation. It needs to be emphasized that the promise of infrastructures depends on the creation and mitigation of risk (see Ibid. 2016:556). In other words, infrastructures not only contain or mitigate risks, but, in the case of Lahore's waste infrastructures, they distribute that risk across the social body. Rameez, Manzoor, and others I have mentioned across this dissertation navigate these risks as they work to make Lahore's waste infrastructures happen. They experience infrastructural violence not only through disconnection but also, through everyday, non-spectacular connections, ones that have sedimented over time.

Though this dissertation has referred to a variety of social inequalities, such as class, caste, and race, it has not deal directly with the production and experience of inequalities in the social lives of sanitation and waste workers. Recent work in anthropology of South Asia has examined how the urban poor navigate illnesses and disease through networks of relations, institutions, and knowledge (Das 2015). Similarly, sanitation and waste workers navigated an intersection of debt, illness, institutions, and social relations. Though their work introduced certain risks and possibilities for them and their social relations, this dissertation only gestured to connections between work and life, in which social inequalities are embedded in everyday acts directed at reproducing not only the city but also social relations. Put simply, making a life possible was not done simply through work in Lahore's waste infrastructures, but was achieved through constant effort and striving on multiple, intersecting fronts. Waste infrastructures thus become ordinary techniques by which certain effects - stigma, poverty, abjection - are produced across the social body, even as the reproduction of life at different scales becomes a possibility. They are the instruments by which specific populations - in this case, subaltern groups - are

abandoned but kept alive to achieve infrastructures' promises of modernity and development in Pakistan.

ABJECTION, INEQUALITY, AND CASTE

Julia Kristeva invokes waste in her description of abjection: "Loathing an item of food, a piece of filth, waste, or dung. The spasms and vomiting that protect me. The repugnance, the retching that thrusts me to the side and turns me away from defilement, sewage, and muck […] The fascinated start that leads me toward and separates me from them" (1982:2). The materiality of these things produces abject "lives [that are] based on *exclusion*" (Ibid. 1982:6). And later Kristeva quotes Georges Baitaille, who describes abjection as "merely the inability to assume with sufficient strength the imperative act of excluding abject things (and that act establishes the foundations of collective existence)" (Bataille 1970:2, 217ff, quoted in Kristeva 1982:57). Ferguson builds upon this act of exclusion when he references abjection as "a process of being thrown aside, expelled, or discarded" (2002:140). Adding to our understandings of abjection, he thematizes the act of "being thrown down" and "debasement and humiliation" (Ibid. 2002:140). Abjection is a descriptor for what has been ongoing in many parts of the developing world: the failure of a global modernity to materialize in the lives of those who were to benefit from it in the post-colonial moment, and the sense of being expelled from development by the contemporary system of spatialized global inequality. This dissertation has made a similar, though distinct point: waste infrastructures reproduce a dispensation of value, in which inequalities are dispersed across urban life with subaltern groups inhabiting the urban peripheries.

As I mentioned in the last section, waste as a thing is distributed through infrastructures, such that it attaches to certain bodies, persons, and groups. Abjection is the product of these

distributive processes. Rajyashree N. Reddy argues abjection refers to waste materialities, the lives of those who have been expelled, and the "paradox that informal recyclers who were cast out to maintain the integrity and purity of the new regime of e-waste management are actually central to maintaining its purity and viability" (2015:173). As my discussion of the public-private partnership and the informal economy might suggest, those who perform the work of waste disposal and circulation are not simply expelled or excluded at particular moments of time. They are kept in a state of abjection through infrastructures. Moreover, abjection is not simply "an ontological experience" but also "a gradual process of transformation" (Millar 2018:59). One waste worker described that transformative state of abjection to me in the following way: "Our lives are passing uselessly. We don't know about its beginning or its passing. We don't understand how our lives start, and we don't know how our lives will end." One can read transformation of abjection as a recurring process, as Millar does when she mentions *catadores* (waste pickers) constantly returning to the dump in Rio de Janeiro. Recurrence reproduces abjection.

As waste is distributed, so are stigma and inequality. The stigma attached to these materials and those particular groups that work with it were constant points of discussion during my fieldwork. Though Ali Bhai or Aqil are not from the same lower status groups as Rameez and Manzoor, they both voiced concerns about performing "dirty work," and others, such as those working in warehouses sorting these materials, mentioned that they do not share information or details about the work they do with their kin and other intimates. Additionally, many Christians, who do not work with waste, recounted numerous stories about being denied food or drink by Muslims co-workers, neighbors, or acquaintances. The transmission of stigma, as it is attached to materials, work, and bodies, raises concern about transactions involving

food, especially since such transactions are a point of contact between potentially different kinds of persons.[9] This potential transmission is not limited to stigma, and as Kristeva's insights on abjection indicate, include the affect of disgust. Joshua Reno conceptualizes disgust as "the psychophysical response of a subject whose virtual wholeness is threatened by holes" (2015:39). This disgust and stigma are both a result of that wholeness and a safeguard against potential threats to it. For those whose work necessitates physically coming into contact and handling these materials, the disgust and stigma of abjection is dispersed and elicited throughout their everyday life, where fear, anxiety, and nausea combine with boredom, enjoyment, and exhaustion.

This abjection cannot be disentangled from wider inequalities. Throughout the dissertation, I have emphasized something called caste labor as being an essential, though devalued component of Lahore's waste infrastructures. Caste labor here has referred to the ways in which waste materials, the work surrounding it, and its performance by subaltern groups have been repeatedly assembled across historical moments to constitute Lahore's waste infrastructures, thereby ensuring the reproduction of its population and a particular dispensation of value. Social inequalities have only figured in tangentially in my account. A series of questions around social inequality and caste can be posed: how has the reproduction of life itself through infrastructures depended upon social inequalities in which caste is constitutive? What are the conditions, relations, and processes through which these inequalities are reproduced? What connections are there, if any between caste, abjection, and inequality? This dissertation has explored these questions by unpacking how waste work and infrastructures reproduce life and a hierarchical dispensation of value. However, a corollary of this dissertation

[9] See Marriot (1968, 1976); Marriot and Inden (1977); Daniel (1984); Strathern (1988)

would be exploring how Manzoor, Rameez, and others I have mentioned navigate, resists, and exploit the everyday inequalities that they experience and work to reproduce. This would examine how abjection, as a transformative process, is made and remade through transformations in individual, social, and collective life.

MATERIALITIES, TEMPORALITIES, HISTORIES

Waste as a material thing shapes and is shaped by the histories out of which it emerges. Whereas the field of discard studies has emerged in the past several years to draw attention to the historical processes out of which waste emerges, something that has drawn attention to how waste is implicated in and works to constitute social, political, economic, and cultural life. There remains a strand of thinking about waste that flattens out the relationship between materiality and temporality. For instance, to emphasize the materiality of inorganic life, Bennett relies upon the following image: "A dead rat, some oak pollen, and a stick of wood stopped me in my tracks. But so did the plastic glove and the battle cap: thing-power arise from bodies inorganic as well as organic" (2010b:6). She presents these images of life to emphasize that what she is calling "thing-power" is not limited to the organic, and that the inorganic - she later speaks of the life of metal and men - exercises power in organizing assemblages through which agency is distributed across human and non-human actors (e.g. an electrical grid or water piping). As mentioned in the introduction, this dissertation draws upon the work of Bennet to unpack how infrastructures are assembled around waste materialities, and through such an approach, I have examined how waste infrastructures have emerged and transformed such that life can be reproduced. My account has stressed that the materiality of waste matters because of its role in constituting historical processes.

Whether a colonial regime of sanitation and public health, the privatization of waste disposal services as a public good, its marketization in the informal economy, or its constitutive role in reproducing abjection, the materiality of waste reappears in different forms across historical moments. This dissertation has argued for an approach to the materiality of waste that thematizes temporality but one that is inseparable from historical processes. In the recently published *Waste: A Philosophy of Things*, William Viney contends: "Waste, then, is felt to be a discontinuous, provisional and yet materially continuous condition, one not to be defined by some intrinsic or universal quality but to a specific articulation of time. One benefit of understanding how waste and time constitute one another in this way is that we then confront how an object's specific physical properties, physical properties that meant ice cream might melt and petrol is flammable, inform our experience of things" (2014:4). Based upon such a definition of waste through its materiality, he proposes a related notion of use-time, or "the finite time dictated by the use and cessation of use of a given object" (Ibid. 2014:8). The shortcoming with such accounts is not that they rely upon materiality or temporality, as both are constitutive of waste as it exists in the world, but that these accounts tend to obscure historical conditions under and out of which waste emerges and transforms as a material thing. These accounts reduce temporality to the duration by which things transform into waste, specifically the changes in "physical properties" by which that occurs. The differences between my approach and one such as these arise partly out of methodological differences: Viney is exploring waste in artistic and literary works while my focus has been on materials, work, and infrastructures. My approach, especially when dealing with the informal economy, has been to look at the transformation of these materials in and through their physical properties and how these changes are effected through infrastructures. However, I did not draw attention to the

temporality of that transformative process, or what Viney calls "use-time," because that obscures past and ongoing processes out of which waste actually emerges.

One place to rethink this relationship between waste, materiality, and temporality is through the particularities of nuclear waste. "Nuclear material can neither be completely accumulated (contained), nor spent (disposed). It tends to drift. The duration over which it must be maintained and protected spatially is too long" (van Wyck 2005:4). Take, for instance, plutonium, which has a life span of 240,000 years. It has a changing, unstable character that has always been part of its worth, has been used to create a nuclear arsenal that is dispersed across several intersecting scales, and has now become spread throughout our atmospheres because of nuclear fallout. The presence and dispersal of this material is almost entirely invisible, largely rendered visible only in its effect through radiation and mediation. Even those effects have an uncertain temporality to them: "[…] those exposed to iodine-131 from atmospheric fallout in the late 1950s, for example, may have experienced the first signs of thyroid cancer only in the 1980s (Masco 2006:32). These materials, and the technologies to which its attached, have a temporality that exceeds the possibility for human life on this planet. In other words, the temporality of nuclear materials cannot be plotted on the same scale as human history. They have another temporal structure of transformation. And yet, as Masco emphasizes, the detonation of the first atomic bomb in New Mexico, "can only be narrated as a moment of historical rupture and transformation" and "marked the end of one kind of time, and the apotheosis of another" (Ibid. 2006:1). Waste materialities, whether of plutonium or plastics, have their own, internal temporality – what Viney calls "use-time" through which they transform in physical properties – but they are also caught up in historical time and processes, which are part of human life but also separate from it. My account of waste has sought to

demonstrate exactly that: how the materiality of waste emerges within and works to constitute histories that it also exceeds.

DISTRIBUTIONS: LIFE, DEATH, AND REPRODUCTION

Waste infrastructures, as socio-technical assemblages, manage the population's metabolic processes that produce waste on a mass scale and are directed at maintaining their health and well-being at the aggregate level. These infrastructures foster life as much as they disallow it; in other words, they let die. To reiterate one final point, when mentioning letting die, I am not speaking about how these infrastructures fail, breakdown, or fall into disrepair, which has an impact on the health of the population and become the basis for calls for improved services and institutional reform. Instead, this dissertation has argued that infrastructures in urban Pakistan present possibilities of living and dying for persons and groups who are entangled with them. Achille Mbembe, in questioning the grammar of biopower, asks, "under what practical conditions is the right to kill, to allow to live, or to expose to death exercised? Who is the subject of this right?" (Mbembe 2003:12). The techniques by which this right is exercised could be rethought through infrastructures: how do infrastructures of different kinds become "*the generalized instrumentalization of human existence and the material destruction of human bodies and populations*" (Ibid. 2003:14, emphasis in original). The infrastructures that have been of concern in this dissertation move, dispose of, and circulate waste materials, specifically those things that have been used up, discarded, and thus are a product of consumptive economies. And, as this conclusion has gestured to, those infrastructures are also violent, especially as they produce abjection and inequalities for those who make them happen. Thus, possibilities of life and death mutually constitute the act of reproducing individuals and collectivities.

Infrastructures distribute possibilities of life and death across the social body through reproduction. James Ferguson has observed that a "neglect and denigration of distributive modes of livelihood has continued, even as such livelihoods have become increasingly important across much of the world," and has called for greater attention to "general processes of distribution as they unfold in contemporary societies" (Ferguson 2015:23, 20). The distribution that is of concern for Ferguson - direct cash transfers and other social payments - are directed at the "reproduction of precisely that class of people who have increasingly slim prospects of ever entering the labor market at all" (Ibid. 2015:12). Ferguson's point is that distributive politics is directed at the reproduction of populations that have limited means of reproducing themselves, or what can be called surplus populations. Waste infrastructures move, dispose, and circulate waste materials across Pakistan. This is a process that, as I mentioned in a previous section, distributes these materials, such that it gets attached to specific bodies, persons, and places, and not others. In other words, waste infrastructures differentiate and distribute, quite often at the same time. That distributive process - of things, bodies, persons, relations, and places - shed light on how and what infrastructures actually reproduce.

As distributive processes, waste infrastructures are "[activities] oriented toward the reproduction of ordinary life" (Berlant 2007:757). This dissertation has moved away from reproduction in bodily terms (see Murphy 2011). Being the product of mass consumption, waste materials are disposed of and circulated such that life on an aggregate scale can go on and be reproduced. And despite reproducing life, the lives of Manzoor, Rameez, and others exhibit what Lauren Berlant calls, "the scene of slow death, a condition of being worn out by the activity of reproducing life" (Ibid. 2007:759; see also Nixon 2011). The simultaneity between the reproduction of life and its exhaustion is part of what Michell Murphy has termed

distributed reproduction, or the "infrastructural distribution of life chances, pasts, and futures" (2017:141). The work of waste infrastructures, as it performed by subaltern groups, is a form of work that, in addition to be stigmatizing and marginalizing, is exhausting for the individuals performing it and their wider social relations. As I have mentioned in other chapters, shared features of sanitation and waste workers' past, such as kin relations already doing this kind of work, the death of a parent, lack of formal education, and prior connections to this department, facilitate their access to and entrance into this line of work. Their present and future, however, create linkages between financial and health conditions. I spoke of debt in relation to the circulation of waste materials, but more generally, this debt arises out of limited access to money, which nevertheless becomes the primary means by which social reproduction happens. In the words of Berlant, their "attrition" happens by being active in reproducing life at multiple scales - individual, social, and collective - and the burdens that comes with this effort and activity.

Waste, the work surrounding it, and the subaltern groups who perform it remain essential and elementary components of reproduction across Pakistan. Waste infrastructures are not reducible to the reproduction of the life of the population, as my reliance on biopower may have suggested. These infrastructures are dispersed across and bring together a highly stratified social body in contemporary Pakistan. As such, they are caught up in reproducing a dispensation of value prominent across the country that distributes life and death in unequal and differentiating ways. This dispensation of value is reproduced through these infrastructures while also becoming a site of political contestation and struggle. If infrastructures retain any promise for those who make them happen, it remains this: the possibility of rearranging that dispensation of value in which life and death are distributed profoundly unevenly.

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