

INTRODUCTION

CHOLERA AND THE COLONIAL STATE IN URBAN ENVIRONMENTS

When did we ever know such a year like this?—when did this city, since its foundation, witness such scenes?—pestilence and horror stalking abroad in her streets—dismay in every countenance—death knocking at every door—none knowing who might next be the victim.

—G. J. MOUNTAIN

For the Anglican archdeacon of Quebec, G. J. Mountain, the sermon delivered on 30 December 1832 was an opportunity to reflect on the events of the almost bygone year. It had not been a good one. During the summer and autumn an epidemic of Asiatic cholera had had the city of Quebec in its grip. Cholera had been a traumatic experience of death and suffering that had cost hundreds their lives. Thus, sorrow was the dominant theme of Mountain's homily, although even in retrospect only God seemed to offer a plausible explanation for cholera's behavior. The disease's ways had been mysterious and had defied "all human sagacity and calculation":

Man can neither trace it in its course,—pronounce upon the manner of its propagation, provide against it by preventive measures, nor do more than allay its intensesness by the remedies of art; neither with respect to place nor with respect to persons, can they augur where it is likely to declare itself: at one time indeed, it seems to travel continuously along a line of communication, but as another to drop, as it were, straight down from Heaven upon a detached population, or upon the devoted head of an individual who has been scrupulously guarded from all contact with the apparent causes of danger: Seemingly capricious in its movements, and sudden, most awfully sudden, in its operation, it puts to flight all the wisdom of men; and those who have the lightest skill in the disease of this

mortal body, either profess the most discordant opinions, or frankly own their accumulated knowledge and their recent melancholy experience, to be equally at a fault.¹

If Mountain recognized in cholera an agent of God, causing havoc and overwhelming the capacities of the local medical experts, attacking “drunkards,” “profane persons,” and “jesters” more frequently than others, then there was also reason for consolation: faced with such an existential crisis, many Quebec residents had rediscovered their belief and returned to God.²

Yet, cholera’s power exceeded even its ability to kill its victims, puzzle doctors, or change the mind of individuals. It had also altered almost beyond recognition the city that was so familiar to its inhabitants:

We saw in our deserted streets, more signs of death than life—hearses carrying their load . . . the constituted authorities who watched for the public safety, unceasingly upon the alert, in token danger; engaged day after day and hour after hour, in active measures and anxious deliberations, doing all that man could do to stay in part the evils of the time, and to infuse confidence into the breasts of their fellow citizens,—Physicians and Ministers of Religion traversing the streets night and day with a hurried pace . . . —fires before every house, loading the atmosphere with vapour from prepared materials supposed of purifying power—or the official [health wardens] with their badges profusely scattering lime along the range of the more suspected habitations—these were the spectacles exhibited in our city—and images of deeper horror might be added were I to carry you into the precincts of the hospital in the first burst of the calamity, when its suddenness and overpowering magnitude, far surpassing all previous calculations, could not be met by any existing provisions nor at once mastered by any possible exertions.³

Mountain’s sermon betrayed feelings of alienation and helplessness even months after the epidemic had subsided. As a cleric, he made sense of this catastrophic experience by attributing its causation to God. Through cholera, God had disrupted normalcy in Quebec, changing not only the behavior of the citizens but the space in which they lived. This metamorphosis constituted a challenge that tested individuals’ faith and also tested the local authorities. They had to care for the ill and ensure that they received the treatment they required, but they also had to fight the environmental factors causing the epidemic. They did so, for example, by attempting to purify the atmosphere and by disinfecting dwellings and streets with lime.

In the end, they had been unable to halt the epidemic, which apparently could be controlled only by God's power, but they had alleviated the suffering and saved as many as possible. They had carried out their duty both as Christians and as government officials.

For Mountain, cholera was merely God's tool to effect change. Yet, even if we leave God's role in the 1832 cholera epidemic in Quebec to the theologians, it is undeniable that cholera altered the city. It had forced a reaction by individuals as well as the authorities who ruled Quebec. They had had to counteract the disease to preserve lives as well as the public and political order. As the medical experts of the time suspected the atmosphere as well as the presence of filth in public and private places to play an important part in the disease's causation, the public and the authorities' attention during cholera's presence had turned to the urban spaces in which they lived, changing their perception of their city at a time of crisis. Offensive yet daily occurrences came to signify imminent danger. To eliminate the threat posed by cholera, these nuisances in the urban environment had had to be eliminated as thoroughly as possible. To organize such a response and to actively make the city safe again by altering the local environment in a way that would mitigate the epidemic had ultimately been the government's task.

A few weeks before cholera made its first appearance in Quebec, the government of Madras had also faced an occurrence of cholera in the territory of its capital city, though it was considerably less grave. On 15 May 1832 the government of Madras had informed the Medical Board that several cases of the disease had been recorded in the "Village at the Back of MacKay's Garden," a *paracheri*, or hamlet, within the city of Madras near the Cooum River. It consisted of about two hundred huts inhabited by approximately eight hundred *parayars*, or lower-caste tenant-cultivators. The board assigned the superintending surgeon, S. M. Stephenson, and the surgeon in charge of the northwest district of Madras to investigate the outbreak. Their report stated that the superintending surgeon's office had learned of the first case by 28 April 1832 and recorded other occurrences up until 11 May. Four of the cases had been fatal, an outcome the surgeons blamed on the victims' reluctance to consult European medical practitioners. The surgeons did not pretend to have found the definitive cause of this small outbreak, but they considered the location of the village and the lifestyle of its population to be at least partially responsible. The settlement was situated at a lower level than the adjacent gardens, was close to the river, and had a strip of land that was used as a "cloaca," or sewer, which exposed the inhabitants to offensive "effluvia." Near the village a

nullah (creekbed) discharged water into the river during the rainy season and was dry the rest of the year. Residents of the village lived in crowded, filthy huts and suffered from malnutrition. Bushes around the dwellings prevented ventilation, and the air was “particularly close and confined” at the meat bazaar in the center of the village.⁴

The situation gained additional urgency due to the proximity of the village to Europeans’ suburban country houses, where many of the villagers were employed as servants.⁵ The crisis called for comprehensive governmental action. The investigating surgeons’ recommendations were unambiguous. To clear the settlement of filth, they proposed the construction of a channel that would direct the sewage into the river. In addition, the bed of the *nullah* would be evened out to promote a constant flow of water and prevent the formation of puddles or pools where filth could accumulate. The bazaar would be relocated from the center to the edge of the village, while the shabby huts and the vegetation surrounding them would have to be destroyed. New huts would be constructed as far away from the river as possible, in a rectangular grid to allow for ventilation. Also, to protect the inhabitants from the “exhalations” of the river, the village would be guarded on that side by newly planted trees intended to block the presumably harmful stench. The superintendent of police would henceforth control the cleanliness of the village. With a member of the Medical Board affirming the investigating surgeons’ findings, the government ordered the collector of Madras to implement the recommendations.⁶

These two episodes of cholera, occurring roughly at the same time in two British colonial cities on different sides of the globe, demonstrate a sharp contrast in cholera’s appearance: a major epidemic in Quebec that dominated a whole city’s reflections on the passing year and a minor outbreak in a small village within the city of Madras, barely acknowledged by the local authorities. Yet, despite their vastly different scale and consequences for the respective cities, both local governments sprang into action. Certainly, they employed very different measures tailored to the specific circumstances. In Madras, the authorities tried to eradicate the cause of the disease and prevent future epidemics by reforming and improving the village, while the officials in Quebec tried to mitigate an epidemic that overwhelmed the city by manipulating the atmosphere and rendering filth harmless through disinfection. If the confidence of the Madras surgeons in their comprehensive plan offers a stark contrast to Mountain’s sermon, which is testament to the failure of the Quebec officials to ensure the desired outcome of their measures, it is, nonetheless, clear that in both instances the authorities focused on the local environment to achieve their goal: controlling cholera.

Usually starting with mild diarrhea, cholera's onset was easily dismissed as something else. Once fully developed, however—as an individual illness or as an epidemic—cholera attracted widespread attention and proved impossible to ignore. This salience was not just because of the high mortality associated with the disease. Cholera was more than a killer; it degraded its victims. The symptoms—violent diarrhea, vomiting, and coma—violated nineteenth-century notions of decency and civilization. Cholera thus filled the imagination of millions with fear not only for their lives and those of their loved ones but also of the kind of death they would suffer.

That cholera remained a medical challenge for most of the century added to its potency. Despite the best efforts of medical experts in many countries over the course of almost a century, the disease only reluctantly gave away its secrets. The long list of names and sobriquets given to the disease highlights the medical profession's difficulties in coming to terms with cholera. After its first appearance in Bengal in 1817, cholera was considered a new disease and there was thus no specific medical experience on which to rely. With time and continued observation, cholera lost the horror of the unknown, but familiarity brought no relief. For decades medical practitioners had only limited remedies to cure or at least mitigate the symptoms of the disease, and none of them was an undisputed success. Yet, the discussions about treatment within the medical profession were almost harmonious compared to those about etiology and epidemiology. Experience showed that cholera followed certain patterns of spread—along rivers or lines of communication, as Mountain mentioned—but exceptions to those rules regularly undermined even such basic assumptions. For most of the nineteenth century the questions about cholera's causes and transmission were among the most bitterly argued among medical experts. There was virtually no aspect of etiology everyone could agree on, except one: cholera was in all likelihood caused by some combination of environmental factors. Over the course of a century the sun and moon, the climate, the composition of atmosphere and soil, humidity, the presence of surface water, filth and its emanations, miasmas, poisons, microorganisms, and many other features of the environment were at one point or another thought to play a role in the occurrence of cholera epidemics.⁷ Which agent under which circumstances was the question, and it was debated with a ferocious earnestness that betrayed its potential implications: if medical treatment was generally unsuccessful, then preventing and mitigating cholera by controlling its causes and spread seemed the most promising response for medical experts and government officials alike. Achieving this goal required at least some reliable knowledge of cholera's etiology; otherwise, no definite

and promising course of action could be taken. As long as such knowledge regarding the disease was insufficient, any measure taken against cholera was of questionable value. Thus, a government's success in fighting the disease depended on medical experts.

To the dismay of government officials, even if medical experts occasionally reached a temporary consensus on how to improve public health, practical results were often disappointing. Yet, despite this lack of dependable knowledge about the disease, ignoring cholera was not an option. The authorities considered it their responsibility to react to a threat or an actual outbreak of cholera and therefore depended on expert opinions no matter how unreliable they might be. The experts' medical recommendations also had to be adjusted to local conditions. Therefore, government authorities introduced information systems that enabled them to observe the local environment, the population, and cholera's movement in both.⁸ The analysis and interpretation of such data, however, were again up to medical experts, who came to widely varying conclusions. As time went by, the range of possible responses to cholera changed along with the underlying medical theories. Government authorities tested long-established practices such as purification, fumigation, quarantine, and cordons sanitaires; they disinfected certain locations; they built sanitary infrastructure, including sewers and water works; and they installed water filters and established laboratories for bacteriological analysis. These measures were an attempt at controlling the urban environment, including its residents, and officials hoped such efforts would give them the upper hand in their recurring struggles with the disease.

The question of how to deal with epidemic cholera was of course not limited to the cities of Madras and Quebec. Cholera was a global disease, and outbreaks were common across the globe. Originating in India, the disease spread in a series of pandemics. Most historians analyzing them in retrospect have counted six pandemics (1817–24, 1829–51, 1852–59, 1863–79, 1881–95, and 1899–1923) during the period under consideration in this book.⁹ In those years, since the disease's transmission patterns were unpredictable despite all efforts to forecast its movements, the threat of an outbreak was constantly looming in many places even if cholera was not present at most times. Medical practitioners, government officials, and the interested public tracked cholera's every movement. Newspapers keenly reported the news of outbreaks, recounting horror stories of death, as well as the newest medical theories, and estimating the likelihood of a local outbreak. Medical experts tried to incorporate supporting as well as contra-

dicting evidence into their theories, while public authorities explored ways to prevent, mitigate, or fight a cholera outbreak in case it materialized.¹⁰

While government and medical authorities, as well as the general public, were aware of the disease's global reach, cholera epidemics were local events affecting the population of a circumscribed space, usually a village, town, city, or region but rarely an entire country. This book deals with outbreaks in Quebec City and Madras. At first glance, Madras and Quebec might appear an odd comparison. There is no direct connection between them and they were—and still are—rather different cities. Nineteenth-century Madras was many times larger in terms of population and territory than Quebec, but the people of Quebec had far more influence on the political fortunes of their city. The urban spaces were also rather different. Quebec was a compact settlement while Madras featured land in intensive agricultural use close to densely populated neighborhoods and small villages next to suburban garden houses, as in the case of the village behind MacKay's Garden, until the late nineteenth century. Upon closer examination, however, the two cities had quite a number of things in common. Both were located in British colonies; both, for most of the period under consideration here, were provincial capitals with corresponding administrations; each accommodated a garrison of British troops; both were port cities; both were founded by Europeans; both experienced population growth, the establishment of a municipal government, and considerable investment in urban infrastructure during this period; and cholera epidemics occurred there several times without the disease becoming endemic.

As provincial capitals, Madras and Quebec functioned as regional centers of authority. Both southern India and the valley of the Saint Lawrence River had been conquered only a few decades before their first cholera epidemics. The colonial order was still unsettled at the beginning of the nineteenth century, and unrest challenging British rule was common. Under these conditions the colonial governments perceived their own power as fragile and constantly under threat regardless of the situation on the ground. Military superiority remained the backbone of colonial rule decades after the initial conquest, and maintaining order was seen as the key task for colonial authorities. Every disturbance was perceived as having potentially catastrophic consequences that could eventually result in the loss of the colony. Thus, colonial officials had to remain cautious and observe the societies they ruled for any possible trouble. For managing and controlling the population, colonial authorities preferred nonviolent means and considered using the army to be an option of last resort. The au-

thorities tried to demonstrate benevolence and administrative competence, as well as their perceived cultural and scientific superiority, thereby simultaneously avoiding unrest and strengthening their position in power.¹¹

Caught up in this mindset, which was part of what has been termed the “colonial situation,” colonial governments perceived cholera as a tangible threat.¹² Those in power also feared the disease because of its ability to disrupt social relations and to incite unrest, but the authorities in the colonial metropolis and across Europe could rely on their traditions, precedents, established public health practices, and relatively developed governmental institutions. Compared to the governments of Europe, the colonial state was weak and underdeveloped, and colonial governments were well aware of this fact. The colonial elites’ sense of their precariousness at the best of times was heightened during states of emergency, such as an epidemic, when they found themselves in a continuous state of crisis. Failure to successfully confront an epidemic, they feared, could severely damage the state’s legitimacy and lead to insurrection, high expenditures, and, ultimately, loss of the colony. Thus, cholera was regarded as a challenge that usually, but not always, called for strong official action. The colonial authorities in Madras and Quebec saw their efforts to prevent or mitigate cholera epidemics as a means of preserving the colonial order. How they achieved order will be one feature of the narrative in this book.

Although both Madras and Quebec City faced the problem of epidemic cholera, the respective authorities had to confront it under rather different circumstances. Although both cities were provincial colonial capitals over most of the nineteenth century, they were in distinctly different types of colonies. Canada was a colony of white settlement that served as a destination for at least a part of the emigrant population leaving the British Isles for North America. Enjoying the rights and privileges of British citizens, the population of white settlement colonies like Canada insisted on being represented in an elected body, thus having their voices heard in the political process, while the indigenous population was marginalized. Madras was located in a prime example of a colony of exploitation.¹³ India was ruled by small, elite groups of British officials relying on superior military power to dominate a politically disenfranchised indigenous population and reap the economic benefits for the imperial metropolis.

Unsurprisingly, the governmental institutions of these two types of colonies had to fulfill their specific functions in different ways even though both systems were based on the British model. Colonies of white settlement had to take the opinions and interests of their inhabitants into account and relied on governmental institutions similar to those in Britain, such as leg-

islatures with appointed upper and elected lower houses, a governor as representative of the monarch, incorporated towns, and independent courts. With the exception of the governor, none of these institutions existed in colonies of exploitation, where the colonial administration's powers were controlled only by London and the indigenous population had at their disposal only petitions, courts, corruption, or insurrection with which to pursue their interests. If any two colonies exemplify these two types of colonies and these two developments within the British Empire, they are Canada and India.¹⁴

India was certainly Britain's most important colony of exploitation and arguably the most prized colonial possession during that period. Its importance for Britain's role as the dominant world power during the nineteenth century can hardly be overestimated.¹⁵ Canada could not compete with India in terms of overall relevance, yet it was more populous, economically stronger, and strategically more important than other white settlement colonies, such as Australia and New Zealand. Canada kept some of the British and Irish immigrants to North America within the realm of the British Empire, and it provided a check on the expanding and increasingly powerful United States. Canada also pioneered a slow and deliberate process of gaining independence peacefully that served as a template for other colonies of settlement, as well as for the indigenous populations of colonies of exploitation like India.¹⁶

Until now, historians have rarely attempted a comparison between these two different types of colonies. The incongruous characteristics of the colonial states and the different problems they faced have apparently discouraged such an endeavor. However, cholera pandemics, combining global reach with recurring local impact, provide an opportunity to fill this gap. In this book, I take a comparative approach to the trajectories of development and environments in the two colonial cities of Madras and Quebec to explore the question of how cities and the authorities who governed them tried to cope with repeated cholera epidemics—or at least the threat thereof—over the course of almost a century. Being located in prime examples of their respective types of colony and in colonies of paramount importance for the workings of the British Empire, Madras and Quebec are uniquely suitable for the study of epidemics over such a long period. No other city in British colonies of settlement combined comparable political importance with a recurrent exposure to cholera epidemics as did Quebec. Bombay and Calcutta exceeded Madras in terms of relevance, but cholera was soon endemic there, necessitating a fundamentally different response by the colonial state and the local population.

Therefore, the local colonial governments in Madras and Quebec City play a central role in this book, alongside cholera and the environments of both cities. Colonial authorities had the responsibility for putting the puzzle together and fighting the disease in ways that fit the unique local environmental as well as social, political, and cultural conditions. The response to cholera epidemics was, therefore, highly localized, which made transferring methods of prevention and mitigation to different places rather difficult. Like the tremendously diverse land masses Canada and India encompass, their populations were correspondingly diverse. Indeed, Madras and Quebec were located in regions that were in many respects quite distinct from the larger colony to which they each belonged. Therefore, extrapolating the results of this study to the larger colonial context of each city would be unwise.¹⁷ Nonetheless, the two cities were part of the political framework of colonial India and Canada, respectively, as well as the British Empire, and decisions made on the colonial level affected local reactions to cholera epidemics. It is impossible to consider Madras and Quebec City independently from the political structures in which they were embedded: the province, the colony, and the empire. Thus, an environmental history of cholera epidemics in Madras and Quebec City is not completely detached from the history of those superordinate political entities and thus offers insight into the history of the development of those two colonial states.

Although these colonial states were weak and initially ill prepared to deal with cholera, they proved able to adapt. During the nineteenth century the colonial governments gradually acquired more power and established new institutions to deal with public health in general and cholera epidemics in particular. This overall process, usually called “state formation,” accelerated over the course of the century as the introduction of constitutions and professional administration gave the state sweeping authority to assert control across territories and over the people living there. The more the state monopolized power, the more it required legitimation by those it ruled or governed. More and more instruments—such as constitutions and other elements of participatory democracy—enabled the population to have some reciprocal control over the state.¹⁸

Cholera was far from being the first or the only challenge to health and well-being that drove the development of state institutions intended to support the health of citizens or subjects. The British state had relied on the services of medical experts to deal with epidemics since the plagues of the Middle Ages, and it continued to do so to an increasing degree, both at home and in the colonies.¹⁹ Cholera proved to be a potent driving force

in this process. Sudden outbreaks called for ad hoc measures, and over the course of the century the recurrent threat and outbreak of the disease pushed authorities to modify both the medical infrastructure and the environment in ways that offered hope for permanent improvement in the public health situation. Thus, sanitation and medicine became one of the areas in which the state's activities expanded exponentially over the course of the nineteenth century. These progressive activities offered the authorities an opportunity to extend their reach into the private affairs of the population. By doing so they could improve the health of the people and by extension also protect linked aspects such as the economy and the military, but they also assumed responsibility for the population's well-being. If they failed, epidemic disease could quickly turn into a political problem.²⁰

Over the course of the nineteenth century, the governing bodies of the United Kingdom, as well as those of its colonies, created new institutions to advance medical knowledge and harness it for use according to the state's interest. Both the nascent medical profession and the state profited from this arrangement, known as medicalization.²¹ It may be surprising, then, that this process caused considerable friction in colonies of exploitation, where European views of medicine clashed with traditional indigenous practices. Medicine was regarded as a "tool of empire"—something that would facilitate colonial rule—and medical practitioners were expected to contribute to the colonial project by providing solutions for problems in the colonies.²² Medical crises like cholera epidemics offered these professionals an opportunity to prove their value. The medical experts, either working permanently for governmental institutions or hired temporarily during the crisis, devised plans to prevent outbreaks or proposed measures to mitigate them. Thus, they sought to impress their superiors in the colonial hierarchy with medicine's usefulness for the colonial state and hoped also to persuade officials to establish temporary or permanent governmental positions for the medical profession. Cholera's role in this process was important, but not central. Other diseases, such as smallpox, also offered opportunities to promote the prowess of the medical profession, but cholera had one definite advantage over most other diseases: it attracted the attention of both the public and colonial officials.

The high profile of this disease has proven extraordinarily beneficial for historians. Cholera has been a mainstay of historical research since the 1960s, when Asa Briggs and Charles E. Rosenberg wrote two pathbreaking articles.²³ They and their numerous successors considered cholera more than a medical problem of the past. Through the study of the disease, historians have gained insights into the history of societies, power structures,

and the development of medical knowledge, as well as perceptions and cultural appropriation of the disease during the period. The latter two aspects, however, rarely include local environmental factors.²⁴ Despite the obvious importance of these environmental aspects, historiography on cholera has, curiously, engaged the environmental aspects of cholera in a very one-sided manner. Many histories of cholera that do feature the environment prominently have attempted to reconstruct the spatial distribution and biological requirements of *Vibrio cholerae*, the bacterium we hold responsible for the disease today. For those who had to deal with the cholera epidemics of the nineteenth century, however, this retrospective view was irrelevant. They acted to prevent or mitigate cholera outbreaks by observing and altering the local environment according to the medical theories of their own time. Although this eyewitness perspective is not entirely missing from the existing histories of cholera, it is rarely more than a sideshow. Therefore, this book is not another study of cholera in an urban setting based on social history and urban geography but an examination of the reactions of the local authorities and medical experts in Madras and Quebec City to cholera epidemics, their perceptions of the disease and the local environment, and their attempts to prevent or mitigate epidemics by altering conditions in that environment.

To achieve this goal I conceptualize cholera and the local environment not as the objects engaged by humans but as actors that usually did not behave as desired or did not react as expected by government officials. If the authorities wanted to restrict cholera's agency and thus control the disease, they had to employ numerous other human and nonhuman actors, many of them features of the local environment, as they did in Madras when they rearranged the MacKay's Garden village to prevent future outbreaks. This approach is indebted to Bruno Latour's actor-network theory, although it does not attempt to fully follow his prescription or use of terminology.²⁵ For example, I have supplemented his terms "actor" and "assembling" with others, such as "factor," "arrange," "agglomeration," "conglomerate," or "integrate," that, I believe, fit the Latourian outlook. Since historians have to rely on preserved sources, it is at times difficult to "follow the actors" and fully assemble them for analysis.²⁶ We have to make do with those materials we come upon, and, therefore, this book strives to emulate Latour's inclusive perspective on society but not to follow Latour's prescription to the letter. This approach is more than a methodological choice; it reflects the perception of cholera by contemporaries. In their accounts of epidemics, they described the disease as an independent entity beyond human control, as Archdeacon Mountain did in his sermon. Even if doing so was no more

than a rhetorical device to impress the readers of newspaper articles, medical treatises, or official reports, these expressions are nonetheless revealing. They demonstrate their authors' perception of the limits of human agency when faced with an epidemic of a deadly disease. To take contemporaries' perspective seriously also helps to avoid some of the dichotomic pitfalls of the nature-culture divide in urban environmental history.²⁷ In cities, "nature" is by definition in short supply. Going beyond the nature-culture divide, actor-network theory offers a fresh perspective on these urban colonial spaces: they constitute an ever-changing agglomeration of human as well nonhuman actors, into which some humans, mainly medical experts and government officials, sought to bring order.²⁸ They tried to identify those actors that would allow them to integrate cholera into a network of actors in such a way that made the disease controllable, and they found them in a variety of characteristics of the urban space.

The urban space itself was one of the most important of those non-human actors. The term "environment" does, after all, describe a spatial relation.²⁹ Being produced by society, and not simply being a given, urban space was continuously being formed and transformed by human and nonhuman actions. It was not, however, a passive object of human will but proved resistant to many of those plans. Thus, analyzing space is a means for studying not only human society but the complex interactions between humans and their environment, alive or not. The notion of space as a product of society was conceived by Henri Lefebvre; his spatial "triad" is a useful means of analysis.³⁰ It proposes that space is multidimensional, encompassing aspects of everyday practices (spatial practices), conceptualizations of space (representations of space), and meanings, imaginations, and emotions connected to space (representational spaces).³¹ All three aspects are present in space at any time, though not in equal measure, as one aspect might dominate in certain situations. If the production of the spaces we encounter in our lives took place in the past, then obviously this is also true for the spaces of the past that historians deal with.³² These spaces were also specific products of social interactions with the environment, and Lefebvre's spatial triad thus enables historians to analyze those aspects of historical spaces. For environmental historians this triad can be a useful tool. It can raise awareness of the different aspects of the spaces they deal with: the spatial practices shaping the sensorially perceived environment; the representations of space in the form of concepts of the environment, which might one day effect profound change; and the imagined layer of emotions and meanings, diffused over the environment, that inform representational spaces. It connects the environment to the social, the political,

and the cultural. Urban environments are thus a particularly fruitful field of historical and spatial analysis. It is certainly no accident that Lefebvre himself mainly concentrated on cities.

Yet, the prominence of nonhuman actors such as cholera or urban spaces cannot hide the fact that human actors, including government officials and medical practitioners, play a dominant role in this account. They were the primary figures who attempted to maintain or form these actor networks. They tried to stop, control, or manipulate cholera, and, therefore, they attempted to recruit and integrate numerous other actors—among them cholera itself—to do so. There is, however, another reason for this focus on human actors. We can discern all these participating actors only through the human observations relayed through written records. In these documents humans dominate. My main sources are records of the colonial authorities—correspondence, memoranda, reports, and minutes—complemented by newspaper articles and medical publications. Much of this source material is unpublished, although due to the process of colonial state formation in both Canada and India the number of published reports increased considerably over time while internal communications were quite often not preserved.³³ This shift in administrative and archival practices has had a discernible impact on this book. However, as it reflects a shift in the workings of the colonial authorities, it should not be perceived as a shortcoming but as a consequence of historical change.

On the basis of these source materials this book explores colonial authorities' fight against cholera, their perception of the local environment, and their attempts to change it. Part I addresses in detail the first cholera epidemics in Madras (1818–20, 1832–33) and Quebec City (1832, 1834). During the outbreaks authorities in both cities undertook measures that reveal different perceptions and kinds of knowledge—or lack thereof—about the local urban environments. Part II focuses on changes in perceptions about cholera, the local environment, and the sanitary movement. After having a considerable impact in Great Britain, ideas about sanitation reached Madras and Quebec City in the late 1840s and early 1850s. Sanitarianism was received quite differently in the two countries, yet it soon became the dominant way to deal with disease in general—and cholera in particular—in both Madras and Quebec City. The movement triggered substantial changes in urban environments, with water works being built at great cost and sewers planned, although not always constructed. Despite these efforts to control the disease, however, cholera epidemics kept returning. Part III explores the impact of bacteriology on perceptions of and measures deployed to fight cholera. Despite the fact that Robert Koch's

identification of a microorganism—the comma bacillus—as the sole cause of the disease occurred in India, the authorities there as well as in London at first refused to accept his findings and launched their own research program. Once Koch’s theory had become scientific consensus, authorities in both India and Canada invested in the new infrastructure of bacteriological laboratories intended to help control disease—an expectation foiled by Spanish influenza, one of the deadliest pandemics in history.