

philippine studies: historical and ethnographic viewpoints

Ateneo de Manila University • Loyola Heights, Quezon City • 1108 Philippines

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Philippine Studies: Historical and Ethnographic Viewpoints
vol. 64 no. 1 (2016): 73–101

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Urban Mobility and a Healthy City Intertwined Transport and Public Health Policies in American- Colonial Manila

During the early American-colonial period (1898–1913) mobility and public health became intertwined policy areas. Innovations in transport technology and infrastructure were introduced to “cure” Manila’s unhealthy geography. In 1906 the Municipal Board institutionalized health and mobility as twin concerns by establishing the Department of Sanitation and Transportation. Intertwining health and mobility seemed rational for colonial governance, but its irrationalities soon came to light. In dissecting this understudied aspect of American colonialism, this article provides new insights not just on the links between empire and technology but also on the concept of the colonial city as applied to early–twentieth-century Manila.

KEYWORDS: URBAN TRANSPORTATION · TROPICAL MEDICINE · MUNICIPAL GOVERNANCE · COLONIAL CITY

A quote from Rudyard Kipling kicks off the discussion in Warwick Anderson's (2007, 1) groundbreaking work, *Colonial Pathologies: American Tropical Medicine, Race, and Hygiene in the Philippines*: "The only things that matter in this fallen world are transportation and sanitation." Anderson then adds that W. Cameron Forbes—a former American governor-general, a friend of Kipling, and himself a firm believer in technological progress—believed that sanitation was more important of the two. Given the Americans' zealousness in "washing up the Orient" (Heiser 1936, 59), one could argue that Forbes's assertion was an understatement.

Akin to *Colonial Pathologies*, this article uses Kipling's intriguing statement as the springboard for analyzing the intersections of technology and colonialism in Philippine history. The quote from Kipling, "the poet and prophet of technology, and particularly transport technology" (Harvie 1977, 269), illustrates this convergence. His words evoke a specific philosophy of empire. It is a philosophy that regards technology not as an appendage but as lying at the core of colonialism. In the case of the Philippines, the innovations the Americans brought into the country facilitated the colonial project and reinforced the colonizers' claim to dominance. This insight regarding technology is, of course, not new (cf. Adas 2006). Although Adas includes both transportation and public health as aspects of what he calls "engineers' imperialism" (ibid., 129), he misses out on how the colonial state in the Philippines engineered this technological convergence to transform the urban landscape of American-colonial Manila radically.

In this article I argue that urban transportation was integral to the public health policies of the early American period (1898–1913), which roughly corresponds to the years prior to the massive Filipinization of the colonial bureaucracy and the consequent onset of a "new order of colonial hygiene" (Anderson 2007, 184). The Americans believed that the issue of mobility could determine the success of their public health and sanitation strategies. Such a notion became reality in the creation of a department of sanitation and transportation under the American-dominated Municipal Board of Manila. Moreover, with the advent of motorization, they felt that this innovation could improve not only the delivery of medical services but also the perception of the colonized toward colonial health institutions. The early history of the motorized ambulance illustrates this point.

The American colonizers offered a package deal of sorts in tying enhanced urban mobility to public health improvement. Eventually even the American colonial officials saw weaknesses and contradictions in intertwining the two policy areas. Moreover, innovations in urban transportation brought its public nature to the fore. The new transport modes then became precarious points of contact between the "diseased" natives and the displaced White man in a colonial city with an "unhealthy geography."

The urban locus of this article, therefore, is not just a setting but also an actor itself that plays an important role in the narrative. First, the colonial city was the main node for the process of technological diffusion from the metropole to the colonies. Also, its problems—pollution, overcrowding, flooding, disease outbreaks—were in fact the primary reason behind the colonial anxiety and the desire to transform its geography via new transport technologies. Lastly, the colonial city had an ideological value unmatched by other places in the colony; its livability for the colonizers was practically tantamount to the viability of colonialism itself.

To elaborate on the urban dimension of this article, I support the argument of Peter Rimmer and Howard Dick (2009, 30–34) regarding the convergence between metropolitan centers and Southeast Asian cities from the late nineteenth century to the early twentieth century as a result of technology transfer. During this period (1880s–1930s) the "late colonial city" in Southeast Asia approximated the "suburban city" in the West in terms of the innovations introduced via colonialism. The increase in the colonizers' political and economic control, in contrast to the situation in the early colonial phase (from the sixteenth to the early nineteenth century), was a crucial factor behind this development. The arrival of new transport technologies was an important aspect of this late-colonial convergence. Transport motorization, which was rapidly improving in the West, was imported into the key urban centers of Southeast Asia, "with very little time lag. By the 1920s, toward the end of the colonial period, the European enclaves of Southeast Asia's main cities looked remarkably like contemporary 'Western cities'" (ibid., 33). Obviously imperial logic dominated the discourse. The convergence of these cities was favorable to the colonizers as it gave them the luxury of comfort and familiarity in the hostile "tropics." In the case of Manila this period of convergence happened mainly under American colonialism. Convergence occurred not just at the level of technology transfer but also in terms of paradigm shifts. Accompanying motor vehicles and public health innovations were notions of urbanism imported

from the US, such as the City Beautiful movement, that Filipino elites soon imbibed (Morley 2016 in this volume).

Makeover of Manila's Unhealthy Geography

Geography was crucial in framing American colonial public health policies in Manila (Mactal 2009). Americans viewed the city's physical features as enablers of disease. Colonizers were anxious about Manila's low-lying topography, tropical heat and humidity, overcrowded slums, and polluted waterways. For the city to be habitable, Manila had to undergo an "imperial makeover" (Doeppers 2009).

Transportation was a key aspect in this geographical reconfiguration. The colonizers were optimistic that improved mobility would help alleviate Manila's unhealthy situation. For example, they saw in transportation the solution to one serious public health problem: overcrowding in the downtown districts. According to the *Manila Times*, henceforth *MT* (1905a, 3), the newspaper that served as the Manila Americans' mouthpiece, densely populated districts such as Binondo, Tondo, and San Nicolas were "not well adapted to drastic changes or material physical improvements other than those necessitated by enforcement of sanitary measures." Colonial officials consequently tagged congestion for the poor health conditions in Manila, especially in those areas populated by informal settlers: "The filthy conditions of some of the quarters of the old city, and especially in the districts of Binondo and Tondo, which are very largely inhabited by the poorest classes of Chinese and Filipinos, caused these places to become regular pest holes during the cholera epidemic" (Municipal Board of Manila 1903, 12). Dean Worcester (1909, 66), in particular, lamented the health conditions in areas densely packed with nipa shacks.

In light of this situation, transportation became integral in analyzing Manila's overcrowded and unsanitary districts. Many Americans cited the inadequacy of urban transportation in Manila as the root of the crowded conditions in the downtown. According to an article in *Manila Freedom* on 2 May 1900 (cited in Mactal 2009, 112), this problem was aggravated by the lack of an efficient urban transport system in Manila, a situation that worsened sanitary conditions in the downtown:

It appears to a great many who have had occasion to solve problems of this kind before, that the lack of rapid transportation is the main

cause of the density in the city. A laborer cannot very well live out at Santa Mesa and come into town in the morning to work on the wharves. It will take him the greater part of the forenoon to get to work on the poor cannon ball street lines that pretend to accommodate the public. No, he must live down town so that he can be close to his work. This same rule applies to thousands of the inhabitants, and as business increases from time to time, the piling up process continues until in many cases the courts in some of the large tenement houses are used to afford sleeping room. When the rainy season comes, the luxury will not be indulged in and the buildings will become more crowded than ever before.

The American solution came in the form of the motorization of Manila's urban transportation in the early twentieth century. At the start of the colonial regime, the new colonizers were upset with what they perceived as an inadequate system of urban transportation in the capital city. What they encountered was a preexisting "network" of small boats (*bancas*), privately operated carriages (*calesas* and *carromatas*), a horse-drawn tram, and thousands of pedestrians walking on poorly maintained sidewalks and streets. Through the collaboration of the colonial state and American entrepreneurs as well as the native elite, the first decade of the twentieth century marked the introduction of the electric streetcar and the automobile (Pante 2011).

The electric streetcar, more popularly known as the *tranvia*, was inaugurated on 10 April 1905 (*MT* 1905d, 1–2) and operated by the Manila Electric Railroad and Light Company (Meralco) by virtue of a franchise granted by the Municipal Board of Manila (1904, 9). Throughout the American colonial period, the streetcar provided an efficient and affordable transit system. Motorcars arrived and became part of the public transport system at about the same time as the *tranvia*'s introduction. Automobility, however, was limited to the colonial and native elite who could afford buying or renting automobiles. Nonetheless, the colonial state was convinced of the transformative power of transport motorization over Manila's unhealthy geography. As early as 1902 the Municipal Board of Manila (1903, 13) looked forward to the desired changes that the electric streetcar could effect, especially in terms of suburbanization and alleviating crowded conditions in the downtown. That optimism was still evident in the following year (Municipal Board of Manila 1904, 9):

The outlying districts in nearly every direction from the crowded centers are more desirable for residence sites by reason of the higher ground, and it is expected that as soon as the railroad [electric streetcar] is put into operation many of those now paying high rents for small, unhealthy quarters will take advantage of this quick transportation and secure comfortable dwellings in better localities.

Introducing the electric streetcar seemed like hitting two birds with one stone. It was as if transportation motorization not only solved the problem of congestion in the “unhealthy” downtown but also encouraged more people to settle in the “more healthful suburbs.” Apparently health issues helped frame transport motorization in Manila. Given these underlying objectives, it was not surprising that the routes of the electric streetcar, once installed, stretched into the outlying sections of the city, where the hilly topography supposedly formed the geographical basis for a more salubrious environment. Areas such as Santa Mesa and San Juan were developed along these lines (Pante 2011).

Aside from the electric streetcar, the automobile was also another critical transport mode in the dispersal of the downtown population into the suburbs. Real estate developers and advocates of suburban living such as Walter Robb (1930a, 5; 1930b, 8) held this view. Robb (1927, 12) explicitly tied the improvement of transport services to the changes in Manila’s “geography of health”: “In these [real estate] companies a moderate number of Americans and a great number of Filipinos are buying their own homes in districts where transportation into Manila is reliable and the surroundings pleasant and healthful.”

Robb (1930b, 8–9) also explained that the existence of automobiles and an electric streetcar allowed many, especially the wealthy, to leave the “deteriorating, noisy, and polluted center for suburbia.” Advertisements such as one made for the San Juan Heights company carried this idea of motorized mobility changing the unhealthy geography of Manila (Salonga 1934, 139): “San Juan Heights used to be a health and pleasure resort for the very rich only. That was when fast horses and carriages were the only rapid transportation. It was a rare privilege then to live there. Now even the poor may have the privilege of a home in San Juan Heights.”

This advertisement, along with the pronouncements of Robb and other exponents of suburbia, pointed to the elite perception that the streetcar and

the automobile were transformative machines. This perception was not far from the truth as it has been shown that indeed motorized transportation, the streetcar for example, “contributed markedly to lower population densities and suburban expansion” (McKay 1976, 208). The Americans’ optimism with regard to motorized urban transportation during this period was not unique to them. For instance, the idea that an efficient streetcar system could solve the problems of the industrial city—from overcrowding and housing shortages to public health concerns—began in the urban centers of nineteenth-century Western society. In the industrial-capitalist centers of New York and Chicago mechanized mobility held the promise of improving the situation of city-based workers (Hall 2002, 49–50; 58–59). For many Westerners who found themselves in the midst of rapid technological transformation, “the electric tramway was little less than the *deus ex machina*, descending miraculously upon the urban stage to resolve the entire social drama” (McKay 1976, 208).

The automobile was also seen in a similar manner. Victor Heiser, Bureau of Health director from 1905 to 1915, saw the purported transformative power of automobiles in terms of changing the unhealthy geography of the city, particularly the walled city of Intramuros. Overcrowded Intramuros and its “malarious” moat were constant targets of the Americans’ criticisms of the poor health conditions in Manila. Heiser (1936, 41) stated: “In disregard of the hurt feelings of antiquarians and historians, we admitted Twentieth Century vehicles, and ventilated the quarter by punching holes through the walls. In our holy zeal for sanitation, we might have razed them completely.”

For the streetcar and the automobile to become effective, the requisite infrastructure had to be in place. Roads thus became an important concern for the American colonial state. So important were thoroughfares that the Philippine Commission’s first monetary allocation, worth US\$1 million, was devoted to building roads (Forbes 1945, 199). If Americans drew a connection between transportation and health, then roads as carriers of vehicles definitely had a role to play in the dynamics. Good roads were viewed as contributing to Manila’s transformation into a healthy city.

In the early years of US colonialism, the link between roads and public health was stressed. One aspect of road building that was often highlighted in this regard was improved pavement techniques. In late-nineteenth-century and early-twentieth-century American cities, the concern for pavement was

a product of changes in transport technology and sanitation issues. As motor vehicles became a fixture in the city, streets had to adapt to the changing traffic that they had to accommodate. At the same time, sanitation was a factor especially in terms of a preexisting transport motive force that was still visible during this time: horses. Gerrylynn Roberts and Philip Steadman (1999, 59) assert that “smooth surfaces were favoured because they were easier to sweep clean of horse droppings.” Furthermore, motorized transportation became preferable because they left no manure in the streets, unlike draft animals. Dust was another sanitation problem that proper pavement techniques addressed. Concerns about the materials used for road construction, paving, and maintenance became all the more pressing because they were issues that went beyond mobility; they involved public health.

Worcester (1909, 85), a Philippine Commission member and Secretary of the Interior, believed that bad streets were a “very serious obstacle to the successful carrying on of sanitary work.” In his view inadequate city streets, compounded by the lack of a sewer system, led to health problems. Residents in the fringes of Manila where road networks were not that extensive walked considerable distances to the nearest public closet, whereas one could simply use a chamber pot and throw the contents into the nearest *estero* (estuarial creek) or vacant lot (*ibid.*, 83). Esteros, another geographical feature of the city tagged by the colonizers as a “constant menace to public health” (US Philippine Commission 1901, 52), thus virtually served as “open sewers” in the city (*ibid.*, 29), a problem that had already been noted by Spanish officials (Reynolds and Caballero 2006, 76). Whereas for centuries these esterros served as Manila’s network for the conveyance of passengers and products, by the start of the twentieth century these esterros had become marginalized in the remapping of the capital, despite plans to tap their potential (Burnham and Anderson 1906; Liongson 2000). William Reynolds and Evelyn Caballero’s (2006, 79–85) analysis of city maps from the late nineteenth century to the end of the American colonial period shows how the previously numerous estero branches in Quiapo had decreased in the early twentieth century. The decline in number was due to the constant filling in of esterros throughout the colonial period, a response of the state to the fear that the estuaries had become carriers of pollution and disease. With motorization already underway these waterways were no longer transportation assets but public health liabilities. In effect these estuaries became victims of the city’s land transportation revolution and the Americans’ neglect (Roxas 1970, 260, 269).

Moreover, Worcester (1909, 85) was concerned with the usual street construction works resulting in roads “constantly torn up and the filth which underlies them has been continually brought to the surface.” He postulated that these excavated materials “harbored the organisms of cholera” (*ibid.*). It was no wonder that health usually took precedence over infrastructural development as reflected in a report by the Municipal Board of Manila (1903, 12): “New constructions and improvements have been planned, but the majority of them have necessarily been delayed for the present in order to enable the Department to cope with the problem of keeping a clean and healthful city.”

In the case of American-occupied Manila, the colonizers’ concern for proper paving even carried an ideological value. The Americans often criticized the road network that the Spaniards left behind and used this deficiency to depict the previous colonial regime as a benighted autocracy. A prominent example was the Spaniards’ use of cobblestones in main thoroughfares such as Escolta and Rosario. In its reports the American-era Bureau of Health blasted the previous colonizers for using “large cobblestones over which the native vehicles rattled with careless abandon and deafening noise” (Heiser 1908, 45). To highlight the supposed inadequacy of these streets, Heiser (*ibid.*) brought up the implications of cobblestones for Manila’s public health: “In the Escolta and Calle Rosario, ambulances containing patients had to proceed at a walk even with emergency cases, in order that further injury might not be inflicted.” The Municipal Board’s answer to this “problem” took the form of wooden blocks and the regular sprinkling of water on city streets: “The most important business streets, paved with wooden blocks, were flushed and washed down daily” (Municipal Board of Manila 1910, 85).

Dust was another related problem. Illustrating this problem was the decision of Santa Mesa residents to write a petition to the president of the Municipal Board on 2 March 1905 because of the lack of street sprinklers plying their area: “Since the advent of the dry season the road is covered with a thick layer of dust, which is continuously stirred up by passing vehicles” (MT 1905b, 2). The petitioners described this circumstance as a health concern and even believed that the Commissioner of Public Health would take their side. In the petition the residents requested that sprinkling be done twice a day.

In response to the petition, the *Manila Times* editorialized about the possibility of having oiled roads in the city to do away with street sprinkling.

It even cited the comparable experience of another American territory in the tropics: “As a road for a tropical country the oil-built thoroughfare has had a trial of a year and a half in Honolulu, and it is probable owing to the satisfaction that it has given, that the principal [sic] will be adopted for general road-building in Hawaii in the future” (*MT* 1905c, 4). The editorial claimed that the main advantage of having oiled roads in the tropics was that heat and rain had no effect on it. Moreover, this dust-free road did not require regular sprinkling. The newspaper had only one objection: the smell of petroleum. However, the editorial also said the smell would become “unnoticeable in a few days. Whatever fumes continue to arise shall act as discouragers to flies and mosquitos along the public thoroughfares” (*ibid.*, 4).

In relation to the abovementioned suburban success, roads were also perceived in a similar fashion. With automobiles as a medium for reorienting Manila’s geography toward “healthy living,” roads were consequently viewed as the necessary platform to achieve the said goal. Wide and well-paved arterial roads that led to the healthy suburbs, such as Calle Santa Mesa, were rebuilt supposedly to “make suburban highlands accessible to the main business sections of town and give dreams of cool clean country homes lying within a short drive of men’s downtown offices, new and practical significance” (*ACCJ* 1940, 35).

Given the available primary sources that show no explicit policy of segregation (whether along racial, ethnic, or religious lines) under American rule, it would be hasty to conclude that road building in American-occupied Manila resembled how broad boulevards in many parts of the colonized world, such as in Morocco, became a *de facto* cordon sanitaire, “isolating the city from its medical zone” (Wright 1997, 336). Nonetheless, American colonial authorities viewed roads as necessary elements in the creation of a healthy city. The Bureau of Public Works (1913, 2), the arm of the Insular Government in charge of transportation, subscribed to the notion that improved roads would bring “[b]etter health and quicker medical attention” apart from other socioeconomic benefits.

In effect Manila began to develop its suburbs that were similar in many ways to those emerging in US cities at the time. The underlying rationale, the processes, and the results were remarkably similar. Manila was shedding its past as a walled city and discovering its new self in the outlying districts. Indeed, such was the ideal set out by Burnham in his 1905 plan for Manila (Morley 2016). In this regard Manila in the early American

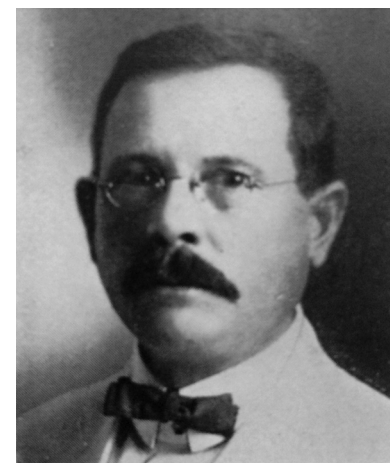
colonial period conformed to the general trajectory of cities in Southeast Asia at this specific juncture (Rimmer and Dick 2009, 30–34). Thanks to technological diffusion, Manila had developed its own streetcar suburbs like those in Boston and San Francisco at almost the same time. However, the convergence of metropolitan and colonial cities went beyond morphological similarities; it was also manifested in terms of urban administration. The next section addresses this aspect.

Manila’s Department of Sanitation and Transportation

The inextricable link between public health and transportation in American-colonial Manila was perhaps most visible in the decision of city officials to create a specific department to address these two issues simultaneously. Established on 1 July 1906 the Department of Sanitation and Transportation of the Municipal Board of Manila (1906, 100) was formerly part of the Department of Engineering and Public Works and oversaw “all sanitary work, street sprinkling, care of parks and public grounds and cemeteries, and all city transportation, also a large part of the transportation used by the Insular Government.”

The department’s first chief was Capt. John C. Mehan (photo below), former city superintendent of parks. Under him were around 1,100 to 1,400 employees (*ibid.*, 100), a large staff relative to the entire workforce of the

municipal government. Mehan was not just a well-regarded colonial administrator, but he also “turned out to be a very active politician, a member of the Taft era’s inner command, and one who possessed far greater administrative abilities than his nominal masters, the City Council. Governor-General Forbes was once obliged to tell them that whereas Mehan was indispensable, they were not” (Gleeck 1990, 70). That he was in the good graces of Forbes was significant because Forbes was known for prioritizing infrastructure and mobility during



Capt. John C. Mehan (1899–1914)

Source: Philippine Carnival Association 1909, [4]

his term and as such earned the moniker “*El caminero*” (The Road Builder) (ibid., 71; Heiser 1936, 51). Upon Mehan’s death in 1914, Manila’s Botanical Gardens, known as Jardín Botánico during the Spanish colonial period, was renamed after him (Gleeck 1990, 71).

The department collected fees for their pail cleaning, vault cleaning, and transportation services, as well as from the rent and sale of rights at city cemeteries. At the same time, it also rendered public services that were free of charge: “Street cleaning, garbage collection, maintenance of crematories, public closets, pail and vault cleaning in city buildings, improvement and maintenance of parks and public grounds” (Municipal Board of Manila 1906, 100).

The upkeep of city streets was one of the department’s main responsibilities. In terms of sweeping the department covered more than a million square meters of street surface annually, with a number of thoroughfares cleaned as often as thrice a day (Municipal Board of Manila 1907, 72). However, this task was not simply about sweeping. The department regularly conducted street sprinkling to maintain road cleanliness. Department employees flushed main thoroughfares such as Escolta twice daily (Municipal Board of Manila 1909, 84). Sprinkling wagons that used Meralco’s tracks were used for street sprinkling (Municipal Board of Manila 1910, 85), although this method was not the only one employed. In some streets a hydrant and a hose were utilized, while in others a simple can with water accomplished the task. The hydrant-and-hose method was cheaper than the use of wagons, but the department figured that it cost more “on account of the injury to the streets and the expense of maintaining a large number of hydrants” (Municipal Board of Manila 1906, 101). In 1908, 77 percent of the total area under street sprinkling was sprinkled using wagons (Municipal Board of Manila 1909, 84). By 1909 the department had “25 sprinkling wagons, and an average of 21 were in daily use” (Municipal Board of Manila 1910, 85).

Street sprinkling targeted a specific health concern: the “dust nuisance” that the Board of Health gave as the cause for many diseases including tuberculosis (Heiser 1909, 35–36). In fact, the cholera epidemics that hit Manila in the early twentieth century brought about the emergence of street sprinkling as a health measure: “During the cholera epidemic of September, October and November, 1908, the wagon sprinklers were used by the disinfecting corps of the Bureau of Health for transporting and distributing disinfectants” (Municipal Board of Manila 1910, 85).

The collection of waste materials was another important task of the department. In the initial years of civilian government in Manila, maintaining sanitation was difficult. Officials blamed transport woes and the lack of attention given to it by the Department of Engineering and Public Works: “Owing partly to lack of transportation, and partly to the fact that this branch of the city work has not been given its proper place in the organization of the Department, the refuse from street cleaning and that obtained by collections of house garbage have never been separated” (Municipal Board of Manila 1903, 20). Garbage dump carts also deteriorated gradually due to the “corrosive action of the refuse” (Municipal Board of Manila 1904, 76). It is not farfetched to think that this supposed lack of attention was a key reason behind the creation of a dedicated agency, the Department of Sanitation and Transportation, a few years later. This department systematized the collection and disposal of refuse. Wagons and carts were used to collect garbage, refuse that accumulated in the beaches and esteros of the city, and dead animals. Sweepings were collected in handcarts, while long-distance hauling was done in dump carts (Municipal Board of Manila 1909, 85). In 1909 an “average of 41 one-horse carts, 20 two-horse carts and 90 laborers were used daily for collecting and disposing of garbage and refuse” (Municipal Board of Manila 1910, 86) from various parts of the city. Collections were made between 9 pm and 6 am, with carts going from door to door. Households were also asked to segregate their waste materials (ibid., 85).

After collection the “rubbish is carted to low land and covered with earth. Material unfit for filling low land is taken to the crematory and burned” (Municipal Board of Manila 1911, 80). One important component of waste materials that ended up in the crematories was the horse manure collected from the city stables. For the landfill system, fills were “covered with at least 6 inches of good earth.” The fill at Cementerio del Norte “was about 15,000 cubic meters” (Municipal Board of Manila 1907, 73). The department noted the city’s high demand for this service: “For carting this refuse and the earth used in covering the same it was necessary to make use of more transportation than that properly chargeable to garbage collection. This amounted to P38,766.86 for the year [1907]” (ibid., 73).

Along with the collection of garbage, the Department of Sanitation and Transportation had another important task intimately connected to the colonial state’s public health regime—the collection of night soil, for which fees were charged. Night soil collection, a significant public health

measure initiated by the Insular government (Anderson 2007, 104–29), entailed a delineation of tasks between the Bureau of Health and the city of Manila. Table 1 shows the value of this service rendered by the department in 1907.

Meanwhile, the cost for “labor, fuel, supplies, equipment, transportation, etc., including expenses of steam barge, *Pluto*, amounted to P133,167.73” (Municipal Board of Manila 1907, 74). A significant portion of this amount was devoted to the maintenance of *Pluto*, the barge that carried all night soil into the open sea for disposal. *Pluto* began its service in 1903 and was sold by the city government in 1911 (Municipal Board of Manila 1906, 101; 1911, 81).

Insular colonial officials such as Worcester (1909, 65) lauded the work of the department and its head: “Under this arrangement the disposition of refuse and night soil was turned over to the city, and I am glad to say that under the supervision of the present highly competent chief of the department of sanitation and transportation, Mr. Mehan, this work has, in my opinion, been performed even better than when it was done by the Board of Health.”

Aside from the movement of wastes, the department was also responsible for the movement of goods, meats in particular. The department oversaw the delivery of meat products via city wagons from the *matadero* (city slaughterhouse) to the public markets; it was also responsible for the overall cleanliness of the markets. Prior to the transfer of the task of meat delivery to the department, a private contractor provided this service to the city (US Philippine Commission 1907, 152). In 1907, 47,372 pigs and 81,064 quarters of beef were transported, and the department collected P8,995.16 for this service (Municipal Board of Manila 1907, 74). Delivering meat was another aspect of the department that was an indirect outcome of the early–twentieth-century cholera outbreaks. Specifically the 1902–1904 cholera epidemic in Manila was largely blamed on the unsanitary handling of food (Worcester 1909, 19–24).

Just like for the department’s work on night soil collection, the maintenance of the *matadero* was one task of the department that featured the collaboration between Insular agencies and the city government. Similarly the department drew praise from Insular officials. According to Heiser (1908, 34) the Bureau of Health was “particularly pleased with the system of administration adopted, and with the promptness with which . . .

Table 1. Value of service rendered by Manila’s Department of Sanitation and Transportation for the collection of night soil, 1907

SECTOR SERVED	VALUE OF SERVICE (PESOS)
For the city of Manila (public closets, municipal buildings, Mariquina Valley, etc.)	54,797.16
Insular bureaus	11,918.68
Quartermaster Department, United States Army	2,396.10
Private householders	70,743.99
Total value of service	139,855.93

Source: Municipal Board of Manila 1907, 74

Mr. J. C. Mehan, has carried out the suggestions of this office with regard to certain features of public sanitation.”

Given all these aforementioned tasks, it was evident that transport technology was crucial for the operations of the Department of Sanitation and Transportation. The centrality of transportation for the purposes of public sanitation could be gleaned from this statement published in the Municipal Board’s annual report:

In street cleaning, the collected refuse must be removed. Over seventy carts are in use every night collecting garbage and rubbish. In collecting night soil and placing it on board the barge which disposes of it, transportation is the greatest factor. The filling of city lots and street sites is almost wholly a matter of transportation. One wagon for collecting animals found at large is maintained at the pound. Three wagons for hauling meat from the *matadero* to the markets form a feature of the sanitary care of markets. All improvements of the cemeteries and parks are dependent upon the amount of transportation available for carrying on this work. And by far the largest street area is sprinkled by wagons. (Municipal Board of Manila 1907, 76)

In the beginning the department relied heavily on horse-drawn vehicles provided by the city stables. By June 1906 the department’s stables had “227 American and Australian horses, 108 native horses, 7 Chinese horses, 149 American mules, and 34 Chinese mules” (Municipal Board of Manila 1906, 101). Maintaining a sizeable animal workforce had its attendant problems.

For one, horses used in garbage collection often ended up in hospitals for treatment usually because sharp objects in the dump injured their feet (Municipal Board of Manila 1904, 76). A more serious concern was the prevalence of disease among the stock, which manifested as early as 1903 (ibid., 13). Surra, an illness that afflicts horses, was one major problem that the department faced. An outbreak struck Manila in the early twentieth century, and the department was badly hit. From December 1905 to January 1906 surra killed eleven animals at the department's Stable No. 1 (Municipal Board of Manila 1906, 101).

The department was not the only agency served by its transportation fleet. Since the department was responsible for the land transportation needs of the Insular government bureaus and other city departments, its fleet also catered to these state bodies. For example, the Bureau of Health's need for ambulances and its work on mosquito and rat extermination depended on transport services rendered by the department (Municipal Board of Manila 1913, 45; Fox 1911, 24). The bureau even praised the "facilities of this large and well managed stable [as it] contributed largely to the promptness with which dangerous communicable diseases were handled" (ibid., 24). Manila's fire department also hired the department's horses for fire-fighting purposes (Municipal Board of Manila 1906, 77). Table 2 provides a breakdown of the monetary values for the transport services that the department offered.

However, with Manila's changing urban transport system in the early twentieth century, the department felt that it had to adapt to technological transformations happening in the city. By 1907 the department was already contemplating the possibility of using motor vehicles for its various functions:

Information has been sought as to the practicability of using motor cars driven by electricity, gasoline, alcohol, or steam. The response to requests for data in this matter has been slow, and there has not as yet been any information obtained which warrants any expenditure in this direction other than for experimental purposes.

There are certain items of expense connected with horse-drawn vehicles which are much higher in Manila than in most of the cities where motor cars have been used for commercial purposes to any extent. This should be taken into consideration in making any

Table 2. Monetary value of transport services rendered by Manila's Department of Sanitation and Transportation, 1912

CUSTOMER	MONETARY VALUE (PESOS)
Insular bureaus	111,291.71
City of Manila other than Department of Sanitation and Transportation	228,429.78
Department of Sanitation and Transportation	254,619.41
Miscellaneous transportation	11,946.91
Total	606,287.81

Source: Municipal Board of Manila 1912, 70

comparison as to operating expenses of horse-drawn vehicles and motor cars. (Municipal Board of Manila 1907, 77)

In 1909 the Municipal Board was seriously considering the use of motorcars for municipal services given that municipal governments around the world were already headed in that direction. Their shift toward motorized technology, the board claimed, would be determined by economics and in relation to the then prevalent use of horsepower:

If their use results in economy and efficiency elsewhere, then, by reason of the extreme high prices that rule here for horses suitable for city work, together with the excessive cost of hay and grain necessary for their upkeep, whether in use or not, there would appear to be no doubt that the use of power other than animal power for all such vehicles as are not in daily use, yet subject to call at any hour of the day, would result in no inconsiderable saving of expense, to say nothing of the increased efficiency. (Municipal Board of Manila 1910, 93)

For that year the department proposed to "place in service . . . two automobile patrol cars, also two passenger cars or runabouts for such service as they will best supply" (ibid.) for the following year.

Despite the initial optimism, the department was slow in integrating motor vehicles into its fleet. In 1909 the Municipal Board of Manila (ibid., 85) "found that the electric car was well equipped for distributing the water

over the streets, but existing conditions made it difficult to load the car with dispatch,” which made using the vehicle impractical. Two years later the department purchased land transport equipment, including trucks, although a big chunk in its expenditure was still devoted to the acquisition of horses and mules (Municipal Board of Manila 1911, 78). Moreover, the department also considered using “street-car sprinklers” to improve its street-sprinkling operations. This move was a response to the fact that “[m]ost of the street surface was [still] sprinkled with horse drawn sprinkling wagons” (ibid., 79). In its 1912 report the department was still in the proposal stage to purchase “a number of auto trucks and sprinklers . . . in lieu of making purchases of animals and vehicles to replace those worn out in service” (Municipal Board of Manila 1912, 71). Finally, the use of motorized transport for the collection and disposal of waste materials only materialized when the municipal board bid out this task to the private sector. The Manila Refining Company won the bid in 1913, and the contract stipulated that the private contractor had to use motor trucks for collecting garbage and refuse (Municipal Board of Manila 1913, 45).

The Motorized Ambulance

Still, motorized transport for public health and sanitation had notable applications best exemplified by the motorized ambulance. In the early-twentieth-century US, in an effort to “show that automobiles were more sanitary, clean, safe, and efficient” (Greene 2008, 263–64) than carriages, motoring advocates documented and published accounts of how medical professionals benefited from using the new vehicles in their practice. For them, automobiles “allowed doctors to respond faster to urgent cases and thus save more lives. Because the vehicles could be left unattended, they allowed a doctor to focus exclusively on the patient without being distracted by concerns about his horse. The doctor who arrived in a car was cleaner and did not bring dangerous stable filth into the sickroom” (ibid., 264). Needless to say, many US doctors quickly joined the bandwagon.

Soon, Manila employed automobile-aided medical services. An early example was the Bureau of Health’s ambulance service in cooperation with the Municipal Board (Heiser 1908, 48). By 1910 the Philippine General Hospital and the San Lazaro Hospital already had one electric ambulance each, with one in San Lazaro reserved “exclusively for dangerous communicable diseases” (Fox 1911, 24). Although the bureau

had praised the stable facilities of the Department of Sanitation and Transportation, it recognized the inevitability of technological change for a more efficient public health system: “the day of the old ambulance is past and gone forever in Manila and motor power vehicles have taken their place” (ibid., 24).

The Bureau of Health believed that more than increasing vehicular speed, motor ambulances provided a social benefit. Heiser (1908, 48) expected that motorized ambulances would please Manila residents:

A central station is to be established near the Bridge of Spain, and the latest modern motor cars will be installed. These cars will not be characterized by distress or horror signals and the clanging of bells, but will pass quietly through the city on their missions of mercy without attracting attention. One of the first official acts of the present Director of Health was to eliminate the pyrotechnic display in the ambulance service.

Heiser’s remarks were made probably in response to the widespread criticisms against health officials regarding the “reckless speed” of its ambulances. Carroll Fox (1911, 25), another Bureau of Health official, shared Heiser’s concerns and optimism: “Much of the antipathy of the Filipino people against ambulances has disappeared since the new service was put into operation.” He added, “Ambulance attendants, who are all Filipinos, are uniformed as sanitary inspectors and are required to observe the strictest decorum in their dealing with people. So far there have been very few complaints” (ibid., 25).

However, the health officials’ confidence in the mechanization of ambulance service was not enough for some sectors, even civilian Manila Americans. On 7 November 1911 the *Manila Times* (1911a, 4) reported the case of a Filipina living in the outskirts of the city near San Juan bridge who died as she was about to give birth. In its editorial the newspaper pinned her death on the failure of the Philippine General Hospital in responding promptly. The editorial alleged that the physician was 29 minutes late, an “unpardonable delay” given that the hospital had an ambulance service that could have saved the woman’s life (ibid.). The editorial’s allegations were so serious that then Interior Secretary Worcester wrote a lengthy rebuttal, which the *Manila Times* (1911b, 1, 5) published the next day.

Worcester explained his side by describing the technological sophistication of the hospital's ambulance service. He narrated in detail the mechanized processes involved, from the telephone call to the alarms set off by buttons and gongs, and ending with the dispatch of electric vehicles. Every minute in his chronology of that fateful emergency call was accounted for, quantifications meant to dispel accusations of incompetence on the part of the hospital. Worcester also tried to deflect criticism by saying, "Obstetrical cases are not ordinarily rush cases and the physicians who go out are, and have always been, sent in carromatas" (ibid., 5). Whether or not an alibi, such a statement revealed the awkward transition phase that Manila medical professionals found themselves in: somewhere between a predominant and an emerging technology.

In their reply the *Manila Times* (1911c, 4) editors, of course, countered Worcester point by point, although what should interest us here is the way they framed their arguments along similar lines. Placing their trust in motorized mobility, the editors stated: "The government hospital is the most excellent—mechanically—of the city institutions. We have sought to raise the human element of the hospital routine to the same level of excellence that the mechanical end has already attained." To assert the newspaper's stance, the editors even conducted an experiment by arranging two automobile owners to drive from the PGH to the San Juan bridge and measure the time it took them to complete the trip. The imperial ethos that underpinned Kipling's appreciation for technology was the same discourse that was visible in the heated exchange between Worcester and the *Manila Times*, and the same discourse that rendered invisible the plight of the Filipina who should have been the focus of their discussion.

A Double-Edged Sword

Evidently the adoption of motorized transport was a pressing issue that the Municipal Board faced. This issue, however, did not just involve matters of physical mobility; it was also tied to public health and sanitation concerns. The health dimension in motorized transport technology made the shift to the latter all the more important. This technological jump was an issue faced not only by Manila, but also by almost all urban areas all over the world.

Efficient urban vehicles, in the form of electric streetcars and automobiles, had supposed transformative powers, as discussed above. Moreover, the shift away from horse-drawn vehicles was seen as a vast

improvement in urban sanitation. Horses used for pulling trams became a hygiene problem because of the droppings they left in the city streets (McKay 1976, 26, 108; Greene 2008, 248). James Flink (1998, 28) posits that one of the main reasons why the automobile became popular in the US was the idea that a horse-less city was a healthy city as well. Although the annual reports of the Municipal Board did not treat horse manure in the streets as a significant issue, statistics present a similar reality in Manila. In 1909 the Department of Sanitation and Transportation collected a total of 20,561 cartloads of "stable refuse" (Municipal Board of Manila 1910, 86). One can just imagine the amount of manure generated by the fleet operated by the department.

With Western society in the throes of industrial advancement during this time, it was not surprising that Americans looked to technology with a sense of optimism as they engaged in their "civilizing mission" in the colonial tropics (Adas 2006). Americans tried to find in "modern" transportation possible solutions to Manila's health problems. However, as discussed below, the solutions the Americans adopted also led to further public health problems.

A good example of this paradox was the construction and paving of city roads. The wood paving in Escolta and Calle Rosario, which supposedly improved upon the poor road pavement of the Spanish colonial period, was also seen by Worcester (1909, 86) as a potential health problem: "numerous holes in the wooden paving have served to retain pools of water when it rained or when the streets were sprinkled and have rendered the placing of these streets in a sanitary condition impossible." Heiser (1908, 45) also criticized the city's road network under the Spaniards and called it a "menace to the public health" of Manila, "as the holes and depressions become filled with dirt" and led to decay. Apparently street sprinkling, a prominent public health measure, was eventually criticized as a possible cause of health problems. By 1911 the "regular daily flushing on Calles Escolta and Rosario was discontinued, as these streets were found to be unsafe for traffic when wet from flushing" (Municipal Board of Manila 1912, 69).

By 1908 the Bureau of Health still had no answer to this quandary. Nonetheless, Heiser (1908, 45) clearly made the connection between transportation and health in how he posed the problem: "A smooth, durable street paving for Oriental cities which is at the same time sanitary, does not yet appear to have been found. Asphalt, owing to the continuous heat, becomes so soft that the depressions of the horses' hoofs and of the wheels of the vehicles make an uneven surface."

Even the bureaucratic logic behind the Department of Sanitation and Transportation did not escape criticisms. Only this time the criticisms came not from colonial officials but from the Filipino masses. Heiser (1909, 34) himself had to respond to rumors surrounding Manila's "multitasking" department: "Much annoyance has been caused during the past few years by the persistent circulation of rumors to the effect that the meat was conveyed from the slaughterhouse to the markets in the same wagons that were used for hauling garbage and night soil. It is, of course, needless to state that no such thing occurred." It is, of course, also needless to state why such rumors about the Department of Sanitation and Transportation began in the first place.

Increasing automobile use also led to a more rapid deterioration of roads. Health officials saw this deterioration as another health hazard, particularly the spread of dust particles. In the early colonial period, before concrete gained popularity in road building, the main materials for paving were gravel, broken stone, or, as in some parts of Manila, wooden blocks (Greene 1912, 19). Macadamization was the usual type of road construction, but it deteriorated rapidly under the weight of automobiles. In response government engineers turned to road bituminization, which entailed having oiled surfaces for roads to prevent the dispersal of dust particles. Not only did this measure supposedly eliminate the need for water sprinkling, colonial officials also saw it as a deterrent in the spread of tuberculosis (Gordon 1912, 17–18). The Americans' fascination with bitumen had striking similarities with their preference for reinforced concrete as construction material. Heiser, for one, was obsessed with concrete's supposedly hygienic characteristics and thus used it for building sanitary markets in Manila (Heiser 1936, 112; Anderson 2007, 115).

The speed of movement that motorized transportation brought about, while solving the issue of mobility, also created the problem of easy transfer of infection. Worcester (1909, 60) was perceptive of the problem:

One source of danger which has arisen since the last serious epidemic in Spanish times seems to have been generally overlooked. So long as inland travel was necessarily undertaken on foot, or horseback, in vehicles or in small boats, it was necessarily slow. The ordinary incubation period of Asiatic cholera in this climate is forty-eight hours and under these circumstances the infection could not spread rapidly, but with the construction of railways a new factor was introduced.

However, more pressing than the swift transfer of disease was the public nature of the new transport modes, thus rendering the entire riding community vulnerable to such diseases.

The transport modes, most especially the electric streetcar popular to both Filipinos and Americans, represented that point of contact between colonizer and colonized. At a time when pathogenic distribution in the colonies was increasingly understood in racist terms, that point of contact became a source of danger. The White American was "threatened by the proximity of diseased Filipino bodies and 'disease-dealing' Filipino behavior" (Anderson 2007, 93); hence, the earlier focus on transforming the geography of unhealthiness shifted toward the disciplining of the natives' diseased bodies. Logically vehicles and roads became critical sites for the colonial state to impose discipline among the native subjects.

Due to its popularity, the streetcar became a principal locus of the colonial state's drive to discipline the Filipinos' supposedly unhealthy habits. In its zeal to reform the native habitus, the colonial state had to rely on "coercive measures based on exclusion, surveillance, and even attempts at segregation" (Moralina 2009, 188) as seen in the antituberculosis campaign during the American colonial period. A good example of this measure was the suppression of the natives' habit of spitting in streetcars.

Those who operated transport vehicles also became targets of public health campaigns. According to section 865 of the 1908 Revised Ordinances of Manila, drivers of any vehicle shall be "at least sixteen years of age, of intelligence and good character, and free from infections or contagious disease" (Malcolm 1908, 283). This provision especially held true for *cocheros*, the native drivers of horse-drawn vehicles. As part of its antituberculosis campaign, the local government even screened driver's license applicants for this specific disease (Heiser 1913, 40–43).

The colonial state also treated the streets as arenas for transforming how the natives valued and distinguished public and private spaces. The Americans then framed this discourse by linking it to public health concerns. The 1908 Revised Ordinances of Manila showed various examples. Sections 815 to 861 referred solely to provisions in relation to the use of the public streets. Section 809 (n) prohibited the depositing of any offensive substance detrimental to public health on any road or alley (Malcolm 1908, 270). Similar restrictions applied to waterways, like esteros and canals (ibid., 263–64). Through these ordinances, the city government hoped that the streets

could reform Manila residents in the ways of proper “biomedical citizenship” (Anderson 2007, 158–79).

Conclusion: The Colonial City and Its Administrative Logic

Urban transportation and public health policies in Manila were interrelated aspects of colonial administration in the early twentieth century. At the start perceptions of geographical displacement governed the Americans’ public health paradigm. The colonizers thought that in order to keep themselves healthy (and by extension, to maintain imperial rule in the Philippines) in the supposedly disease-dealing tropics, Manila’s unhealthy geography had to be transformed. The electric streetcar and the automobile came to the rescue. But in time this paradigm gave way to a more racist understanding of health (*ibid.*), and as such the natives’ *habitus* became the focus of public health campaigns. Nonetheless, urban transportation was still an important component of public health policies. Precisely because of its public nature, urban transportation revealed the porosity of the divisions separating the colonizers from the colonized and thus became a source of anxiousness for the health-conscious Americans.

The ties between health and mobility were also illustrated in the fusion of the seemingly incompatible, if not unrelated, tasks of sanitation and transportation into a single department in Manila’s Municipal Board. From a twenty-first-century perspective, this merger would seem illogical, but it was most probably rational for the Americans who saw that public hygiene and urban mobility were inextricably connected.

For the colonial regime, a healthy city is a mobile city. The city is a living organism. Its health is dependent upon the freedom of movement within its complex bodily networks. Roads and vehicles are arteries and veins. Just as human beings need air, blood, and nutrients to circulate within their bodies unhampered, cities require the same for its passengers and products. Just as human beings have to discard wastes as quickly as possible, so do cities. Clogs are potentially fatal.

These concerns were magnified in the context of an urbanized capital, a primate city no less, which for the health-conscious colonizers was a problem reducible to the lack of circulation (whether of people, air, basic necessities) in the city. Clogging was thus the city’s problem. Movement was the needed medicine. In effect, early American-colonial Manila became a continuation

of how bodily circulation provided the paradigm for the planning of livable urban areas amid the growing concern toward unhealthy industrial cities. As Richard Sennett (1994, 255–81) noted, the principles of circulation were visible in the planning of Washington, DC. The planners of the US capital city saw the physiology of the human body as the ideal template for creating an urban center out of the swampland along the Potomac River. A century later, that concept was replicated in another capital city halfway across the globe via colonialism.

But more than just rationalizing or harmonizing urban governance, the utility of technology to colonialism also involves the question of power. Mechanization, according to Kipling, is the “marriage of technology and authority” (Harvie 1977, 273). As technology advances so does the political power wielded by those who control it.

However, in the case of Manila in the early American colonial period, not everyone saw the rationality of the intertwining of health and mobility, nor did motorization lead to unquestioned colonial authority. The ideal city for the colonizers was not without its self-contradictions that led to contestations from various fronts. Cynical Manila residents and even American colonial officials saw contradictions in this trumpeted convergence between mobility and salubrity. The widespread rumors surrounding the department’s wagons and complaints against the recklessness of ambulance drivers revealed the disparity between colonial intentions and popular perceptions. Pedestrian knowledge about health was far from marginal. Heiser (1936, 64) even admitted that the American colonial state had to always consider indigenous concepts of well-being, such as notions of urban sanitation. Most importantly, while the supposed health-related benefits of mobility aided the triumph of motorized power over horsepower in US cities (Greene 2008, 266), such a radical change did not take place in Manila, where carriages had remained a prominent urban fixture years after the Second World War. Similar to the case of the Dutch East Indies, the techniques of colonialism gave the colonizers no assurance of omnipotence. In fact, “Modern roads in the Indies, besides the many wonderful things they did, became from the moment of their inception a battlefield and a space where the Dutch in the colony were clearly uncertain of themselves” (Mrázek 2002, 8). The state’s attempt to tie the issues of mobility and health together was an aspect of the colonizer’s “dominance by design,” as Michael Adas (2006) would put it, but that design was hardly flawless.

Note

This is a revised version of an essay that was originally submitted as a requirement for a graduate class in history under the late Dr. Alma Bamero of the University of the Philippines, Diliman. The original essay was subsequently revised and presented as a conference paper at the History of Medicine in Southeast Asia meeting in Solo, Indonesia, in July 2012 and at the Asian Society for the History of Medicine conference in Keio University, Yokohama, Japan, in December 2012.

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