The Impact of the 1833 Cholera Epidemic on Havana's Vulnerable Populations and Urban Landscape

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Abstract

This article examines the connection between the cholera epidemic, health codes, and the early nineteenth-century urban change of Havana. Cholera was supposed to be a sickness that targeted racialized populations. Moral deviance and physical contamination had previously been vaguely associated with concepts of racial and class inferiority, but following the 1833 cholera outbreak, the ideological links between the two became clear. Colonial authorities took advantage of the circumstances to carry out many of the urban changes that would drastically change Havana's appearance, such as renovating the most

vulnerable areas, establishing aqueducts, public fountains, and gardens. In this study, we examine the impact of the cholera epidemic on black and mulatto women, as well as the modification of their living environments in Havana in the decades after the 1833 pandemic. Viewing the epidemic from the inside allows us to understand the trends of structural racialization prevalent in Havana at the time as well as within our own society. The structural violence made evident by analyzing infrastructure makes analysis of past societies, through race, gender, and class, vital for the creation of policy.

Keywords: Cholera, infrastructure, aqueduct, water access, race

Resumen

Este artículo examina la conexión entre la epidemia de cólera, los códigos sanitarios y el cambio urbano de La Habana a principios del siglo XIX. Las creencias de la época relacionaban a las enfermedades con la población vulnerable de la ciudad. Hasta entonces, la desviación moral y la contaminación física se habían asociado vagamente a conceptos de inferioridad racial y de clase, pero tras el brote de cólera de 1833, los vínculos ideológicos entre ambas se hicieron evidentes. Las autoridades coloniales aprovecharon las circunstancias para llevar a cabo muchas de las transformaciones urbanas que cambiarían drásticamente la faz de La Habana. La creación de nueva infraestructura como el establecimiento de acueductos, fuentes públicas y jardines en ciertas zonas desplazó a la población afrocubana. En este estudio, examinamos el impacto de la epidemia de cólera en las mujeres negras y mulatas, así como la modificación de sus entornos cotidianos en La Habana en las décadas posteriores a la epidemia de 1833. Contemplar la epidemia desde dentro nos permite comprender las tendencias de racialización estructural que prevalecieron en La Habana en aquella época, así como dentro de nuestra propia sociedad. Al analizar las infrastructuras es posible entender la violencia estructural en las sociedades del pasado y cómo operan la raza, el género y la clase y cómo su correcto entendimiento es sustancial para la creación de políticas públicas.

Palabras clave: cólera, infraestructura, acueducto, acceso a agua potable, raza

The coronavirus pandemic (COVID-19) lends itself to numerous comparisons with its nineteenth-century equivalents, such as the cholera epidemic that decimated Europe and the Americas (1831–33).[1] The racial stereotypes surrounding the COVID-19 pandemic, as seen in the use of slurs such as "the Chinese virus" by former US President Donald Trump, are symptomatic of a racist legacy and unwittingly echo patterns birthed in previous epidemics.[2] In the midst of the growing trend of xenophobia against Asian Americans and other ethnic groups, it is imperative to gain a deeper understanding on how pseudo-medical discourses can be used to define certain minoritized [ethnicized?] bodies as dangerous and/or unhealthy. As the COVID-19 pandemic shows, Asian Americans are still seen as an alien population in America. This rhetoric of otherness demonstrates erroneous attempts to ascribe the guilt of sickness to groups perceived as "racial outsiders."

Similarly to today's correlation of race to illness, this article seeks to demonstrate how race, class, and structural racism interacted in colonial Cuba, where particular bodies and sites in the city were regarded as unhealthy and prone to sickness. The description of cholera in this epoch bolstered the prevalent hypothesis that links individual disease to society's ill composition. For this reason, our case study will examine the first outbreak in Havana, focusing specifically on the effect the cholera epidemic had on black and mulatto women[3] and on the changes it promoted on the urban fabric created by the Spanish colonial administration to bring the city in line with Enlightenment sanitary values.

Following the lead of Julio Ramos and Selene Zander's seminal articles, the first half of this research will analyze data acquired from health reports regarding the impact that the cholera epidemic had on black and mulatto women, and the second half will expose the transformations that Havana experienced, specially in the barrio of Jesús María. Futhermore, this article adds to earlier studies' understanding of how fountains and waterworks systems

contributed to such urban changes during the 1833 epidemic. Due to health concerns, colonial authorities used this opportunity to remodel Havana's most precarious districts, pave roads, and establish aqueducts, public fountains, and gardens. These urban transformations had begun prior to the outbreak of cholera in Havana, but the epidemic accelerated the process (Aguilera Manzano 28).

Although infrastructure is normally viewed as an improvement to living standard conditions, this article contends that a more nuanced analysis is required to determine who really benefits from its construction. This study unveils how the waterwork system—which included the first paid access to water for private dwellings in Latin America—actively managed populations and shaped racial subjectivities and identities. The Fernando VII Aqueduct, built between 1831 and 1835, created a visible, broader social and racial divide via infrastructure, projecting a cohesive, liberal city.

1. Understanding Disease Logics: The Cholera Epidemic of 1833

The early nineteenth century is generally considered to have been an economic prosperous time for Cuba and its capital, Havana, thanks to Cuba's role as one of the world's leading exporters of sugar, a highly coveted good at the time (López-Denis 50). Cuba's economic growth was fueled by the transatlantic slave trade prohibitions imposed by the United States and the United Kingdom, the collapse of Saint Domingue's sugar market after the Haitian Revolution, and the absolute increase in slave trafficking. Claudio Martínez de Pinillos, Minister of Treasury's focus on economic growth and global trade were the real factor that contributed to Cuba's failure to implement the necessary sanitary measures in time. By the end of this outbreak, the epidemic had killed an estimated 30,000 people on the island, spreading like wildfire through slave barracks and even into the countryside.

The first reported fatality in the Historic Archive in Madrid's papers related

to cholera was a Catalan man named José Soler, a resident of the neighborhood of San Lázaro in Havana. It is likely that a merchant ship from New Orleans brought cholera to Havana in late February of 1833. Lasting from 1826 to 1837, Havana's first outbreak corresponded to the second worldwide epidemic, which primarily affected the Americas and Europe as a result of transport and trade advancements (Beldarrain and Espinosa 156–157).[4] At the time the epidemic struck Cuba, Captain-General Mariano Ricafort was in charge of the colony. In a letter currently held in the Archivo Histórico Nacional (AHN) in Madrid, Ricafort reported:

> El día 25 del pasado apareció en el barrio extramuros de San Lázaro, una grave enfermedad con síntomas sospechosos, atacando a un mismo tiempo a cinco individuos de los cuales fallecieron tres en muy pocas horas. *Las calles y casas de aquella población están situadas en un terreno bajo y pantanoso y sus habitantes en general son personas miserables;* al día siguiente y en los subsecuentes fueron aumentándose los enfermos con los mismos síntomas muy semejantes a los del cólera morbo (Ricafort, our emphasis).[5]

For a long time, scientists believed that cholera was an airborne illness, but it wasn't until 1854 that British scientist John Snow (1813–58) and his team discovered that it was actually a waterborne one. Therefore, from the perspective of the medical expertise at the time, the island was considered safe from the ravages of the disease due to its atmospheric conditions.[6] Medico-scientific developments from recent times have determined that it is impossible for cholera to have been caused by anything other than *Vibrio cholerae*, the bacterium associated with the disease. Nevertheless, Havanans in the 1830s did not reach the same conclusion: elite classes in Havana saw cholera as not only a disease of the body, but also a disease targeting certain social classes, otherwise known as "dangerous or miserable classes" due to their racial and social positions (Ramos 182; Zander 5). Even though the colony appeared

prosperous on the surface, its internal politics had been hindered by societal anxieties and insurmountable fears regarding miscegenation (Zander 11).

Various pseudoscientific arguments focused on vulnerable populations as possible contagious vehicles (Hempel 35). José Antonio Saco, one of the most notable Cuban writers of the nineteenth century, wrote several essays regarding cholera, one of which reads:

> El mal parece que respeta hasta cierto punto a los europeos y sus descendientes, pero que se encarniza contra los asiáticos y africanos. ¿Y nacerá tan notable diferencia de una predisposición funesta que la naturaleza ha dado a estos últimos? ¿Será que la suma de conocimientos que posee la raza europea le proporcione ventajas sociales con que hacer frente a la enfermedad [...]? (Saco 20).[7]

These assumptions reflected the prejudices and biases of the society that informed them. J. Selene Zander has studied how affluent Cuban were quick to condemn the behaviors and lifestyles of certain ethnic groups for their supposed propensity to illness. Previously, moral deviance and physical contamination had been loosely correlated with notions of race and class inferiority, but after the cholera epidemic of 1833, the ideological connections between the two became direct (Zander 4).

The all-encompassing nature of the epidemic transformed the colony's struggles and sociopolitical systems to such an extent that the colony was nearly unrecognizable when compared with what it had been prior to the epidemic. At the heart of this metamorphosis was the notion of cholera as a social disease caused by the "degenerative behavior" of otherized races and classes, rooted in the foundation of pigmentocracy upon which Havana was built (Zander 3–5). Despite many colonial notions of hierarchy, interactions between individuals of various races were common in Havana at the time the epidemic arrived, though they were often regarded with severe disapproval by

the city's elites (Zander 7). Regardless of this dynamic of interracial synergy, a chain of power still existed within the colony with Creole elites striving to control Afro-Cuban populations and Spanish leaders enforcing sovereignty over the Creole elites (Zander 11). In the end, the epidemic left the city with even more concrete racial divisions and a more stringent control of the colony by Spanish authorities (López-Denis 152).

A comprehensive understanding of the epidemic's effects cannot be achieved without taking into account the role that gender, class, and race played within Cuban society. Examining such relations, by synthesizing available census and medical data using data visualization techniques, can provide us with particularly useful insights, both by reconfirming previous expectations of race, gender, and class, and by highlighting new discoveries and idiosyncrasies unique to Havana.

When the spread of cholera began upending the world, authorities, such as the Superior Board of Health (*Junta de Sanidad*), did not sit idly waiting for cholera to come to Havana. Instead, they mobilized the military, the ports, the medical community, and the existing sanitation administration to create stringent cleanliness requirements across all social classes in Cuba, and, most importantly, enforced the quarantine system for incoming ships (López-Denis 172). An archival document in the AHN details the various sanitary measures that were maintained until February of 1833 (Ricarfort). However, the rigid quarantine requirements were soon loosened in order to maintain the colony's widespread trade relations (López-Denis 173). The head of Treasury and Finance, Claudio Martínez de Pinillos, one the most powerful men in Havana, used his influence to reduce the quarantine system to a shell of what it had previously been. Just a month after this reduction in health measures, cholera entered Havana and the first case was discovered on February 24, 1833 (López-Denis 189).

An in-depth analysis of basic medical information during the epidemic,

as well as census data from before and after the epidemic, can further illuminate nuances in Havana's race, gender, and class debates by reinforcing understood notions of such relations or by determining new trends. We are fortunate enough to possess enough statistical information from the period to perform an overview analysis of the first cholera epidemic in Havana. Also available to us is the more detailed, nuanced information that was included in medical reports called *Partidas de Sanidad*, health reports with very detailed information, including the gender, ethnicity, social status, and even the physical addresses of the people infected with cholera.

2. Datasets

Our analysis of the cholera epidemic is based on statistical information obtained from three complementary sources: a) census data from 1828 and 1841; b) *Partidas de Sanidad* from March 10th and 11th, 1833; and c) Ramón de la Sagra's *Tablas Necrológicas*.

The first island-wide census was conducted by Governor Captain-General Francisco Dionisio Vives in 1828 and published in 1829. The document includes detailed information about the city's population broken down by gender, social status (free and slave), and Intramuros/Extramuros location (a category corresponding to individuals' location within or outside of the city's wall). This census was created within the context of the "technicalization of politics" that flourished in the 1830s and included the establishment of statistical societies all over Europe and the Americas (Joyce 24–27). In an effort to devolop a detailed knowledge of the population, which enhance colonial social control, a second census was conducted in 1841, which took many years in the making. However, this later date provides us with the opportunity to examine how the population had changed since the previous census, and to further understand the potential impact of the cholera epidemic.

The second item of analysis are the *Partidas de Sanidad* from the 10th and

11th of March of 1833. These documents are part of the Rubenstein Library's Medicine Collection at Duke University.[8] The dataset used for this analysis was culled from seventeen reports from different Havana neighborhoods containing information on deaths and new illnesses attributed to the cholera outbreak. The detailed information in these documents includes the names of the deceased, their age, and in some cases their physical address and their social status (e.g., slaves, prisoners, free blacks). To our knowledge, these *Partidas de Sanidad* have not been previously studied, and are incredibly valuable due to the insight they provide into the historic record for March 10th and 11th, 1833.

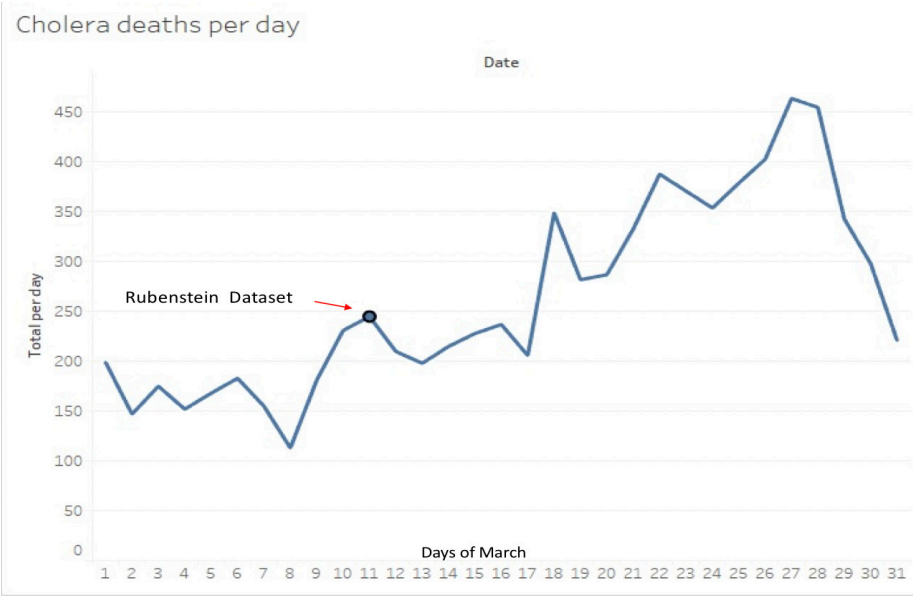


Fig. 1. Cholera deaths per Day from Duke University Rubenstein Library, Medical Collections, Record 47123 [Cuba] and Sagra, Ramón. *Tablas Necrológicas del cólera-morbus en la ciudad de La Habana y sus arrabales: formadas a escitacion del Conde de Villanueva*. Habana: Impr. del Gobierno, 1833.

Although the reports only provide information for two days in terms of the entire epidemic, the statistical information from Ramón de La Sagra's Tablas Necrológicas, or death counts, can help us contextualize the information provided by the Partidas de Sanidad. In the next section, we will look deeper into this source. In a broad view, Sagra's book visualizes mortality data in tables broken down by neighborhood for every day of the months of March and April 1833. It also provides data that is further stratified by class, gender, social status, and ethnicity. What relevance do these two days from the Rubenstein dataset have in the context of the whole epidemic? The Rubenstein dataset did not represent the greatest peak (March 27th), but by analyzing the data it did represent the first peak of the epidemic (see fig. 1) and the first peak is crucial in the way it allows experts to begin understanding the progression of the disease in the long run.

3. Cholera and Vulnerable Populations

Ramón de la Sagra, a well-respected naturalist who ran the Botanical Garden in Havana, was commissioned by Minister of the Treasury Pinillos to analyze the impact of the disease. Based on the parish books, he published *Tablas Necrológicas* in which he analyzed the demographic dynamics among Havana's population in certain neighborhoods.[9] During the epidemic, the Spanish naturalist prepared a comprehensive statistical report: a total of 45 tables that are divided into four large sections: 1) daily mortality by parish, including racial information, gender, and social status data; 2) age; 3) area of origin of the victims; and 4) marital status (Belarradin and Cortés 163).

After analyzing the *Tablas Necrológicas*, initial observations from this dataset suggest a similar morbidity of cholera between males and females. Though males had a slightly higher morbidity than females, the difference of roughly 100 individuals was negligible given that each of these populations had over four thousand individuals contracting the disease.[10] However, the roles the

men and women played differed greatly in Havana. White women in Havana were restricted from participating in public spaces and rarely allowed to leave their homes, except in limited circumstances. However, this assessment does not hold true for black and mulatto women, as they were indispensable facets of the city's public spaces, playing roles such as artisans, midwives, caregivers, teachers, and business owners (Mena 89–90).

The consistent morbidity across genders proves that cholera was not an airborne disease, as had been assumed by most medical professionals in Havana at the time (Tulchinsky 80). Since most white women did not leave the house, an airborne illness would likely have led to a higher morbidity among men, who interacted in public spaces more frequently. But a waterborne disease, like cholera, could affect women just as easily as men, despite the fact that white women in Havana rarely left their homes because water was often brought in from various contaminated sources into the home. In a broader context, these historical data also corroborate scientific information by providing evidence that the disease could not have been airborne and had to be attributed to a different cause (Tulchinsky 80). However, this connection wasn't made at the time, so cholera was still believed to be an airborne disease and the so-called "dangerous classes" were thought to have carried it. It was not until the Cuban medical expert Carlos Finlay performed several self-funded experiments in the Zanja Real between 1867 and 1868 that the belief was finally overturned and cholera was confirmed to be a waterborne disease (Beldarraín-Chaple 47).

From a chronological perspective, analysis of both averages and sums of overall cholera cases in the *Tablas Necrológicas* show that the greatest transmission of the disease occurred in mid-March of 1833. However, differences arise within this overarching trend in cholera proliferation when we examine race alongside women in cholera morbidity and mortality. Black women were most likely to both contract and die from cholera in Havana. It is important to note that there is a stark difference in cholera transmission

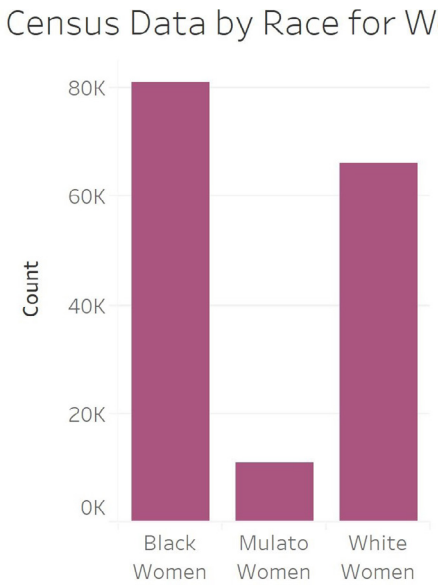
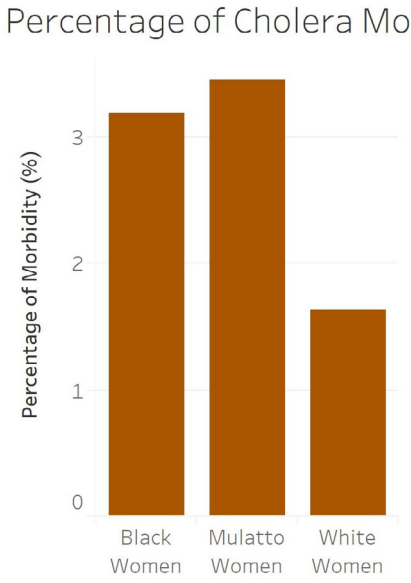
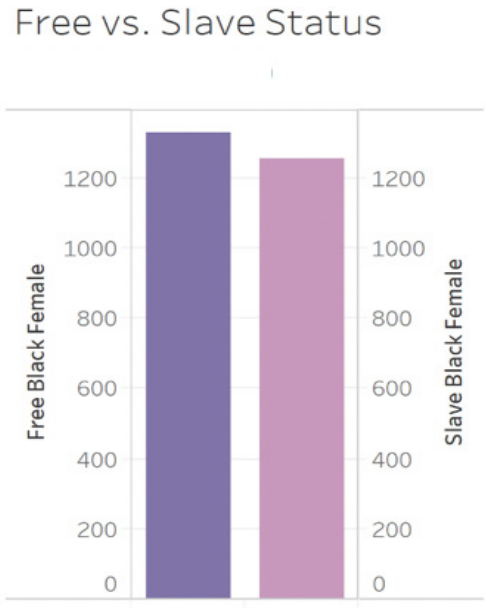


Fig. 2. Census Data by Race for Women from Sagra, Ramón. *Tablas Necrológicas del cólera-morbus en la ciudad de La Habana y sus arrabales: formadas a escitacion del Conde de Villanueva*. Habana: Impr. del Gobierno, 1833.

between women of color (both black and mulatto) and white women (see fig. 2). However, it was most surprising to see that mulatto women seemed to have the *lowest* levels of cholera transmission in terms of total cases. But further analyses including data from the 1828 census show that this initial observation only paints half the picture of the reality in Havana during this time. When comparing total census data for black, white, and mulatto women, the population sizes indicate that there were more than 50,000 fewer mulatto women compared to the number of black and white women in Havana, which explains why mulatto women had fewer total cases of cholera in general.

In contrast, when comparing transmission in terms of the *proportion* of each population that contracted cholera, mulatto women had the *highest* transmission with 3.45% of the population, closely followed by black women, who had a transmission rate of 3.18%. White women, likely due to their greater access to personal hygiene, had a transmission rate of just 1.62% (see fig. 3). The most significant contribution from this dataset was the difference





Figs. 3 and 4. Percentage of Cholera Morbidity from Sagra, Ramón. *Tablas Necrológicas del cólera-morbus en la ciudad de La Habana y sus arrabales: formadas a escitacion del Conde de Villanueva*. Habana: Impr. del Gobierno, 1833.

in cholera transmission rates between enslaved black women and free black women, or rather, the lack of such a difference. Taken from the *Tablas Necrólogicas*, enslaved and free women had nearly identical transmission rates during every week of the epidemic (see fig. 4), which reflects the broader issue of structural racialization, a process of using public practices, institutional policies, and cultural norms to reinforce racial inequity and white privilege (racialequitytools.org). The pervasive nature of structural racialization led to minority communities suffering the most from health crises, regardless of class status, because of the interaction of values and culture that led to the preservation of the gap between whites and minority communities. Analysis of the formation and operation of these types of oppressive structures by taking race, gender, and class into account in interpreting data such as those presented here is a crucial step towards addressing such long-standing issues of inequity (Powell 2).

When conducting a similar analysis using data from the Rubenstein dataset, the same trends identified earlier in the La Sagra data can be seen again, even though the Rubenstein data provides cholera proliferation information in different neighborhoods during the dates of March 10th and March 11th in 1833.[11] The information shows that of the women recorded to having suffered from cholera, only one woman was white. The data also showed that black women suffered the most from the epidemic with a rate of almost 70% of the cases recorded for women. These cases were indiscriminate of class status again. Analyzing the Rubenstein dataset strengthens the results reached from the broader La Sagra data set, such as the prevalent nature of structural racialization, by demonstrating that it was a widespread and systemic issue.

These structurally racist practices are often palpable in the urban constitution of cities. As Beebeejauna and Modarres explain with regard to contemporary urban areas, poor building standards and regulations create intolerable living conditions for predominantly minority populations, as a result

of decades of disinvestment, financialization, and a lack of new investments in health infrastructure. While state programs had subsidized many white communities and provided them with better infrastructure and public and private housing, racialized populations had been excluded from better neighborhoods because of exclusionary planning, while simultaneously being stigmatized as having created their own substandard conditions. Segregation and colonialization encouraged the development of segregated and dual cities, which were manifestations of the power relations that favor certain ethnic groups (6).

4. Water services in Havana

The case study of the Fernando VII Aqueduct serves as a model for water privatization and segregations efforts throughout Latin America. Water was still a public good, held by the government in Cuba, but as we shall show, there was a huge disparity between those who could enjoy the modernized hygienic city and those who had to rely on stored water from wells and public fountains. Minister of the Treasury Pinillos designed a system for the first paid access to water for private residences, effectively turning water into a commodity.

The construction of the Fernando VII Aqueduct began on June 18, 1831. It was planned to replace the Zanja Real because to its poor water quality, high maintenance costs, the city's need for a new water source, and Havana's already rapidly growing population in 1831. Darwin Arduengo has carried out the only investigation devoted entirely to the Fernando VII Aqueduct. This author comments on how, during the colonial period, three aqueducts were built in Havana: the Zanja Real, the Fernando VII Aqueduct, and the Albear aqueduct. As Arduengo observes, "these three works intertwine in a way that makes it impossible for one to be a complete substitute for another since certain elements of the previous one remain in play" (10, our translation).

The Fernando VII Aqueduct included several structural innovations and also had to overcome certain obstacles: for example, the Protomedicato, the most important medical board, had prohibited the use of iron for conducting water because it was considered harmful at the time. However, its fervent promoter, Pinillos, managed to modify this ruling, and the Fernando VII Aqueduct was the first in Latin America to include iron water pipes that served directly to homes. (Arduengo 11; Arango). As we can see, the careful design of the infrastructures tested in Havana—such as the first paid access to water for private residences in Latin America (1835)—were coeval with technologies widely associated to the industrialized Global North. Patrick Joyce studied the relationship between self-regulation strategies and the creation of a liberal ideology: hydraulic infrastructures such as water supply and drainage were crucial in forming individual character and sanitary habits (65–66). In this colonial setting, this research contends that these little-known historical infrastructures actively regulated people and molded subjectivities along racial lines.

The cartographical blueprints of the Fernando VII Aqueduct show how a line that symbolizes water enters and leaves homes and public places (see fig. 5). Thus, this underground water network had the crucial feature of uniting the private and public spaces in the most prestigious neighborhoods of the island. As the network of water supply provided immaterial forms of community and dependency, there was also a sense of urbanity. Incorporation into the city was facilitated via the construction of the aqueduct, since having access to water, and therefore appearing on the map, produced a process of social access by design.

The aqueduct map depicts the purchasing power of families with private water connections. By charging for public water, Pinillos innovated the economics of water provision by letting the service become self-sustaining infrastructure, which allowed for maintenance and the possibility of expanding the water system and other infrastructural projects (Arduengo 7–10). In the

Fig. 5. Rafael Rodríguez, *Plano demostrativo de los barrios intramuros de la ciudad de la Habana con la distribución que hace en ellos el acueducto de Fernando 7° para proveer su vecindario de agua potable en las diferentes fuentes públicas casas particulares que la reciben*, watercolor c. 1839–41, Naval Museum, Madrid, Spain

next section, we will trace how the long-lasting effects of structural racism on the urban fabric of Havana are outlined in an account of the cholera epidemic and its deficient waterworks system, which disproportionately affected the Jesús María neighborhood, a majority Afro-Cuban community in the outskirts of the city (see fig. 6).

5. Sanitary Conditions and Urban Transformations After the Cholera Epidemic: The Case of the Jesús María Neighborhood

The Jesús María neighborhood had one of the highest rates of cholera transmission in the city. It is not a coincidence that this neighborhood was

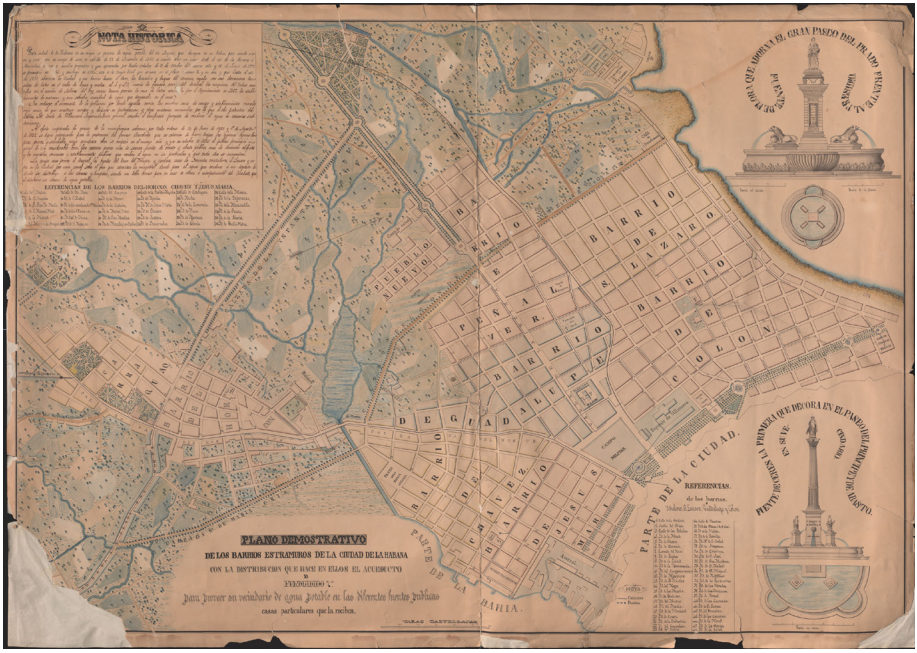


Fig. 6. Rafael Rodíguez, Naval Museum, Madrid, Spain

largely populated by free black individuals (García 93–94). Ramón de la Sagra also mentions that Jesús María was home to affluent populations of free black and mulatto prior to the epidemic (La Sagra, "Historia física" 168). Following La Sagra's records of deaths in *Tablas Necrológicas*, we can see that during the whole epidemic (which lasted from February to April), 338 white people and 1,122 black and mulatto died in Jesús María. This translates as follows, for every white person who died, 3.31 black and mulatto also died, making the ratio a catastrophic 1:3 deaths. Furthermore, we know that 953 females and 507 males died. Women made up the majority of the mortality (65%), and of the women who died, 706 were black and mulatto women, while just 185 were white. This means that for every white women who died, almost four black

and mulatto women also died. From Havana's 1841 census records, we can see that after the epidemic, the racial composition of the barrio shifted briefly with 5,919 white vs. 6,800 black and mulatto. While black and mulatto still dominated on average, only 4,121 were part of the free population that still lived there in 1841. We can infer from this that the slave population living in Jesús María largely formed part of white households.[12]

José Aguilera Manzano has analyzed how the arguments presented by the cholera medical reports reveal a profound disregard for Afro-Cubans in the Jesús María neighborhood. The main arguments moved from physiology to racism and from urbanism to social exclusion. For example, Dr. Diego Manuel Govantes, who was the chief medical inspector in several of the poorest barrios in Havana,[13] authored the *Esposición histórica de algunas observaciones sobre el cólera-morbo-espasmódico: que ha reinado en el barrio de Jesús María desde fines de febrero hasta principios de abril de 1833*, a report on the Jesús María neighborhood's experience with the disease:

> Este aire corrompido que se respira, disminuye directamente la vitalidad de todo el sistema sanguíneo, oxigenando de un modo imperfecto la sangre en los pulmones, y haciendo que las funciones fisiológicas se ejecuten de un modo lento y anormal, que constituye a los individuos en un estado de anemia o debilidad, que los predispone a toda especie de enfermedades. El cólera se ha cebado en aquella parte más baja del barrio de Jesús María, en el cual habitan para mayor abultamiento, gente muy pobre y negros entregados al uso del aguardiente, sujetos a todas las necesidades, amontonados en habitaciones sumamente reducidas, húmedas, asquerosas y mal ventiladas en unas calles estrechas, tortuosas y llenas de aguas corrompidas y de lodazales que constituyen la activa existencia de los mayores elementos de infección. Observamos en el párrafo siguiente, aunque de una manera general, el influjo que han podido tener todas estas circunstancias en la intensidad y marcha de la epidemia del barrio (Govantes 8–9).[14]

As Aguilera Manzano points out, it is critical to pay attention to the author's rhetoric and notice how "the doctor combines the idea of 'dirty and low' with its similarity with 'low passions' that are characteristic of the 'inferior races'," as well as the features of with the environment they live in. (56).

Stephanie Haydee González has also studied Diego Govantes' work extensively in relationship with the smallpox, and finds that he combined a limited sensitivity to the structural factors associated with disease incidence with stern calls for compulsory vaccinations (84–86). During the time when Govantes participated in the smallpox vaccination campaign, prejudice against the Afro-Cuban population continued. Between 1844 and 1846, *the Junta de Sanidad* conducted vaccination campaigns that made vaccination mandatory for slaves and poor people. Govantes argued that all slaves and free blacks should be vaccinated, and should be fined if they failed to comply. Govantes's words go as follows:

> ...que habitan esas zonas húmedas e insalubres en las afueras de la población en las que surgen principalmente las epidemias, y entre los cuales, debido a su ignorancia, se encuentran a menudo la preocupación y el abandono [hacia la vacuna]... será necesario obligarlos por la fuerza a recibir el beneficio del conservante, no sólo para su propio bien, sino también contra los males ocasionados contra otras clases cuando sirven (debido a sus circunstancias circundantes) como propagadores de la repugnante y mortal viruela... (Diego Govantes a la Junta de Sanidad, March 26, 1855, Junta de Sanidad, Havana, No. 11, File 38, AN. 245, cited from González 86)

As the quote shows, public health and urban design were interrelated. Govantes was indeed referring to the core of the miasma theory, a medical theory that was prevalent in the eighteenth and nineteenth centuries, which explained that many epidemic diseases, including cholera, originated from miasma.[15] In this regard, urban trends of the Enlightenment emphasized the

need to regenerate air in a variety of ways, including the reorganizing of the urban layout and the installation of more parks and gardens where public health strategies would reduce the prevalence of diseases such as cholera. Jesús María, which was the result of improvised housing outside the walls of the city, had narrow streets and was densely populated; its design did not correspond to the new sanitary landscape of the nineteenth century.

Patrick Joyce has commented on how hygienist ideas related the city to the human body, where there was a need to supply it with liquids and dispose of waste (63). In conjunction with the aqueduct, Miguel Tacón (1834–38), Captain-General of the island, ordered the creation of a sewage system in 1835—made with the labor of the slaves—that would build 3,270 sewers. In his report, Tacón says: "estableció un canal sobre su foso que da paso al agua de la Zanja y la conduce a un depósito desde donde se distribuye a las alcantarillas para su limpieza y saneamiento. El que se hizo en la parte más baja de la ciudad evita males de gran consideración" (Tacón 12).

This "lowest part of the city" corresponded to the neighborhood of Jesús María and was clearly not part of Tacón's urban planning program. In *Hydraulic City*, Nikhil Anand proposes access to water as an indication of citizenship and comments on how the colonial design of Mumbai was oriented from its inception to privilege certain neighborhoods and exclude others (7–10). Following Anand, we consider that water citizenship, or meaningful inclusion in the city's water distribution network, as could be seen in Tacón planning. Thus, this section aims to comprehend the link between infrastructure, racism, and accessibility. To do so, an examination of the attitudes and biases of elites is required, since certain political subjectivities were generated via infrastructure's materialities. The biopolitical supply of water systems, which according to the Foucaultian perspective refers to the point where politics and life intersect when it comes to population management, were created to benefit some areas and populations while excluding others. Anand shows how

the colonial logic in Mumbai with respect to water subsisted in its postcolonial form and as we can observe this same logic seems in operation in Havana (10).

In the *Memorias de la Sociedad Patriótica de La Habana* of 1837 there is a description of the neighborhoods by Arsenio Lacarriere Latour, designer of the aqueduct project and responsible for the paving of the streets in Havana. After the cholera epidemics that devastated Havana in 1833, the issue of sanitation was of utmost importance for the Cuban elite. There is a close link between the discourses of natural history, topography, sanitation, type of population and access to water in their descriptions. The neighborhood of Jesús María is described as:

> De todos los barrios extramuros, éste es el más insalubre y la razón es muy sencilla: el suelo está formado por los restos de plantas marinas y pantanosas, y por la basura que han llevado durante mucho tiempo los carros de la ciudad y de los suburbios y que han servido para cubrir el terreno que las mareas cubrían en otras épocas (Lacarriere Latour 226).[16]

As Claudia Martínez Herrera has stated the Jesús María neighborhood suffered from environmental damage caused by the functioning of the port. The majority of the city's trash, as well as garbage generated by ships, ended up at the bottom of the bay and damaged the mangrove environment. The problem was made worse by deforestation along most of the shoreline. The unchecked expansion eventually destroyed the mangroves that had bordered one end and part of the eastern side of the port and directly affected the Jesús María neighborhood (5).

The urban divisions and infrastructural deficits were represented in the same way by the *costumbrista* authors, for example, with the case of José Victoriano Betancourt, (1813–75) who was a famous writer and made an excursion to the "sewer neighborhood" of Jesús María.[17] Jorge Camacho has studied the work of Betancourt and his chronicle "Los curros del Manglar". The author in his role

of stroller or flaneur narrates the marginal neighborhoods that are at the limit of the literate and urban city (Camacho 82–90). Betancourt observes a funeral of an Afro–Cuban child in Jesús María and describes it as a descent into hell: "it was to observe their customs and paint those infernal scenes" (135, cited in Camacho 83). Camacho also makes an interesting link between the sewage that poured from Havana's intramuros into the Jesús María neighborhood and the treatment of its citizens by the Cuban elite (83).

Similarly, Ramón de Palma y Romay (1812–60), who was a Cuban–Spanish poet, short–story writer, and journalist, wrote a short story "La cólera en La Habana", in which he comments on how his protagonists leave the city at night, encountering a dead horseman that frightens the protagonists and the guard comes to their aid and comments: "Every day there are such people" (137).[18] Palma, besides giving us a sinister and sick scenario, also warns of the danger of leaving the walled city, especially at night. As with the case of Betancourt, the edge of the map is marked by the wall, beyond it, there is no more habitable world. However, the vast majority of these dark and sick scenarios were generated by the same infrastructures that planned to build the hygienic modern city.

In Jesús María, the drainage design mixed sewage with drinkable water from the Zanja, thus contaminating the public fountains of Jesús María (151). According to Felicia Chateloin, the system in Havana was designed so that some neighbors had access to clean water and a proper sewage system. Reports given by military engineers exposed this problem and how the system damaged the streets of El Águila (the main street of Jesús María), which was continually in bad condition because it was continually flooded (Chateloin 147–52).

The example of what happened in the neighborhood of Jesús María is quite illustrative, as it seems to demonstrate a broader issue: infrastructure is typically perceived to produce a common good, but it can also have a

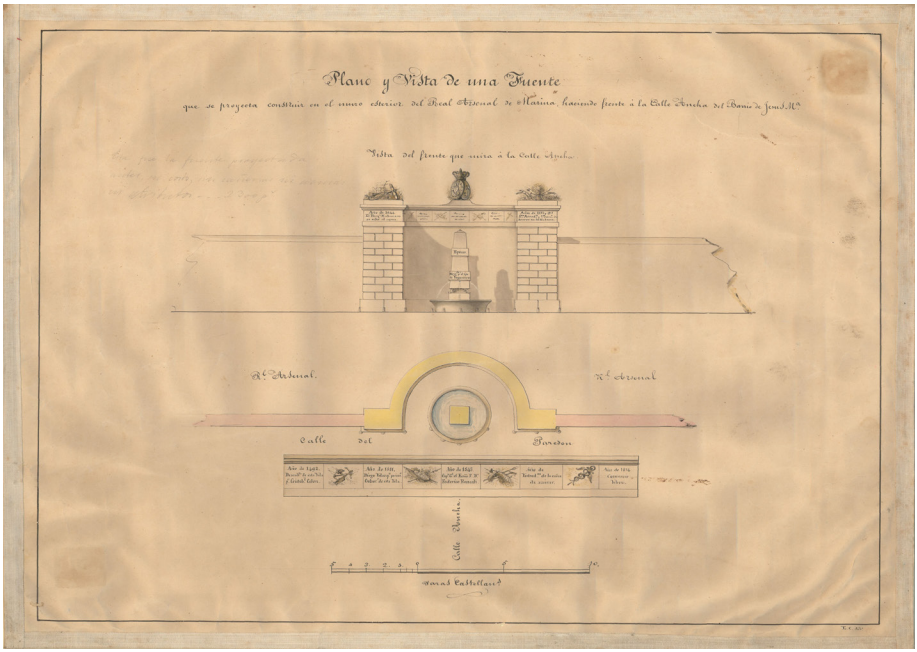


Fig 7. Eugenio Campos de Letamendi, *Plano y Vista de una Fuente que se proyecta construir en el muro esterior del Real Arsenal de Marina*, [1848–50?], General Archive Madrid, Spain (and details)

detrimental effect on certain populations, as was the case with Jesús María following the epidemic. Dr. Ángel J. Cowley (1797–1859) was a Cuban physician and the first professor who explained Toxicology in Cuba. The *Junta de Sanidad* and himself decided in 1834 that the inadequacies of urban design rendered the environment in the Jesús María area unhealthy, and that the best method to reduce the risk of a second epidemic was the replacement of homes with trees, fountains, and open spaces (Cowley).[19] The same conclusion was reached by Dr. Govantes in his report on the victims of the Jesús María neighborhood. In his opinion, the neighborhood had been built on top of a mangrove swamp, so the air there could not renew itself, resulting in clouds of azote and putrid mephitic gas (7–9). Govantes mentioned that he could have saved 15,000 people, but that the loss of the neighborhood was devastating (46–47). He also advised reconsidering the urban removal of all these "poor people" (38).

As previously stated, the Fernando VII Aqueduct benefited some residents and barrios while neglecting others. The blueprints of the aqueduct are fairly detailed in depicting the private inlets and public exits of water in the city, allowing us to determine which residences received water.[20] The results show that Intramuros or inside the walls was still the most important part of the city, while only 33% of the private water inlets were in Extramuros. From the Extramuros barrios, the average of inhabitants per inlet was lowest in Colón near the Paseo Isabel and the Fuente de la India. The per-person ratio was 775 per fountain and 18 private inlets. Not surprisingly, Colón is one of Extramuros' whitest barrios, whereas Jesús María had just two fountains, with a ratio of 6,559 person per fountain and no private inlets.

The Jesús María fountain—part of the Fernando VII Aqueduct's course—was titled "Épocas," or historical time periods, and incorporated numerous landmarks in Cuba's colonial regime: 1492 Christopher Columbus' landing, 1511 Diego Velázquez, first governor of Cuba, Year (without a precise date) of sugar cane introduction, and 1814 Free commerce (see fig. 7).

The last inscription on the fountain states: "Year 183* […] 1st aqueduct". In the composition of this ornament, the fatidic symbolism of 1833 (the year of the cholera epidemic) is totally forgotten. It is apparent from the historical events they selected to highlight in the fountain that the administration intended to merge paternalistic colonialism with the success of Cuba's agro-exporting culture. The introduction of sugar cane in the timeline and agricultural decorations in the fountain highlights this economic achivement. Furthermore, the fountain's placement in an Afro-Cuban community where most inhabitants were illiterate (Fitchen 108–110) suggests an understanding of the fountain only within a celebratory scheme designed for inaugurations. These fountain adornments, which do not acknowledge the slave labor necessitated for Havana's economic prosperity, demonstrate a disregard for the Afro-Cuban community that lived in Jesús María. Instead, the ornament draws attention to a vast underground infrastructure that would otherwise remain hidden while it helps erase other processes such as the removal of the houses of precarious materials from Jesús María that ensued in the wake of the cholera epidemic.

The authorities used and visualized the subsurface waterworks with the adornment in the Jesús María fountain. Infrastructure such as the aqueduct's water conduits seem invisible since they cannot be seen in the same way as a bridge. Susan Star argues that infrastructure is often taken for granted when it is functioning properly and that the work of maintaining it is often invisible (380–382). The invisibility assigned to pipes, sewers, or cables often makes them seem boring, dull, or unimportant, when, in fact, they reinforce the structural differences that define the social fabric within a city.[21] In colonial contexts, this article argues that infrastructure is not invisible; it constitutes a symbolic factor that can be managed and administered as can be seen in the example of this fountain. Colonial engineers frequently promoted the grandiosity of infrastructure projects, as a display of imperial affluence and

paternalistic oversight, which in tunr served as a reference point for progressive actions toward the "common good".

As seen by these cases, people of Jesús María had little say in their fate as a result of water pollution or evacuation by authorities following the cholera epidemic; for that reason, their situation fits in with John Galtung's concept of structural violence. According to Galtung, violence exists as an uneven distribution of power and opportunity in society (170–171). It also resonates with Michael Mann's notion of infrastructure as an institutional medium that facilitates social regulation (13). Both authors have examined ways in which structural forms of violence are deeply ingrained in the spatial and infrastructural configurations of city life. Without a doubt, the inequitable sanitary conditions of Havana and its urban renewal efforts can be considered as infrastructural violence. The efforts taken by health boards, medical professionals, and, subsequently, urban architects indicate structural marginalization of particular target communities and geolocation in the city with less access to hygienic infraestructures.

6. Final Remarks

Havana's cholera epidemic provides a unique insight into how medical events can dictate political and social systems, and how pre-existing political and social biases can take advantage of medical crises to justify harmful policies and rhetoric. By addressing the center of the cholera epidemic through the lens of race, gender, and class, further discussions can be more accurate in evaluating the effects of the epidemic, while also providing insight into the urban alterations provoked by the disease.

The structural violence inherent in infrastructure makes analysis of past societies, and particularly the evaluation of race, gender, and class, all the more important. Infrastructure keeps a "line", both literally and figuratively, between the types of people and goods that can and should circulate with

ease and the types that cannot, between the types that belong within the city and those that should be left outside of it. A discussion of how infrastructure and race interact is a necessary part of this debate regarding epidemics and their urban settings.

Urban transformation is typically regarded as a common good, and, thus, is often referred to as "public works;" however, infrastructure can also be detrimental, especially in colonial contexts, which is why it is imperative to know when, for whom, under what conditions, and why infrastructure becomes violent (Davies and Boehmer 2–4). Taking a closer look at infrastructure programs allows us to redefine the idea of technological progress during colonial times. This task is crucial, as many detrimental colonial continuities persist today in postcolonial cities, albeit disguised behind the promise of urban improvement. As the cholera epidemic demonstrated, certain communities received preferential attention over others based on race and economic position, and this establishment and interest in infrastructure plans rather than public welfare had a devastating effect in the Afro-Cuban neighborhoods. Therefore, we contend that it is critical to comprehend the relationship between the epidemic and the development of Havana's urban infrastructures at the time. Geographic barriers between races or classes that were forcibly created in centuries past often still exist to this day. Prior to the cholera epidemic, an Afro-Cuban neighborhood was largely black-populated with free individuals, but afterward, it became briefly dominated by whites and it benefitted from improved infrastructure.

The same mechanisms of structurally racist and colonial concepts still exist to this day within most societies, despite growing understanding and advancement on views regarding harm against minority communities. In the case of the cholera epidemic, what would appear to be a medical event was used as a tool to produce writing to otherize and justify the segregation of minorities as a prophylactic measure, as well as to influence politics by

delegitimizing political leaders (López-Denis 187–188). Much like the cholera epidemic of 1833, the HIV/AIDS epidemic in the United States in the 1980s was viewed as a social disease (Velimirovic 541). In Havana, it was racial minorities whose behavior was blamed for the epidemic; in the US, the behavior of sexual minorities was considered to be the source of the proliferation of HIV/AIDS. Jon Dell Jaramillo has posited that the HIV pandemic was addressed by excluding individuals, hence promoting stigma and prejudice. Nevertheless, some narratives by Reinaldo Arenas, Pedro Lemebel, and Pablo Pérez challenge the limits of gender and genre, while also making a substantial impact on the reevaluation of LGBTQ history (22). The author contends that under extraordinary circumstances, as in Fidel Castro's post-revolutionary administration, there was a significant imposition of strict regulations on the populace (Jaramillo 55). Just as with the cholera epidemic years before, some individuals or groups must be held accountable as victims of the lack of comprehension and the bias.

Such stigmatization of a section of the population was also a trend in the past major global emergency known as the "Spanish Flu" (1918–20). The 1918 influenza pandemic was called the "Spanish flu" despite not having originated in Spain, in fact, the flu probably began in British Army camps in mainland Europe; some theories point to American Army training facilities around the spring of 1918; and even to New York City (Trilla 668). Spain was in fact a conscientious country which reported the cases early. However, this name was adopted and this trend surely caused unwarranted anxiety and stigma by implying that foreign and otherized populations cause contagious disease (Hoppe 1462).

Public health history has associated emerging infectious diseases with foreign nationals and countries. When COVID-19 was branded as "The China Virus" and localized in particular populations, the same racist rationale was used. Furthermore, vestiges of ill-created political decisions may continue to

influence institutions within modern political systems, and only identifying the historical source or gaining understanding can lead to more viable solutions. Early travel bans in 2020 and Centers for Disease Control's Title 42, only terminated on April 1, 2022, is one example of this discriminatory rationale. Long-standing immigration law mandates that asylum seekers have a complete and fair hearing to establish whether they are entitled to protection in the United States, and Section 42 was a violation of that requirement. The Title 42 enforcement by the CDC against covered undocumented people advanced the delusion that the policy halts the spread of COVID-19, while in reality it just serves to provide a dangerous containment (Rosen).[22] The cholera epidemic of 1833 may seem like a distant memory, but echoes of the methods of containing the disease offer a unique look at how political and social preconceptions of the colonial authorities of Havana can exploit medical emergencies to justify damaging rhetoric and practices. Out of all of the potential that historical analyses contain, the most important benefit is to assess and correct grievous wrongs and dismantling colonial modes of thinking. In order to move forward with a sustainable and truly equitable political system, past injustices must be addressed and acknowledged.

Notes

1 However, as the literature on disease offers such xenophobic and racist remarks mimic actions that occurred during historical outbreaks of diseases other than cholera. See among many: Nayan Shah, Contagious Divides: Epidemics and Race in San Francisco's Chinatown. University of California Press, 2001; Keith Wailoo, "Spectacles of Difference: The Racial Scripting of Epidemic Disparities," Bulletin of the History of Medicine, vol. 94, no. 4, 2020; and Jon Jaramillo, Viral Bodies: Aides and other Contagions in the Latin American Narratives, Ph.D. University of Oregon (2023).

2 The terms "epidemic" and "pandemic" are used in this article more loosely than they are currently defined. According to the Real Academia Española (RAE, 2022), an epidemic is a sickness that gradually spreads over a country and affects a large number of people; a pandemic is a sickness that rapidly spreads through many nations and affects a sizable population. The World Health Organization (WHO, 2010) defines a pandemic as a brand-new ailment that has spread throughout the globe. The nineteenth century did not use "pandemic" and used the more traditional word "epidemic" which was a long medical tradition since *No Corpus Hippocraticum*. Following the Spanish Flu in 1918, the *OED* notes that the term "pandemic" has begun to be used more often. After that date, the Google Books Ngram engine continues to record the same frequency of the term "pandemic."

3 We will use the historical terms found in the documents to refer to black and mulatto women. Our analysis of the cholera epidemic is based on statistical information obtained from three complementary sources: a) census data from 1828 and 1841; b) Ramón de la Sagra's *Tablas Necrológicas* and c) Health Reports from Rubenstein library. All historical documents consulted distinguish by gender, but race is presented in different ethnic ways: for example, the census only considers white, free, and slave as categories, whereas the cholera's *Tablas Necrológicas* distinguish by white, black free and black slave, and mulatto free and mulatto slave, and health reports from the Rubenstein library also discern between white, black, and mulatto. All mulatto subjects are registered as free individuals. Also, in these documents there is no information on freedman *o libertos*, just a black and mulatto subjects are registered as free.

4 Seven outbreaks of cholera worldwide have been registered since 1817.

5 On the 25th of the past month, a serious illness with suspicious symptoms appeared in the neighborhood outside the city of San Lázaro, attacking five individuals at the same time, three of whom died within a few hours. *The streets and houses of that settlement are located in a low and swampy terrain*

and its inhabitants in general are miserable people; the next day and in those that followed, there was an increase in the number of patients with the same symptoms very similar to those of morbid cholera (our translation). Ricafort also stated in the letter cited above that he had personally been affected by the epidemic when he was Captain-General of the Philippines in 1820, the first year that cholera had been diagnosed in Manila. Even though Ricafort commended himself on the manner in which he had handled the situation in the Philippines, he was markedly slow in acknowledging the disease as an epidemic in Cuba.

6 John Snow's experiment on London's Broad Street was essential in establishing that cholera was a waterborne illness. However, other experiments done in the Global South, such Carlos Finlay's trial in the Cuban neighborhood of El Cerro, were as essential. This segregation policy of accessing clean water was later reassessed during the third cholera outbreak (1867–68). Carlos Finlay's study found that 91 of 130 cholera patients died after drinking contaminated water from the open-air Zanja Real in the Cerro neighborhood, a barrio on top of Jesús María (Belderrain Chaple 46).

7 This evil disease seems to respect Europeans and their descendants to a certain extent, but is fierce against Asians and Africans. And would such a remarkable difference arise from a fatal predisposition that nature has given to the latter? Could it be that the sum of knowledge that the European race possesses gives it social advantages with which to deal with the disease [...] ? (Saco 20, our translation)

8 Duke University, Rubenstein Library, Medical Collections, Record 47123, Havana, 1833, 32 pp. In Spanish. Small quarto, on folded folio sheets; integral blanks. Due to the Covid-pandemic, travel restrictions, and lockdowns, we could not travel to the National Archives in Cuba to search for more *Partidas de Sanidad*. But, the were complemented with Ramón de La Sagra *Tablas Necrológicas*. Also, we verify the information with completed death counts from 1833 to 1835 that are held in the Archivo Histórico Nacional in Madrid. These documents provide an in-depth analysis of the deaths that occurred each month between 1833 and 1835. The information provided and the geographical breakdown between Havana and its hinterlands suggest that there was a fear of a possible second or third wave shaking the surrounding sugar plantations. Consequently, these reports were sent by the Health Board to the Spanish authorities in the Iberian Peninsula in order to obtain statistical information about the disease.

9 The parish book, which records births, baptisms, marriages, and deaths within an area controlled by a parish, included population data

10 Though we understand gender exists on a spectrum, we needed to perform our analysis under a binary system of gender because of the nature of the dataset, which only provided gender information as male/female.

11 The Rubenstein data register the deaths in the following neighborhoods: Espirtú Santo, Monserrate, Santo Domingo, Del Gobierno, Catedral, Del Angel, San Francisco, Santa Paula, San Felipe, Pueblo de la Regla

12 Although this transformation was short-lived, Jesús María was traditionally known for its famous Mangrove, refuge of the so-called negros *curros* (Deschamps 5–6). In the last third of the nineteenth century, Jesús María returned to its origins as an Afro-Cuban neighborhood par excellence.

13 Diego Manuel Govantes y Gómez was born on April 21, 1802, he was recognized doctor, Sub-delegate of the Medical Faculties for the inspection of the neighborhoods of Jesús María, Guadalupe, and Peñalver. Pensioned Deputy of Vaccine. He also was part of the Protomedicato.

14 This corrupted air that is breathed directly decreases the vitality of the entire blood system, imperfectly oxygenates the blood in the lungs, and causing physiological functions to run in a slow and abnormal way, which constitutes individuals in a state of anemia or weakness, which predisposes them to all kinds of diseases. Cholera has taken root in that lower part of the Jesús María neighborhood, in which there live, to a great extent, very poor people and blacks devoted to the use of clear rum, subject to all manner of necessities, piled up in extremely small, humid, disgusting, and poorly ventilated rooms on narrow streets, tortuous and full of corrupted waters and mudflats that constitute the active existence of the greatest elements of infection. We observe in the following paragraph, although in a general way, the influence that all these circumstances may have had on the intensity and progress of the neighborhood's epidemic (Govantes 8–9; our translation).

15 A miasma is an emanation of rotting organic materials (Porta and Last, "Miasma").

16 "Of all the neighborhoods outside the walls, this is the most unhealthy and the reason is very simple: the floor is formed of the remains of marine and swampy plants, and of the garbage that has been carried for a long time by the carts of the city and suburbs and that have been used to cover the land that the tides covered at other times." (Lacarriere Latour 226; our translation).

17 Undoubtedly the most important of Betancourt's writings on traditions, "Los curros del manglar" (1848) contends with the presence of disregarded components of society. It is interesting that he discusses the black presence in

society at this historical juncture, since the terrible *Conspiración de la Escalera* (1844) had just happened; a cause in which false confessions were extracted on an enormous slave rebellion scheme. (See https://www.ecured.cu/Jos%C3%A9_Victoriano_Betancourt)

18 He was one of the most important Cuban writers in the nineteenth century, although his work wasn't recognized at the time. Palma was one of the few nineteenth century Cubans interested in story theory. His short stories generally Palma strongly attacks the higher sections of Cuban society, recalling José Antonio Saco's *Memorias sobre la vagancia en la isla de Cuba* (1830).

19 Cowley was interim dean of the Faculty of Medicine and vice-rector of the University of Havana. Also, he was founding member of the Junta and Protomedicato, mediated between the medical profession, scientific community, and government.

20 With the help of digital humanities and, in particular, georeferencing and geo-coding techniques, we made a correlation between the water inlets and the possible owners of the houses. To do so, we cross-referenced the information provided by the "Directory of Havana" (1841), the "Topographic Plan of Havana" (1841) and the "Picturesque Plan of Havana" (1847) and the aqueduct's demonstrative plans (1839). The results of the analysis show that there is a relationship between race and water supply, as well as the notion that providing accessibility to water to the inhabitants of Intramuros was a priority, since, as we can observe, the maximum range in Extramuros is almost equivalent to the minimum in Intramuros.

21 Sophia Beal, Michael Rubenstein, and Bruce Robbins have understood infrastructure as the materiality that lies below the surface and generally tends to be hidden behind the façade (e.g., water, electricity, gas, and the internet). These authors recover the invisible quality of infrastructure as a symptom of its correct functionality (575–76). Brian Larkin has noted this tendency to define infrastructure under the characteristic of invisibility, but considers this vision limited (336).

22 Likewise, Chilean President Sebastián Piñera made a public statement regarding Chile's police force: "They have also collaborated in better protecting our land, sea and air borders to prevent illegal immigration from bringing to our country the contamination or infection of the virus that's attacking us" (CNN Chile, 2020, cited in Bonhomme and Alfaro 404). The trope of foreignness of the disease was in this case associated with Haitian immigration in Chile.

Works Cited

Aguilera-Manzano, José M. "Limpieza y poder en la Habana colonial." *Revista Europea de Estudios Latinoamericanos y del Caribe = European Review of Latin American and Caribbean Studies*, vol. 87, 2009, pp. 47–62.

Anand, Nikhil. *Hydraulic City Water and the Infrastructures of Citizenship in Mumbai*. Duke University Press, 2017.

Arduengo García, Darwin. "El acueducto Fernando VII: una revolución ignorada en la gestión del agua en La Habana", *Anales de la Academia de Ciencias de Cuba* [Online], Habana, vol. 10. URL: http://www.revistaccuba.cu/index.php/revacc/article/view/755/776.

Arango, Anastacio. "Comprobantes correspondientes al oficio del 23 de Abril de 1831 relativos a la conducción de aguas por una cañería de hierro desde el Río Almendrariz a la Plaza de La Habana. 23 de Abril de 1831." Sig. 4-1-1-10. Cartoteca Archivo Militar, Madrid.

Beebeejaun, Yasminah, and Ali Modarres. "Race, Ethnicity and the City." *Journal of Race, Ethnicity and the City*, vol. 1, 2020, pp. 6–10.

Beldarraín, Chaple E, and Cortés L. M. Espinosa. "El cólera en La Habana en 1833: su impacto demográfico." *Diálogos Revista Electrónica de Historia*, vol. 15, no. 1, 2014, pp. 155–173.

---. "Carlos J. Finlay y Barrés (1833–1915) en la medicina cubana." *Boletín Mexicano de Historia y Filosofía de la Medicina*, vol. 8, no. 2, 2005.

Boehmer, E. and Davies, D. *Planned Violence: Post/Colonial Urban Infrastructure, Literature, and Culture*. Cham, Switzerland: Springer, 2018.

Bonhomme M, Alfaro A. "'The Filthy People': Racism in Digital Spaces during Covid-19 in the Context of South–South Migration." *International Journal of Cultural Studies*, vol. 25, no. 3–4, Jul 2022, pp. 404–27. doi: 10.1177/13678779221092462.

Camacho, Jorge. "Patrullando la ciudad: los negros curros de José Victoriano Betancourt". *América sin nombre*, no. 19, 2014.

Campos, Eugenio. "Plano y Vista de una Fuente que se proyecta construir en el muro esterior del Real Arsenal de Marina, haciendo frente á la Calle Ancha del Barrio de Jesús Ma. C. 1848–1850?." CUB-20/8. Cartoteca del Archivo Militar, Madrid.

Chang-Rodríguez, Raquel y Malva E. Filer. *Voces de hispanoamérica: Antología literaria*. Cengage Learning, 2017.

Cholera epidemic in Havana official reports, 1833. March 10–12, 1833. Small Manuscript Collection, Sec. A Box 163, items 1–17. Rubenstein Library, Duke University.

Costeloe, Michael P. *Response to Revolution: Imperial Spain and the Spanish American Revolutions, 1810–1840*. Cambridge University Press, 2009.

Cowley, Angel. "Medidas contra el cólera y consulta sobre Juntas de Sanidad". 25 December 1833. ULTRAMAR, 2010, Exp. 11. Archivo Histórico Nacional, Madrid.

Fitchen, Edward D. "Primary Education in Colonial Cuba: Spanish Tool for Retaining 'La Isla Siempre Leal?'" *Caribbean Studies*, vol. 14, no. 1, 1974, pp. 105–20.

Galtung, John. *Peace Problems: Some Case Studies. Essays in Peace Research*. Copenhagen: Christian Ejlers, 1980.

Gonzalez, Stephanie. *The Double-Edged Sword: Smallpox Vaccination and the Politics of Public Health in Cuba*. Ph.D. City University of New York, 2014.

Govantes, Diego M. "Esposición Histórica de algunas observaciones sobre el colera-morbo-espasmódico: que ha reinado en el barrio de Jesús María desde fines de febrero hasta principios de abril de 1833." Habana: Oficina del Gabierno y Capitanía General por S.M., 1833.

Hoppe, Trevor. "'Spanish Flu': When Infectious Disease Names Blur Origins and Stigmatize Those Infected." *American Journal of Public Health*, vol. 108, no. 11, 2018, pp. 1462–64. doi:10.2105/AJPH.2018.304645

Jaramilllo, Jon Dell. *Viral Bodies: Aids and Other Contagions in Latin American Life Narratives*. 2023. Ph.D. University of Oregon. https://scholarsbank.uoregon.edu/xmlui/bitstream/handle/1794/28492/Jaramillo_oregon_0171A_13533.pdf?sequence=1&isAllowed=y

Joyce, Patrick. *The Rule of Freedom: Liberalism and the Modern City*. Verso, 2003.

Larkin, Brian. "The Politics and Poetics of Infrastructure." *Annual Review of Anthropology*, vol. 42, 2013, pp. 327–43.

López, Denis A. *Disease and Society in Colonial Cuba, 1790–1840*. 2007. Ph. D. University of California. https://www.proquest.com/docview/304872155

Lowe, Lisa. *The Intimacies of Four Continents*. Duke University Press, 2015.

Martínez Herrera, Claudia. "Environmental Degradation and Dredging in the Havana Bay (1820–50)", Nuevo Mundo Mundos Nuevos [Online], *Débats*, December 2019, accessed May 14th 2021.

Mann, Michael. *The Sources of Social Power*. Vol. 3. Cambridge University Press, 2012.

Memorias de la Real Sociedad Patriótica de La Habana, vol. 3, Oficina del Gobierno y Capitanía General, 1837.

Mena Luz, L. "Stretching the Limits of Gendered Spaces: Black and Mulatto Women in 1830's Havana." *Cuban Studies*, vol. 36, 2005, pp. 87–104.

Palma, Ramón de. "El cólera en la Habana", *Cuentos Cubanos*, La Habana, 1870.

Porta, Miquel S, and John M. Last. *A Dictionary of Public Health*, 2018. Internet resource. Accessed July 8, 2023

Potapchuk, Maggie—MP Associates, Sally Leiderman & Stephanie Halbert Jones—CAPD, Shakti Butler—*World Trust Educational Services. Racial Equity Tools*, Aspen Institute, 2000, accessed 15 July 2021.

Powell, John A. "Deepening Our Understanding of Structural Marginalization." *Poverty & Race*, vol. 22, no. 5, September/October 2013.

Ramos, Julio. "A Citizen Body: Cholera in Havana (1833)." *Dispositio*, vol. 19, no. 46, 1994, pp. 179–95.

Rancière, Jacques. *The Politics of Aesthetics: The Distribution of the Sensible*. Bloomsbury Academic, 2004.

Ricarfort, Mariano. "El gobernador de La Habana da cuenta de las medidas tomadas para evitar la introducción en la isla del cólera morbo". 29 July 1832. ULTRAMAR, 1610, Exp. 41, Archivo Histórico Nacional, Madrid.

---. "El gobernador capitán general de Cuba informa al secretario del Despacho de Gracia y Justicia sobre la epidemia de cólera morbo que se ha extendido por La Habana". 27 February 1833. ULTRAMAR, 1611, Exp. 3. Archivo Histórico Nacional, Madrid.

Rodríguez, Rafael. "Plano topográfico de la ciudad de S. Cristóbal de La Habana: con la distribución de las aguas de que le provee el acueducto de Fernando 7° en 28 fuentes de abasto público y mas de 300 particulares". c.18–1841. MN-MN-P20-B-10. Archivo del Museo Naval, Madrid.

---. "Plano demostrativo de los barrios estramuros de la ciudad de la Habana con la distribucion que hace en ellos el acueducto de Fernando 7° para proveer su vecindario de agua potable en las diferentes fuentes publicas casas particulares que la reciben". c.1839–1841. MN-MN-P20-B-11. Archivo del Museo Naval, Madrid.

Rosen, Sarah. "'Trump Got His Wall, It Is Called Title 42'; the Evolution and Illegality of Title 42's Implementation and Its Impact on Immigrants Seeking Entry into the United States." *Race, Racism and Law*, https://racism.org/articles/citizenship-rights/immigration-race-and-racism/10262-trump-got.

Rubenstein, Michael, Bruce Robbins, Sophia Beal, "Infrastructuralism: An Introduction", *MFS Modern Fiction Studies*, vol. 61, no. 4, Winter 2015, pp. 575–86.

Rubenstein, Michael. *Public Works: Infrastructure, Irish Modernism, and the Postcolonial*, Notre Dame, University of Notre Dame Press, 2011.

Sagra, Ramón. *Historia física, política y natural de la isla de Cuba*, tomo 1, Librería Arthus Berthrand, Paris, 1852.

Sagra, Ramón. *Tablas Necrológicas del cólera-morbus en la ciudad de La Habana y sus arrabales: formadas a escitacion del Conde de Villanueva*. Habana: Impr. del Gobierno, 1833.

Star, Susan Leigh. "The Ethnography of Infrastructure." *American Behavioral Scientist*, vol. 43, no. 3, 1996, pp. 377–91.

Tacón, Miguel. *Relación del Gobierno Superior y Capitanía General de la isla de Cuba, estendida por el Teniente General Miguel Tacón al hacer la entrega de dichos mandos a su sucesor el Excmo. Señor Don Joaquín De Ezpeleta*. S.l.: s.n., 1838.

Trilla, Antoni, et al. "The 1918 'Spanish Flu' in Spain." *Clinical Infectious Diseases*, vol. 47, no. 5, 2008, pp. 668–73.

Tulchinsky, Theodore H. "John Snow, Cholera, the Broad Street Pump; Waterborne Diseases Then and Now." *Case Studies in Public Health*, 2018, pp. 77–99.

Velimirovic, B. "AIDS as a social phenomenon." *Social Science & Medicine*, vol. 25, no. 6, 1987, pp. 541–52.

Vives, Francisco D. *Bando de buen gobierno: adicionado por el Escelentísimo Señor D. Francisco Dionisio Vives, presidente, gobernador y Capitán general de esta siempre fidelísima ciudad e isla de Cuba con cuya Superior aprobacion se publica*. Habana: s.n., 1828.

Wade, Bethany M. "The Blue Death: Cholera and Reimagined Community in Nineteenth-Century Havana," in *Pandemics and Epidemics in Cultural Representation*, ed. by Sathyaraj Venkatesan et al. Singapore: Springer Nature Singapore, 2022, pp. 81–103.

Zander, J.S. "Contagious Invasions: the 1833 Cholera Epidemic in Havana." *Revista de Estudios Hispánicos*, vol. 49, no. 1, 2015, pp. 3–23.