

“The Sick Man of Asia”: A study of two epidemics of plague in late-Qing China

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Infectious disease remains the age-old antagonist of humankind. Disease reminds even the most powerful individuals that their time on the Earth is limited, and instills fear in entire societies. New and reemerging diseases of epidemic or pandemic proportions continue to cause anxiety in professionals and neophytes. Among these diseases are Ebola, Zika, SARS, and AIDS. Yet what has been made clear to those who fight these modern biological organisms is that beyond the barely visible pathogens is something that cannot be tangibly seen, even with a microscope.

Disease is in part an idiosyncratic structure of society. This concept in and of itself is not new to the historian. In fact, J. N. Hays describes disease as “both a pathological reality and a social construction” that is “rooted in mental habits and social relations rather than in objective biological conditions of pathology.” Hays goes on to argue that scholars cannot accept one interpretation of disease in exchange for the other, but rather, they must focus on the biological aspects and the social aspects of any given disease.¹

Culture directly influences the scientific management of an infectious disease epidemic. When modern doctors examine the scientific and the social aspects of a contemporary disease they discover that cultural beliefs may either prevent or promote the spread of that disease. When historians recount the scientific and the social aspects of a disease in history, they must also consider that modern conceptualizations of that disease differ from the past. Cultural differences play a powerful role in responses to disease, and these reactions may be amplified during heightened cultural conflicts. When dissimilar cultures encounter the same epidemic, such as at the end of Qing dynasty China, the

¹ J. N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (New Brunswick, New Jersey: Rutgers University Press 2009), 1-2.

resulting arguments over treatment and medical practice provide historians with a vivid example of divergent notions of disease, the human body, and the significance of scientific authority.

By the end of the Qing dynasty (1644-1911), the Manchu government of China experienced two great outbreaks of disease that challenged the traditional understanding of infection in China. Striking the empire twice during its waning years, the bubonic plague became a worldwide pandemic in 1894. In China, diagnoses based on pulse and the “five phases” of Wood, Fire, Earth, Metal, and Water, would prove ineffectual against the disease. Scientific knowledge of germ theory enabled scientists to isolate and identify the plague bacillus, the bacteria we now know as *Yersinia pestis*; however, the two epidemics of plague in China would challenge physicians’ abilities to apply germ theory, and its concomitant requirements to control the spread of infection.²

During the latter half of the nineteenth century, enzootic disease that regularly occurs in an animal population led to plague and slowly spread across Yunnan, Guangxi, and Guangdong before reaching the cities of Canton and Hong Kong in 1894. From these two heavily populated trading ports, the disease swept across the globe, and particularly through Asia, killing an estimated twelve million people in China and India. The spread of plague in China, Hong Kong, and India brought medical communities into conflict. By the late nineteenth century, European nations vied for influence and control in China, and the development of Japan as an international power complicated these conflicts. The British presence in India and Hong Kong, as well as the French occupation of Indochina, meant that both nations had both a military and medical presence in the region.

When Europeans brought the germ theory of disease to China, it remained a concept that some physicians did not completely understand and could not yet use efficiently to treat a disease like plague. Although scientists had isolated *Yersinia pestis* in Hong Kong and understood the connections to sanitation, Europeans still condemned the Chinese for dirty cities and unhygienic

² “Contagion: Historical Views of Diseases and Epidemics,” *Harvard University Library Open Collections Program*, accessed April 30, 2016. <http://ocp.hul.harvard.edu/contagion/germtheory.html>. This source gives a great summary of the main points of germ theory and its development. Also, see: J. N. Hays, *Epidemics and Pandemics: Their Impacts on Human History* (Santa Barbara, California: ABC- CLIO 2005) 331-343.

practices. As a result, Europeans could claim superiority in treating disease. By using intrusive public health practices that would certainly be followed by the almost exclusively professional foreign population of areas in immediate danger, foreigners could criticize the Chinese who resisted these practices as inferior. Even when the 1894 pandemic spread abroad, racial stereotypes traveled with it.³

Many Chinese intellectuals accepted the germ theory of disease. These doctors, however, were few in a population of laymen who remained ill-informed about the theory. Among these doctors was the brilliant Wu Liande who throughout his life considered “Western medicine” to be superior to “Chinese medicine.” Yet Wu Liande developed many new methods to treat the disease and was renowned as an innovative scholar in the field. As a highly virulent and lethal disease spread in the East, the physicians who confronted it came from both West and East.

Bubonic Plague in Southern China, 1894-1903

It was the spread of the bubonic plague to the cities of Guangzhou (Canton) and Hong Kong that made the world realize the importance of controlling disease in a globalized world. When the disease reached these two ports it became a true pandemic and spread across the world, infecting cities on all six inhabited continents, including Bombay, Alexandria, Porto, Buenos Aires, Rio De Janeiro, Honolulu, San Francisco, Sydney, and Cape Town.⁴

On January 16, 1894, the first case of bubonic plague in a major port city was discovered by medical missionary, Mary Niles, in Guangzhou. Visiting a Chinese general's ill daughter-in-law, Niles did not realize she was dealing with plague and made “a doubtful diagnosis of typhus fever.” She noted symptoms such as a 104.8-degree fever, a rapid pulse rate, and a large painful swelling in the groin (a common site for the telltale “buboes” of bubonic plague). Niles visited the family over the next few days, finding the patient unconscious and dressed in grave clothes on January 18th. The family had provided a traditional treatment, giving the patient bear gall for her symptoms; they assumed that her death was certain. When Niles was not invited back the following day, she assumed that her

³ J.N. Hays, *Epidemics and Pandemics*, 338-341.

⁴ Myron Echenberg, *Plague Ports: The Global Urban Impact of Bubonic Plague, 1894-1901* (New York: New York University Press, 2007), xi.

patient had died. On February 22, however, she was called back because the boil remained, but she found the patient in much better health.⁵

Because of their trust in the medical missionary society's work, the family sought Mary Niles's help, but Niles did not diagnosis plague, and most doctors in Europe were confident that this disease no longer existed. Yet the family also asked for the help of practitioners of traditional Chinese medicine, demonstrating that it is unlikely that the family considered "Western" or "Chinese" medicine superior but was rather trying to find "medicine" that worked.

Throughout the next two months, Mary Niles ran into more cases of the disease, but it was not until March 30, 1894 that she had realized that what she was seeing was not typhus but the dreaded bubonic plague. Niles had very little to offer in the way of treatment and could only diagnose the disease based on symptoms.⁶ Although Niles could not know it, the bacteria would be independently identified in that year by two researchers, French public health official Alexandre Yersin (for whom the bacteria was named) and Japanese scientist Kitasato Shibasaburo. But without the ability to quickly diagnose the disease, physicians and public officials could do little to halt it; plague spread to the British colony of Hong Kong without the knowledge of Hong Kong's health officials.

Besides lacking a familiarity with the bacteria that caused the plague, foreign health officials were still unsure of its mode of transmission. Dr. Lowry, an agent of the Chinese Imperial Maritime Customs Service, who reported on the possibility of plague at Beihai (Pakhoi) in 1882 observed that, "although the filthy condition of houses and of their vicinity, previously mentioned, had long existed, it was not till the temperature began to rise, and rain to fall, that the disease manifested itself."⁷ Connections between rainfall and the spread of plague abound. Some doctors like Dr. Lowry argued that when rains were abundant plague was also abundant, while others argued that plague occurred in times of

⁵ Mary Niles, "Plague in Canton," *The China Medical Missionary Journal* Vol. 8, 2 (June, 1894): 116.

⁶ Ibid., 116-118.

⁷ Sir Charles Alexander Gordon, *An Epitome of the Reports of the Medical Officers to the Chinese Imperial Maritime Customs Service, from 1871 to 1882*, (London: Baillière, Tindall, and Cox, 1884), 304.

drought.⁸ Even today, the question of rainfall in connection to the bubonic plague is questioned by scholars such as E. G. Pryor and Michael Shiyung Liu.⁹ It is also important to note that Dr. Lowry did not find the disease particularly threatening as it “does not seem to spread to any great extent.”¹⁰ Most important, however, was the connection foreigners were beginning to make between bubonic plague and rats.

With the alarm sounded by Mary Niles, Dr. Gomes da Silva, the Principal Medical Officer of Macao, was invited to travel to Guangzhou by the Portuguese consul in the city, D. Cinatti, to observe the disease. The doctor was informed that this epidemic infected “exclusively the Chinese and the rats.”¹¹ Dr. Gomes da Silva’s account, however, did not directly link rats as the cause of plague and rather called for the closing of wells and disinfection of Chinese property. He demanded that the harbormaster be responsible for the supply of water for the city.¹² The doctor’s measures treated bubonic plague as a waterborne disease like the already identified cholera bacteria, and his demands for sanitary reform would be implemented throughout Canton and Hong Kong during the epidemic. Mary Niles herself had already observed that dead rats were often found in the houses of plague-infected individuals. She observed thirteen rats being swept out of a school where she treated plague patients, and had even stepped on a rat that did not squeal and died shortly after. She also commented that the locals were aware of some connection between rats and the plague.¹³

Chinese experts were aware about the plague and its connection to rats at least a century prior to this epidemic. One rather wealthy official in Canton,

⁸ William Robinson, “Hong Kong: Governor’s Dispatch to the Secretary of State with Reference to the Plague,” *Sessional Papers* (HKGRO) June 20, 1894, 287. This source as well as many others pertaining to the 1894 epidemic of bubonic plague come from the University of Hong Kong Libraries’ Hong Kong Government Reports Online database. Wherever this source is consulted the identifier HKGRO will be provided in parenthesis as in the above citation.

⁹ E. G. Pryor, “The Great Plague of Hong Kong,” *Royal Asiatic Society of Great Britain and Ireland-Hong Kong Branch* (1975): 66. See also: Michael Shiyung Liu, “Disease, People, Environment: The Plague in China.” Lecture, Ohio State University, Columbus, Ohio, accessed on June 13, 2016. <https://www.youtube.com/watch?v=Z0pX3tfyiUk>. Gordon, *An Epitome of the Reports*, 302.

¹⁰ Gordon, *Ibid.*

¹¹ Gomes da Silva, *A epidemia de peste bubónica em Macau: relatório*, (Macao: *Typographia Mercantil*, 1895), 3. Author’s translation.

¹² *Ibid.*, 6.

¹³ *Ibid.*, 3, 6; Niles, “Plague in Canton,” 119.

wishing to do whatever was necessary to prevent the plague, used his private funds to purchase rats at a rate of ten cash per dead rat. He was said to have purchased 35,252 rats in one month, and 2,000 in a single day.¹⁴ Indeed, this man wanted to prevent the spread of disease between rats and humans; thus, he must have believed in a connection between rats as a vector of the bubonic plague. On the other hand, this view was not widespread amongst the Chinese. Warm factor theory beliefs in pestilential qi would lead most Chinese practitioners to believe that “bubonic plague emanates from the ground and is favored by a long continuance of dry weather, when the earth becomes porous and numerous fissures appear on the surface, facilitating the escape of whatever causes the disease.”¹⁵ Most Chinese medical practitioners believed that rats were infected first because they were closer to the ground where pestilential qi could get to them quicker, not that rats were responsible for spreading the plague to humans. Yet, this explanation retained little distinction from a renowned foreign doctor’s explanation stating, “it is only natural that as rats have their snouts about an inch above the floors of houses they are much more liable to inspire plague- infected dust than people that have their mouths at least two feet higher.”¹⁶ Thus the understanding of the origins of plague challenged doctors from Europe and doctors from China, though prevention measures varied.

The major difference between Chinese treatment of plague and the treatment of plague by foreigners, especially in Southern China, was the authority to provide public health and sanitary measures. Due to its long distance from the capital and the weakness of the Manchu run Qing government by the late nineteenth century, the Pearl River Delta, the area that encompasses both Guangzhou and Hong Kong, was somewhat independent of imperial control. While still part of the Qing empire, day to day operations in southern cities were run by local officials as well as benevolent societies known as the shandang. These benevolent societies were funded and directed by local merchant elites (hongs). Guangzhou had nine of these organizations whose medical role was to provide free medicine, vaccines, coffins, and act as hospices and care facilities for the

¹⁴ Ibid., Niles, 119.

¹⁵ A. Sharp Deane, “Dr. A. Sharp Deane’s Report on the Health of Pakhoi,” *China Imperial Maritime Customs: Medical Reports, Vol. 41* (Shanghai: Statistical Department of the Inspectorate General of Customs, 1894) 32.

¹⁶ James A. Lowson, “Hong Kong: Medical Report of the Epidemic of Bubonic Plague in 1894,” *Sessional Papers* (HKGRO), March 2, 1895, 180.

terminally ill and the sequelae, or those suffering conditions of a previous illness.¹⁷ On the other hand, local officials also acted against the epidemic by issuing proclamations that did not interfere greatly with the rituals and traditions of Chinese society. Officials stated that streets should be cleaned of rubbish, and that collection buckets should be covered.¹⁸ But the central government of the Qing dynasty was seldom involved in the affairs of South China.

Disease prevention differed between the British and the southern Chinese, to say nothing about the north. Part of this was due to the weakness on the part of the Qing government. The shantang provided public health measures to a certain degree, and local officials supplemented this work, but overall the people were accustomed to this lack of government interference in their affairs. The Chinese would seek out medical treatment when they believed it was necessary, but they were unfamiliar with the concept of having a government check up on them regarding their physical health. Furthermore, the British would learn a great deal about global public health from the plague in Hong Kong. In a region unfamiliar with social medicine, and public health in particular, the implementation of draconian measures such as house to house inspections would serve only to exacerbate an epidemic. Thus, public health was not entirely a “Western medicinal concept” because its implementation in the West would not mirror its implementation in the East.

In Europe after 1858, governments determined that it was necessary to take uniform action against the spread of disease rather than to leave the response to private institutions or individuals. s rather than leaving the task to the people. This decision developed from successful efforts to control cholera, for example. In Great Britain, the so-called “Great Stink of London” in the summer of 1858, caused by a failing sewage system of London, resulted in new emphasis on public sanitation. The idea of public health intervention quickly spread across the British empire. Therefore, the dynamic of disease control and public health sanitation would be greatly different between Guangzhou and Hong Kong, a crown colony of Britain. In fact, Hong Kong would have only one true medical shantang, the Donghua Hospital. Nevertheless, because of the nature of infectious disease to spread rapidly, the trade of goods and services between the two cities,

¹⁷ Carol Benedict, *Bubonic Plague in Nineteenth-Century China* (Stanford, CA: Stanford University Press, 1996), 133

¹⁸ Niles, “Plague in Canton,” 119.

and the proximity of Guangzhou to Hong Kong, the British government of Hong Kong would become very involved in the affairs of Guangzhou. On May 4, 1894, the Hong Kong government determined to send Dr. James Lowson to Guangzhou to observe the disease, unaware that it had already invaded its shores.¹⁹

Visiting Guangzhou, the twenty-eight-year-old Lowson was the only medical government official who had previously diagnosed plague, and so it was his job to identify the disease among patients all over Hong Kong. Returning to Hong Kong four days later, Lowson observed a case of “remittent fever” that he determined was bubonic plague. He visited Donghua Hospital as well and discovered twenty more plague cases there.²⁰ The reason more plague cases were found in Donghua is because Chinese in Hong Kong, who were the first people affected by the plague, would rather go to the shantang than visit a foreign hospital. Chinese members of Hong Kong society were willing to go to the hospital when they felt ill, if they could choose which hospital. Without the ability to treat plague scientifically, it was the comfort of the patient that should matter in the hospital and not the hospital itself. It was this issue that the epidemic of Hong Kong would teach doctors about the field of global social medicine. Furthermore, without the ability to diagnose plague by its bacillus, all cases, regardless of where and in what hospital, were diagnosed based on the symptoms.

Apart from not being aware of the specific bacillus that caused the plague, Dr. Alexander Rennie, an agent of the Chinese Imperial Maritime Customs Service, who travelled to Guangzhou (Canton) alongside Dr. Lowson, also called the plague a “virus.” This is of interest as a “virus,” in the modern understanding of the term, would not be discovered for another four years. Dr. Rennie would have been using the term to describe either a toxin produced by bacteria, or more likely, “a substance produced in the body as the result of disease, especially one that is capable of infecting others with the same disease.”²¹ The latter definition for the term removes the necessity of a bacterium at all, and shows that germ

¹⁹ James A. Lowson, “The Outbreak of Bubonic Plague in Hongkong,” *Report on the Outbreak of Bubonic Plague in Hongkong, 1894, to the International Congress of Hygiene and Demography held at Budapest, 1894* (Hong Kong: China Mail Office, 1894), 15.

²⁰ Lowson, “The Outbreak of Bubonic Plague in Hongkong,” 15.

²¹ Alexander Rennie, “Report on the Plague Prevailing in Canton During the Spring and Summer of 1894,” *China Imperial Maritime Customs: Medical Reports*, 47 & 48 (September 30, 1894): 65; “virus,” Oxford Dictionaries, accessed June 22, 2016.
http://www.oxforddictionaries.com/us/definition/american_english/.

theory was not entirely dominant in medical literature.

Adding to the already complicated situation in medical understanding of the bubonic plague was the difference in names attached to the disease; as it spread across Yunnan province on its way to Guangzhou (Canton), no single name spread with it. Rennie described various names used throughout the province such as shiyi, or rat epidemic, making a connection to the death of rats that immediately precedes plague; luanzi zheng, or egg disease, referring to the shape of buboes caused by plague; and biao she, or “shooting snake” which refers to the nature of the disease to kill its victims rapidly.²² Yet until well into the outbreak of 1894, many foreign doctors refused to refer to the disease as plague or used quotation marks around the word plague when referring to the disease.²³ Rennie admitted that this disease was definitely the same plague as the fourteenth century Black Death, but stated that most doctors believed the disease went extinct in the 1840s. Thus, an understanding of the true nature of this disease was undermined in Eastern and Western literature as both refused to call the disease by a singular name.

Discussing the causation of the bubonic plague in Guangzhou, Rennie stated that the main condition leading to plague were the filthy conditions of Guangzhou and many other Chinese cities. He was particularly concerned, as were most other Europeans, about the unsanitary water conditions in China.²⁴ This fear was no doubt due to the five cholera epidemics of the nineteenth century, the causes of which were clarified by John Snow’s research of water pumps during the Third Cholera Pandemic (1839-1856) and Robert Koch’s

²² Rennie, “Report on the Plague Prevailing in Canton,” 67.

²³ Gordon, *Epitome of the Reports*, 302. In this account, Sir Alexander Gordon refers to the disease in question as plague but leaves a question mark at the end of the word to express his uncertainty. He later calls it “the disease known as luen-tzû... considered to be at least closely allied to bubonic plague.

²⁴ Rennie, “Report of the Plague Prevailing in Canton, 67. See also: William Robinson, “Governor’s Dispatch to the Secretary of State with Reference to the Plague,” *Sessional Papers* (HKGRO), June 20, 1894, 287. Governor Robinson, probably advised by Dr. Ayres determined that the cause of the plague was probably the lack of water in the colony due to the recent drought as well as the “filthy” habits of the Chinese. It is proposed that a reasonable amount of water is necessary for the proper sanitary conditions of the colony. Among an increase in taxes and rents, Robinson also called for an additional eighty million gallons of water to be brought into the colony to fight the plague. Knowledge of cholera was seen as a justification to fear a connection between water and plague.

isolation of the bacteria during the Fifth Cholera Pandemic (1881-1896).²⁵ Rennie's understanding of the cause of plague also extended to the prevalence of droughts before an outbreak, and he noted, "intelligent Chinese regarded this absence of rain as the most important factor in the propagation and dissemination of the disease, rendering as it did both wells and drains more filthy than usual."²⁶ Dr. Rennie accepted the Chinese observation that many rats die before an epidemic and that scientists and doctors should study whether or not the disease is spread by rats to humans. Even though he could not provide direct evidence to prove this, and although he was not taken seriously by other foreign officials when making this point, Dr. Rennie was quite possibly of the very first European doctor to even suggest a direct link between rats and the bubonic plague.²⁷

Rennie observed in Guangzhou that plague was less present on in upper floors of buildings and on the water, unless people were infected before boarding a ship, and this caused many Chinese to live on ships. Yet instead of inferring that this was evidence to believe rats caused the disease, he instead walked the line between germ theorist and miasmatic by suggesting that some sort of pathogen, whether bacteria or a poison gas that came up from the soil was causing it, so that rats were infected first. To justify this, the doctor reported that in the Settlement of Shamian (Shamien), across a twenty-yard creek from infected Guangzhou, there were rats, but no plague.²⁸ Rennie argued that it seemed unlikely that rats caused the plague because where there were rats, there was not necessarily plague, even if plague was nearby. Finally, Rennie made the point that no germ theory-inspired medicine could effectively treat plague patients and that preventative measures should instead be relied upon.²⁹

Rennie proved that he was unaware of the epidemiology of plague. He failed to accept the tenets of either miasma theory or germ theory in full, and was instead guided by fear of the cholera epidemics of the past. Although he did make a connection between plague and rats, he did not provide evidence to prove bacteria had anything to do with the plague. An analysis of Rennie's work

²⁵ Hays, *Epidemics and Pandemics*, 236. Hays briefly introduces the story of John Snow and the Broad Street Pump when discussing the Third Plague Pandemics. See also: *Ibid.*, 307.

²⁶ Rennie, "Report on the Plague Prevailing in Canton," 68.

²⁷ *Ibid.*, 339.

²⁸ *Ibid.*, 70.

²⁹ *Ibid.*, 72.

proves that the doctor was conscious of Chinese theories of plague such as the connection between rats, and he may have brought this to the consideration of germ theorists, but he could not personally see a definite connection. He found even germ theory's pharmacopeia wanting in the cure for plague, and this would cause the government of Hong Kong to make public health measures the priority in combating the plague. But as bubonic plague arrived in Hong Kong, government issued public health programs would prove too severe for Chinese residents.

Bubonic Plague Arrives in Hong Kong, 1894

In Hong Kong, a colony of the British Empire, the inefficiency of hospitals against a disease as virulent and catastrophic as plague was worsened by the fact that the city lacked hospitals and hygienic measures. The government hospitals of Hong Kong prior to the epidemic of 1894 included a civil hospital serving the entire population of the city, which at the time contained roughly 238,724 people. It also included a hospital for the isolation and possible treatment of prostitutes with sexually-transmissible infections; the Hygeia, a floating hulk of a ship, christened in late-1892 in Hong Kong harbor, and used to isolate patients with transmissible diseases; and the Donghua Hospital, a unique shantang closely affiliated with the British colonial government but highly resented by Dr. Philip Ayres, the Colonial Surgeon.³⁰

Becoming Colonial Surgeon in 1873, Ayres immediately confronted the problem of public sanitation in the city. In his early reports, Ayres complained that his office was short-staffed; only he and two Inspectors of Nuisances were responsible for the sanitation of the entire colony. He complained particularly about the Chinese areas of town where drainage was poor, homes were overcrowded, lighting was minimal, and ventilation was almost non-existent. For any miasmatic, the last point would certainly raise eyebrows, because poor ventilation meant poisonous, epidemic producing gases could not escape the home.

Ayres also complained that Chinese keeping pigs, goats, and sheep in

³⁰ Ph. B. C. Ayres, "Colonial Surgeon's Report, 1893," *The Hong Kong Government Gazette* (HKGRO), December 1, 1894, 977-981. See also: J. H. Stewart-Lockhart, "Report on the Blue Book and Departmental Records for 1893," *Sessional Papers* (HKGRO), May 18, 1894, 275.

upper floor bedrooms, often allowing them to sleep under the bed. In one instance, he observed, "In the cold weather when cattle were killed late in the evening so the meat should be ready for early morning market the meat quartered was taken to Chinese houses and hung up in rooms where a crowd was sleeping. I found in one case a fore quarter of beef hanging up over the bed of a man in the last stage of small-pox, and the people were quite astonished when I ordered it to be destroyed."³¹ His own Inspectors of Nuisance had no right to enter these houses unless a neighbor complained, so most lower class Chinese continued to live in these conditions. According to Ayres' report, only a quarter of the wells in the city contained drinkable water. Even in homes occupied by Europeans, sewers vented into bathrooms, and bedrooms were oftentimes adjacent to the bathroom. For a believer of miasma theory, this allowed for night gases to get into the bedroom while people slept. But Europeans were often unaware of the conditions they and their Chinese servants were living in, as they trusted their compradors and had little reason to trust the new Colonial Surgeon, due to his inexperience.³² As an example of one of the perpetual themes of this epidemic, both Europeans and Chinese opposed some of the intrusive practices brought on by the public health system, and a distrust of modern practices was common among most in Southern China. Modern medicine was both accepted and rejected by Chinese and European alike, thereby invalidating the name "Western medicine" as a term for the still-emerging concept.

Since Hong Kong was supposed to be a model port in Asia, the Europeans in the port as well as the members of Hong Kong's government were in disbelief. They refused to accept Ayres' comments that the city was unsanitary. As a wealthy trading port, it was most likely the money he asked for that led to Europeans rejecting his calls for sanitary reform. They did not see anything unsanitary on a day-to-day basis, and had no intention of paying for his claims if they could not observe them. Furthermore, a blend of miasma theory and germ theory among laypersons would be even more prevalent. Confused as to the true nature of

³¹ Ph. B. C. Ayres, "Sanitary State of Hongkong from 1873 to the Date of the Outbreak of the Epidemic of Plague, May 5th, 1894," *Report on the Outbreak of Bubonic Plague in Hongkong, 1894, to the International Congress of Hygiene and Demography held at Budapest, 1894* (Hong Kong: China Mail Office, 1894) 3.

³² Ayres, "Sanitary State of Hongkong," 1-4. See also: Ph. B. C. Ayres, "Annual Report of the Colonial Surgeon," *The Hong Kong Government Gazette* (HKGRO), April 4, 1873, 159.

disease, these Europeans had no reason not to continue with the status quo which had thus far caused them little harm. Europeans failed to support Ayres' sanitary reforms. For Europeans in Hong Kong, the determination to follow commercial interests over public health interests was among the various reasons that the plague would spread to the port of Hong Kong.

Although it would take the coming of the epidemic before Ayres would be able to order his men into the homes of lower class Chinese without a complaint of nuisance or a permit, some changes would be made that propagated sanitarian reform. For instance, the government hired an interpreter for the Inspectors of Nuisances, so the department could more readily respond to nuisance complaints and take the proper measures.³³ The Chinese Medical Missionary Society put out advertisements looking for qualified health officials as well, such as a pharmacist with the stipulation that they be foreign born, not Chinese.³⁴ Also, in 1883, the governor approved legislation to form a permanent sanitary board in the city to aid Ayres in his job of sanitation.³⁵ The establishment of the Sanitary Board included regulations demanding that all citizens keep their homes clean and remove "offensive matter" every twenty-four hours. The walls of every home were to be whitewashed, and every resident of the city was provided with watertight receptacles for the disposal of dirty water. Fines would be issued for the illegal disposal of waste areas of the city, such as near a water source, and the government would hire contractors for the disposal of night soil, human waste.³⁶

The removal of night soil was of great importance to the public health of the city of Hong Kong. It was a predominately Chinese industry, but it was also the first to be targeted by the British government for the sake of public health. Harvesting fecal waste became a large industry for the agricultural sector of Chinese society. People of the cities were expected to collect their feces during the day in clay, or later metal urns. They would leave the urns out at night and a night soil carrier, or Dark Drifter (hunhunn) would carry it to farmland outside the city

³³ W. H. Marsh, "Government Notification - No. 289," *The Hong Kong Government Gazette* (HKGRO), September 1, 1883, front page.

³⁴ "Wanted. A Qualified Pharmacist," *The China Medical Missionary Journal* 8: 2 (June, 1894): 68.

³⁵ W. H. Marsh, "Government Notification - No. 236," *The Hong Kong Government Gazette* (HKGRO), July 7, 1883, 579.

³⁶ J. H. Stewart-Lockhart, "Rules and Regulations made by the Governor in Council, this 10th day of August, 1883, for the effectual carrying out of Ordinance," *The Hong Kong Government Gazette* (HKGRO), August 18, 1883, 703-704.

to be used as fertilizer. According to scholar Ruth Rogaski, the Dark Drifter could be considered a thug as they were known for their public displays of pain tolerance such as jumping in vats of boiling oil, taking knives to the chest, and cutting off pieces of their own flesh. While Rogaski admits that these may or may not be exaggerations, the Dark Drifters often formed gangs and engaged in street brawls.³⁷ It is perhaps for these reasons, as well as to ensure the efficiency of the work, that the sanitary board hired its own contractors for night soil removal.

Various accounts of the Qing dynasty elude to the all-encompassing nature of this industry. Commenting on the use of human feces as manure in the fields of China during the Taiping Rebellion (1850-1864), Lieutenant-Colonel Garnet Joseph Wolseley states, "There is not part of the world in which distance lends more enchantment to the scenery than in China. When amongst the highly-manured fields of that empire, the olfactory organs are so rudely assailed by the variety of stench, always experienced by the inexperienced traveler who seeks for rural pleasures, amidst the corn-growing fields of the "flowery land," that a second trip is seldom taken."³⁸ Dr. John Dudgeon wrote of the high prevalence of tapeworms in Chinese and the belief of many Chinese that vermicelli was converted into worms in the digestive tract. Dudgeon was puzzled as to the cause of the tapeworms, suggesting raw foods might cause the disease.³⁹ While this is arguably true, the system of infection is probably related to the use of tapeworm infested human feces being used to fertilize new crops.

It is notable that neither the Chinese nor the British fully understood the significance night soil played on public health. Nevertheless, night soil collection was the first industry in which the British government determined to regulate in the colony of Hong Kong. By hiring their own agents for the removal of night soil, the British interfered in the native night soil industry as well as the agricultural sector of the city. This action was taken in the name of "Western medicine" or

³⁷ Ruth Rogaski, *Hygienic Modernity: Meanings of Health and Disease in Treaty-Port China*, (Berkeley, CA.: University of California Press, 2004), 208-211. See also: Yu Xinzong, "The Treatment of Night Soil Waste in Modern China," *Health and Hygiene in Chinese East Asia: Policies and Publics in the Long Twentieth Century*, ed. Angela Ki Che Leung and Charlotte Furth, (Durham, NC: Duke University Press, 2010), 51-53.

³⁸ Garnet Joseph Wolseley, *Narrative of the War with China in 1860* (London: Longman, Green, Longman, and Roberts, 1862), 65.

³⁹ John Hepburn Dudgeon, *The Disease of China: Their Causes, Conditions, and Prevalence, Contrasted with Those of Europe* (Glasgow: Dunn & Wright, 1877), 22-23.

that of miasma theory, a type of medical understand which had already developed for hundreds of years in the West. Interference of the night soil industry was done to prevent the foul odors of night soil as described in Wolseley's account. In this way, prior to the epidemic, the government of Hong Kong set a precedent for their invasive sanitary measures that would soon follow.

By the epidemic of 1894, night soil waste was still a problem for the sanitation of the city. The Chinese government in Guangzhou required night soil carriers to take away night soil prior to ten in the morning and only in covered buckets.⁴⁰ This practice was like the practice of the British government in Hong Kong, and probably due to a moment of cooperation between the two governments. During this epidemic, the British would learn that there was a limit to the invasive measures they could practice against the Chinese, even in times of extreme danger, and the Chinese would learn that they must accept some public sanitary measures while some could be rejected. This balance would be worked out in the struggle between Governor William Robinson's administration and the level-headed leadership of Sanitary Board member and Legislative Council member, Ho Kai.

The harsh British sanitary measures officially began, upon Lowson's return from Guangzhou. Dr. Lowson and Dr. Ayres put together a list of necessary measures to enact against the plague on May 10, 1894. Among the measures on this list were the inspection of all homes, the whitewashing of any homes that were deemed unsanitary within forty-eight hours of inspection, and the destruction of infected property that could not otherwise be sanitized. If a house were deemed unfit for habitation even after disinfection, a situation that usually occurred because of more than one infection in a single home, the house was to be abandoned within twenty-four hours by order of the Permanent Committee of the Sanitary Board, and the residents would be removed to government-provided hovels or small boats. Latrines were required to be cleansed in all residences at least two times a day. In addition, the dead were to be buried or reburied on government land outside of city to prevent further infections.⁴¹

⁴⁰ Niles, "Plague in Canton," 119.

⁴¹ The British government still lacked the identification of the plague bacillus by which they could confirm that any of the deceased were killed by the plague rather than any other cause. Edward A. Ram, "Bye-laws made by the Sanitary Board, under the authority of Section 32 of 'The Public Health Ordinance, 1887,' for the prevention and mitigation of the Epidemic, Endemic, or Contagious Disease now effecting the colony known as Bubonic Plague," *The Hong Kong*

The reburial of plague victims by the Hong Kong British government was highly resented by the Chinese residents of Hong Kong because it was directly opposed to the Confucian practices of ritual propriety (li) and filial piety (xiao). Feeling the need to take extra precautions even against those who were already buried, the British showed disrespect for the Chinese, and this would soon cause an even bigger problem in the response to the plague.⁴² The British government assumed authority under the Public Health Ordinance of 1887, a law passed behind closed doors by the Sanitary Board without the consent of the predominately Chinese residents of Hong Kong. It called for the creation of intrusive public sanitation measures in times of epidemic without the prior knowledge of the people. It called for fees of up to one-hundred dollars a day for those who violated regulations and imprisonment for those who could not pay the fine.⁴³ This ordinance was essentially a blank check for the British government to employ any means necessary to prevent the spread of the plague but without regard for the Chinese in the colony. Without knowledge of the bye-laws created by the ordinance, the Chinese were fined for things they had done all their lives and so they were aggravated by the new British laws.

Various historians have argued that the major difference between “Chinese” and “Western medicine” at the time of the 1894 epidemic was the use of public health methods by Westerners to combat disease. Yet the Chinese were just as likely to use public health methods, such as their regulations for night-soil carriers. Unlike the laws for the 1894 epidemic, however, regulations by local officials did not violate Chinese faiths and philosophies.

A central issue in global health practices is how they are fitted to the cultural conditions of the society in which they are implemented. If “Western medicine” has a place in the English vernacular, then it would be solely used to define the type of public health measures employed by the British which failed during the epidemic in Hong Kong. “Western medicine” implies imperialism, and during this epidemic, the British were employing measures that were at odds with the culture of the society in which they were implemented. “Western medicine” in this case meant that the British forced the Chinese to comply with laws in

Government Gazette (HKGRO), May 11, 1894, 375-376. See Also: Edward A. Ram, “Additional Bye-Laws,” *The Hong Kong Government Gazette*, May 31, 1894, 493-494.

⁴² *Ibid.*, 751.

⁴³ G. William Des Vœux, “The Public Health Ordinance, 1887,” *The Hong Kong Government Gazette*, (HKGRO) (June 2, 1888): 532-538.

opposition to their faith. But “Western medicine” simply made this epidemic worse, as the Chinese often fled from the British government and spread the disease. Therefore, “Western medicine” would need to be replaced by global medicine, but this change would not occur quickly. The British government in Hong Kong was powerful, but its Sanitary Board could not implement sanitary laws without the compliance of those who might oppose it.

If a Chinese member of Hong Kong society could stand up the Sanitary Board, it was the Sanitary Board’s own member, Ho Kai. Also a member of Hong Kong’s Legislative Council, Ho Kai studied medicine and law in England, and was admitted to the British bar in 1881. Ho Kai was a part of both Chinese and British society and could practice modern medicine and law with everyone. During his time in Hong Kong, Ho Kai would become a mentor to Dr. Sun Yat-sen, but he still faced prejudice from the British. He was not allowed to join their recreational clubs, and his protest against the Public Health Ordinance of 1887 fell on deaf ears.⁴⁴

Ho Kai opposed the Public Health Ordinance of 1887 for various reasons. Ho Kai argued that the bill should not have been passed secretly, as people needed to understand laws and expectations in times of an epidemic. He also argued that “what is good for the goose is not good for the gaggle,” and though these laws are almost a carbon copy of the laws passed in other cities in England, that did not mean they are useful in the city of Hong Kong. On this point, he aggressively stated:

Some Sanitarians are making the mistake of treating Chinese as if they were Europeans. They appear to forget that there are wide constitutional differences between a native of China and one who hails from Europe. They do not allow for the differences of habits, usage, mode of living and a host of other things between the two. They insist on treating all nationalities alike however much they may differ from one another physically, mentally, and constitutionally. Hence arise the several provisions in this Ordinance and Bye-Laws on question which I have no hesitation in characterizing as wholly unnecessary. One might as well insist that all Chinese should eat bread and beefsteak instead of rice and pork,

⁴⁴ Stuart Heaver, “A forgotten knight: Why Sun Yat-sen’s mentor Sir Kai Ho Kai died penniless and powerless 100 years ago,” *South China Morning Post*, July 19, 2014, accessed July 21, 2016, <http://www.scmp.com/magazines/post-magazine/article/1556065/forgotten-knight-sir-kai-ho-kai>.

just because the former two articles agree better than the latter with an English stomach... Look over our local Ordinances, how many there are still in force which make clear distinctions between Chinese and Europeans. It would only be a waste of time to quote instances. As long as we govern the Chinese according to our promise given while this Colony was still in its infancy, viz., to govern them as much as possible in accordance with their manners and customs, and to respect their religions and prejudices, we must of a necessity modify our laws in order to meet their peculiar requirements. Besides, does not common sense alone indicate to us the advisability of legislating especially in many cases to suit circumstances and surroundings?⁴⁵

Ho Kai argued that what was best for Europe was not what was best for China, but that did not mean China was incapable of enacting public health regulations. In Southern China, where the Qing government's influence was possibly even weaker than it was closer to the capital, implementation of public sanitary precautions was ineffective but still existent. Ho Kai argued that to expand the public sanitary measures in Southern China, measures should be made that were similar to existing measures and implemented in a friendlier fashion rather than those reminiscent of "the Star Chamber and the Inquisition." Ho Kai presented the sanitary board with a list of "better ways for providing the Colony with sanitary improvements."⁴⁶

Regardless of Ho Kai's attempt to provide both opposition and a new solution to the Public Health Ordinance of 1887, his call for less intrusive practices in public health would not be fulfilled until the later years of the bubonic plague epidemic. Instead of support, Ho Kai received rejection by a coalition of seven Sanitary Board members including Philip B. C. Ayres, John M. Price, Patrick Manson, A. P. McEwen, T. C. Dempster, J. H. Stewart Lockhart, and Hugh McCallum. This group, out of spite for Ho Kai's complaints, asked the acting governor to pass the Public Health Ordinance of 1887.⁴⁷

With the passage of the Public Health Ordinance of 1887 came the

⁴⁵ Ho Kai, "An Ordinance for Amending the Laws relating to Public Health in the Colony of Honking with the Bye-laws Made Thereunder," *Sessional Papers* (HKGRO), May 27, 1887, 404.

⁴⁶ *Ibid.*, 405.

⁴⁷ J. M. Price et al. "The Sanitary Board's Rejoinder," *Sessional Papers* (HKGRO), June 1, 1887, 407-410.

introduction of the floating lazaretto, or plague isolation unit, the Hygeia. Dr. Lowson argued that the ship was not suitable for the isolation of plague patients, as the disease would quickly spread onboard.⁴⁸ Furthermore, Chinese citizens of Hong Kong saw the ineffectiveness of the ship, with one Chinese written editorial in the North-China Herald stating:

When a person is stricken with the plague at Hong Kong the foreign officials take them to the floating hospital moored in the mid-stream. First they make the patient swallow 12 oz. of brandy, mixed with some kind of liquid medicine. Then they put six pounds of ice on top of the patient's head, while the chest, hands and feet are also loaded with a pound of ice each. In this manner, not one person out of ten manages to leave the floating hospital alive.⁴⁹

When added to Dr. Lowson's objections to the Hygeia, disunity amongst even foreign health officials shows that a unilateral understanding of preventative measures for disease, and thus scientific medicine, had not yet developed.

Governor William Robinson reported further distrust among the Chinese to the British foreign office in his dispatch on the condition of the plague in Hong Kong on June 20, 1894. Robinson worried that most Chinese patients went to Donghua Hospital rather than the British government run facilities, and suspected that the Donghua hospital abandoned their sick after death without reporting illness or properly burying them. He also stated that the Chinese citizens of Hong Kong feared for the privacy of Chinese women and children, believing that British doctors might do unspeakable things to them. Nevertheless, the governor's remedy for this situation was to investigate the claims, and in finding that Chinese fears of malpractice were exaggerated, Robinson told the Chinese that their fears were unfounded. Without attempting to prove his point, Robinson simply told the Chinese that they were wrong in their suspicious and that because they chose to be subjects of Hong Kong they must obey his laws and the colonies sanitary procedures. Still uneasy about the situation, Chinese in both Hong Kong and Guangzhou began holding up

⁴⁸ Ph. B. C. Ayres, "The Colonial Surgeon's Report for 1893," *Sessional Papers* (HKGRO), July 11, 1894, 360.

⁴⁹ Chinese editorial in the North-China Herald, Canton, June 15, 1894, as cited in Benedict, *Bubonic Plague in Nineteenth-Century China*, 340.

placards that charged the British with cutting open the bodies of pregnant women to make medicine from their fetuses.⁵⁰

Common anti-British stereotypes were born out of fear for the invasive practices employed by the British, and the disregard for Chinese customs. The Chinese did go to Donghua for the sake of comfort. Robinson remained concerned that they would receive inadequate care and would spread the disease. Nevertheless, the treatment of bubonic plague and its method of transmission remained a mystery. Comfort was still the best tool for treating the plague, and isolation in any hospital was the greatest preventative measure. If some commoners were prevented from going to Donghua, they might not go to a hospital at all, and the disease would spread. Yet these points were not considered by the governor.

Governor Robinson had no interest in working with the Chinese; rather, he believed that his means were essential for public health. He stationed the gunboat Tweed near Donghua Hospital and threatened to destroy the structure and arrest any who opposed his laws.⁵¹ Robinson stated that those who chose to live in Hong Kong had the bound duty to assist the government of Hong Kong and prevent anyone to obstructing it. He expected the unquestioning obedience of those over whom he ruled. Robinson later stated that he would offer a reward to those who turned in anyone disobeying his sanitary laws or writing negative placards.⁵² Here he is evoking the psychological behaviorist punishments and rewards system common among many legalist authors. But as Guan Zhong stated in his own legalist work, rewards are only to be given to the one who is credited with achievement.⁵³ Another important tenant of legalism was implied by the British sanitary measures even if it was not intentional. By entering infected houses, and isolating entire families as contacts though only one member of the family may be infected, Governor Robinson's men were applying legalist policies for punishing family members for a crime. Many commoners very well must have felt they were being punished for a crime when they were isolated on the

⁵⁰ William Robinson, "Governor's Dispatch to the Secretary of State with Reference to the Plague," *Sessional Papers* (HKGRO), June 20, 1894, 284.

⁵¹ *Ibid.*, 285.

⁵² Robinson, "Governor's Dispatch," 285.

⁵³ Guan Zhong, "The Guanzi," *Sources of Chinese Tradition: From Earliest Times to 1600*, ed. Wm. Theodore De Bary & Irene Bloom Vol. 1 (New York: Columbia University Press, 1999), 193.

Hygeia or in another government facility. A quote from Shang Yang explains, “punishment should be extended to their [the criminal’s] family for three generations.”⁵⁴

The ways in which governor Robinson played the part of a legalist ruler meant that the Chinese would fear him. Nevertheless, the Chinese were completely capable of running away from this menace and so they did, spreading plague to other cities. Robinson failed to consider the sentiments of the Chinese and so he faced greater opposition. Claiming his own practices as superior and citing “Chinese” practices as inferior, Robinson created a divide that would foster false concepts of “Western” medicine and “Chinese” medicine.

Common Chinese Responses to the Plague Outbreak, 1894

Like the people of every society faced with the outbreak of an epidemic disease, many people in China turned to religion to alleviate their fear and cure the disease. One report states that the people of China, upon hearing from a fortune teller that the plague would die away with the approach of the Spring equinox determined to speed up what they assumed would be a long and sorrowful year by attempting to fool heaven and celebrate the New Years’ Festival. The Chinese in Guangzhou were reported to have played gongs, set off fireworks, and closed businesses to trick heaven. Local officials even supported the festivities. Nevertheless, plague continued in Southern China throughout the celebration.⁵⁵

Religion has always played a part in societies across the world when faced with epidemic disease. Unexplainable loss of life has caused almost every civilization to turn to their faith for an answer to the question of disease. Therefore, religion plays an important part in layperson’s understanding of the Third Plague Pandemic. The religious responses to disease in China were considered by foreigners to be proof of the backwardness of the Chinese, and an example of how their own “Western medicine” was superior to “Chinese medicine.” Professionals in the medical field of China had other beliefs about

⁵⁴ “The Book of Lord Shang,” 197.

⁵⁵ “Attempt to Outwit the Plague: Novel and Thoroughly Chinese Scheme to Check an Epidemic,” *New York Times* (July 30, 1894), ProQuest Historical Newspapers, 1.

disease theory. Since the plague was taking place in China, a field of British professionals could critique the thoughts of Chinese lay persons without compromising the various beliefs about disease held by the lay persons of Europe. Various foreign doctors criticized Chinese religious responses to disease to highlight a false sense of superiority about the “Western world.”

Dr. John MacGowan reported that, for example, Chinese sorcerers dressed up in elaborate costumes to fight fictitious spirits who causes epidemics. Wielding a sword as well as a black flag with seven stars, the sorcerer danced, supposedly battling a malign spirit. The sorcerer replayed this act as many times as needed until the epidemic subsided, with the sorcerer claiming the credit for having defeated the pestilential scourge.⁵⁶

In another account, the author described the Chinese practice of fengshui. According to MacGowan, the Chinese believed that venerable fairies with grey hair and long beards and evil demons populate nature. To control these fairy spirits and demons, the geomancers of China practiced fengshui. Dr. MacGowan opposed this practice, arguing that its primary function was malice. In an anecdotal account, MacGowan stated that fengshui prevented the Chinese from understanding the true causes of disease, and he claimed that fengshui was such an important force to the Chinese that everyone practiced the art. When a renowned geomancer determined that a plot of land would bring wealth and honor to the people who lived on it, he wrote, great wars were fought over the plot of land, although MacGowan offered no specific examples. MacGowan asserted that the Chinese in the nineteenth century had progressed intellectually less than the Europeans had by the Middle Ages.⁵⁷

The purpose of MacGowan’s accounts was to fascinate the reader with an experience of a unique yet backwards culture. But to provide the reader with this experience MacGowan often exaggerated facts such as the unlimited power beliefs in *fengshui* had in Chinese society. He created a view that Europeans could generalize to all of China. Throughout the text, MacGowan explained how Europeans, and in particular the British, helped the struggling Chinese people. In doing so, he paved the way for the creation of “Western medicine” as a European method to help the reluctant and ignorant Chinese.

⁵⁶ John MacGowan, *Men and Manners of Modern China* (London: T. Fisher Unwin, 1912) 124-126.

⁵⁷ *Ibid.*, 107-117.

In another instance of desperation to stop the epidemic, a Chinese planchette supposedly revealed the word of the popularly celebrated god of war, Guan Yu. A planchette is a small pointing device; in the United States it is commonly used with Ouija boards. For the Chinese, the planchette was typically a three-pronged stick used with sand or a tray to engage in “spirit writing,” or fuji. Spirit writing revealed that Guan Yu had become Assistant Superintendent of the Department of Governing Pestilences in heaven.⁵⁸

Guan Yu’s planchette was written by Buddhist nuns and several requests are made for humans on Earth to repent before the buddhas to escape plague. Nevertheless, Guan Yu’s planchette gave advice to the virtuous on the ways of preventing and curing plague. Guan Yu stated that the reason for the plague is to prevent the overcrowding occurring in China, especially among those who are not virtuous. He warned that the disease was only just beginning, but he interceded on behalf of humanity. Guan Yu asked five thousand families in every town and city to repent to shorten the duration of the epidemic. The god stated that to prevent the disease, the rich should establish benevolent organizations with their wealth, and the poor should burn incense, pray, and recite the liturgy of Guan Yu. Distributing twenty copies of the planchette would save a person, and distributing two hundred would save their family.⁵⁹

Saving one’s family would be a filial act, and those who were filial would not be infected by the bubonic plague. Furthermore,

those who were formerly wicked and cruel, but now have become filial and faithful to friends... it is not too late for these classes to repent. If you are really sincere and will not deceive me, Kwan [Guan], you should swear before me and sketch out my precious halberd after the pattern given here... below it write the characters, ‘Assistant Superintendent of the Department of governing Pestilences, the seal Kwan So-and-So [Guan Yu]’ These ten characters, together with the picture of the halberd, posted before the door of the house will prevent the demons of plague [yigui] from disturbing you.⁶⁰

⁵⁸ J. Dyer Ball, trans., “Notification by Planchette by the God of War of precious instructions to resume the world - a harmless remedy to drive away the plague. Do not consider the words as too many. It is urgently requested of you that you must carefully read this and reverence paper with characters in it,” *Sessional Papers* (HKGRO), March 2, 1895, 233.

⁵⁹ *Ibid.*, 233-236.

⁶⁰ *Ibid.*

To justify the fact that some strongly virtuous people were infected by the disease, the Guan Yu planchette claim maintained that these people were accidentally infected, and offered remedies to treat them. Finally, the most important declaration supposedly made by the god was to purify wells, as many had been contaminated by dead rats. On this point, an unknown commentator, either Dr. Lowson or Dr. Ayres, suggested that plague was probably spread by contaminated wells, while ignoring the mention of dead rats.⁶¹

While this example of religion to explain disease among commoners in Southern China was not indicative of scientific medicine, it nonetheless made an empirical inference, the connection of dead rats to the plague. Without knowledge of the plague bacillus, the connection of rats and plague presents little tangible information regarding the spread of plague, although the same could be said of British sanitarians who saw that plague occurred in dirty conditions. Only the discovery of the bacillus would prove that each of these observations was theoretically correct. Although neither a British nor Chinese national would be responsible for the discovery of the bubonic plague bacillus, debate still exists today as to whether the discoverer was from Europe or Asia.

Discovery of the Plague Bacillus, 1894

Hong Kong was undoubtedly the location in which the discovery of the plague bacillus was made, but disagreement persists over which scientist identified the bacteria.⁶² Kitasato Shibasaburō and Alexandre Yersin are usually cited as co-discoverers of the disease that is considered one of history's greatest killers. The plague expert Wu Liande commented on this conflict in the 1930s, contending that Kitasato was the first to discover the organism, but Yersin's research was much more detailed and accurate. Wu argues that both doctors deserve credit for the bacterial discovery.⁶³

Regardless as to whom we credit with discovering the plague bacteria, the significance of this revelation is that two doctors, one from the East and one

⁶¹ Ibid.; "A Chinese View of the Plague," *Sessional Papers* (HKGRO), March 2, 1895, 233.

⁶² Echenberg, *Plague Ports*, 32-35.

⁶³ K. Chimin Wong and Wu Liande, *History of Chinese Medicine* (Shanghai: National Quarantine Service, 1936), 516.

from the West were equally knowledgeable about the epidemiology of infectious disease. Both doctors took up residence in the East for most of their lives, Kitasato in Japan and Yersin in French Indochina. What can be determined is that, the plague bacteria were isolated in China by a doctor who resided in the East; thus, the argument that modern medicine is inherently “Western medicine” may be proven void. Apart from the biological ethnicity of the discoverer, the disease was isolated in the East by a method used across the world, and this led to a great advancement in the field of scientific medicine.

On June 12, 1894, a team of six researchers from Japan traveled to Hong Kong with the objective of isolating the plague bacillus. This team was led by Kitasato Shibasaburō. Doctor Kitasato was a Japanese national and was sent to Hong Kong as a representative from the Japanese Imperial Board of Health to learn about the plague. He was sent as the Japanese representative because he was already an accomplished bacteriologist. Kitasato completed most of his medical schooling in Japan; nevertheless, he was a graduate of the Koch Institute in 1891 and a student of Robert Koch, who is commonly referred to as the “father of bacteriology.”⁶⁴ Upon his graduation, Kitasato isolated the bacteria, *Clostridium Tetani*, the bacteria which produces the neurotoxin, tetanospasmin. This toxin in turn causes the disease tetanus, otherwise known as lockjaw. Furthermore, Kitasato is credited with creating a serum to treat both tetanus and diphtheria. This latter disease also produces a toxin which was discovered by Yersin.⁶⁵

Kitasato and his team were highly equipped with the latest technology for bacteriological research. His team also had the support of the British government in Hong Kong who outfitted Kitasato’s team with their own laboratory and cadavers to efficiently research the plague. Their work began on June 14th, and Kitasato made the discovery of multiple bacteria in a bubonic lesion on a corpse of a subject who passed away only eleven hours earlier. To

⁶⁴ David C. Knight, *Robert Koch, Father of Bacteriology* (New York: Watts, 1961)

⁶⁵ Correspondent, “The Discoveries of Kitasato,” *New York Times*, January 28, 1896, 4. See also: E. Roux and A. Yersin, “Contribution A L’étude de la Diptherie,” *Annales de L’Institut Pasteur*, Vol. 2, 12 (December 1888): 629-630. Both tetanus and diphtheria produce extraordinarily potent toxins. These toxins are among the most lethal toxins in the world (tetanospasmin, the toxin produced by the tetanus bacteria is second only to the botulinum toxin which causes botulism). Today both tetanus and diphtheria are prevented in the United States by the DTaP vaccine given in childhood as well as successive Tdap booster shots given periodically throughout the remainder of the patient’s life.

confirm that these bacteria were plague, Kitasato infected a mouse with the sample taken from the corpse. He also took a sample of plague from a living human specimen and found the same bacteria. In the coming days, Kitasato performed fifteen more autopsies and inoculated various other animals with the samples. Every mammal he inoculated became ill, while the pigeons he inoculated lived. Further autopsies revealed the same bacteria so Kitasato quickly relayed his findings to Dr. Lowson. The British doctor sent word to England and published Kitasato's findings in *The Lancet* on August 11, 1894. *The Lancet*, being one of the most prestigious and most widely read peer-reviewed medical journals of the time, Kitasato's was sure to find a large audience for his findings, much larger than his contemporary, Alexandre Yersin. Kitasato published his own report to the journal on August 25, 1894.⁶⁶

Yersin was ten years Kitasato's junior, and his claim to fame was discovering the toxin that caused diphtheria, though the pathogen itself had already been discovered years earlier. Yersin was a student of the Pasteur Institute, the equal of Koch's school. The Pasteur Institute was founded by Louis Pasteur who was of equal importance to Robert Koch in the field of microbiology. Having graduated from the Pasteur Institute in France, Yersin moved to Vietnam (Annam), and became the director of the Pasteur Institute in this French protectorate. Upon receiving a Colonial order due to the fear of plague spreading to French Indochina, Alexandre Yersin traveled to Hong Kong and arrived on June 15, 1894. As Yersin was sent from a small institute in a colonial outpost, he was not equipped with a full team nor the sophisticated equipment given to Kitasato by the Japanese government. Moreover, the French doctor was not popular with the British officials, so he did not receive the hospitality and provisions granted to Kitasato from the British government.

⁶⁶ W. B., "Obituary Notices: Shibasaburo Kitasato," *Proceedings of the Royal Society of London. Series B, Containing Papers of a Biological Character*, Vol. 109, No. 764 (Jan. 2, 1932), xi-xii. <http://0-www.jstor.org.www.consuls.org/stable/81572>. This obituary notice argues for the point that only dates matter and therefore Kitasato should receive full credit for the discovery of the plague bacillus. The author states, "I mention these dates because attempts have not been wanting to deprive Kitasato of the full credit for his discovery and this by some of his own countrymen. Claims have also been put forward on behalf of Alexandre Yersin, a surgeon of the French Colonial Service and director of the Pasteur Institute at Nha-Trang (Annam) who also went to Hong-Kong and arrived there on June 15, 1894, with scanty equipment. By the time Yersin had really started with his work Kitasato had got out all the fundamental facts concerning the bacteriology of the plague." See also: S. Kitasato, "The Bacillus of Bubonic Plague," *The Lancet*, Vol. 2 (August 25, 1894): 428-429.

Yersin was allowed a makeshift hut for use as a medical laboratory and had to find his own cadavers in which to perform autopsies.⁶⁷

The “Eastern” practitioner in this case had far more advantages than the “Western” practitioner. The Japanese had well-established public health facilities that the French could not match, at least not in Asia. Kitasato also had the advantage of being close to his home country. Apart from being able to bring more resources to the field to conduct his work, Kitasato was supported by the British government. The British worked with other governments to discover a cure for the disease, thus validating the emerging idea of global scientific medicine.

Although Kitasato’s discovery of the pathogen occurred prior to Yersin’s identification, the Japanese doctor was careless with his samples. Kitasato’s tests to discover whether the bacteria were gram-positive or gram-negative remained inconclusive.⁶⁸ Testing bacteria for Gram staining reveals differences in the cell walls of the bacteria, important for the characterization and classification of bacteria. Treatments, immune response, and bacteriological behavior are all determined in part by Gram staining.⁶⁹ On the other hand, Yersin reported that the bacteria was in fact gram-negative. Even though his report was not published until September, Yersin’s delicate work produced a more accurate description of the bacteria. Yersin also made a strong claim that rodents in general, but particularly rats, were the main reservoir of the disease:

Dead rats found in homes and in streets almost always contain the microbe in grand abundance their bodies. Many of them present genuine buboes. I placed in the same room healthy mice and inoculated mice: the inoculated mice died early; but, in the following days, the healthy mice all died each after the other, with the plague bacillus in their bodies. So, the plague is a contagious disease and can be inoculated. It is likely that the rats are the main vestibule, but I also found that flies take ill, die, and can serve as agents of transmission. I noticed that in the laboratory in which I

⁶⁷ Alexandre Yersin, “La Peste Bubonique A Hong-Kong,” *Annales de L’Institut Pasteur*, Vol. 8, (September 1894): 662. Author’s translation.

⁶⁸ Kitasato, “The Bacillus of Bubonic Plague,” 428-429.

⁶⁹ For a further explanation of Gram staining see: “Gram Stain Technique,” Amrita Vishwa Vidyapeetham University, last modified 2011, accessed on August 1, 2016, <http://vlab.amrita.edu/?sub=3&brch=73&sim=208&cnt=1>.

do my animal autopsies, there were a lot of dead flies. I took one of these flies, and after having torn off the legs, the wings and the head, I crushed in broth and have inoculated in a guinea pig. The inoculation liquid contained a large amount of bacilli absolutely similar to that of the plague, and the guinea pig died in 48 hours with the specific disease.⁷⁰

Yersin's final assessment that flies could transmit the plague was similar to modern understanding that fleas transmit the plague. Yersin was not credited with discovering the true vector of plague, but certainly advanced the understanding of how plague was spread.

Both doctors would produce serums to treat the plague, and due to their notoriety for discovering the plague, their serums were treated as miracle cures.⁷¹ Yersin declared *Pasteurella pestis* as the name of the new pathogen he had discovered, but until the 1920s, the disease was generally referred to as *bacillus pestis* in medical literature. Alternatively, those who did not endorse Yersin's claims to have found the bacteria first, such as Dr. Lowson, called the bacteria *bacillus Kitasatonensis*. Finally, after Yersin's death, the name of the pathogen was changed to *Yersinia pestis* to honor the scientist who made a detailed identification of the bacteria.⁷²

Among the Hong Kong British doctors, James Cantlie was one of the few who respected the French doctor, whereas James Lowson despised Yersin and venerated Kitasato. Cantlie, as the doctor who provided Yersin with a site to conduct his research, remarked that Yersin was "a master of detail, precise in his methods, full of resource in difficulties, and his conclusions are worthy of the highest respect."⁷³ James Lowson, in contrast, maintained that "all of Yersin's work was suspicious." Cantlie gave Lowson the benefit of the doubt, but Lowson

⁷⁰ Alexandre Yersin, "La Peste Bubonique A Hong-Kong," 666-667. Author's translation.

⁷¹ Correspondent, "The Discoveries of Kitasato," 4. See also: Correspondent, "Another Malady Conquered: A French Doctor Finds a Cure for the Plague in China," *New York Times*, September 2, 1896, 15. The *New York Times* does not mention Yersin's name in the headline and improperly refers to Dr. Yersin as Dr. Gersin in this account; however, this highlights that much of the world was still unfamiliar with the work of Yersin compared to Dr. Kitasato.

⁷² CDC, "Etymologia: *Yersinia*," *Emerging Infectious Diseases*, Vol. 16, 3 (March 2010): 496. See also: Lowson, "The Outbreak of Bubonic Plague in Hongkong," 19.

⁷³ James A. Lowson and James Cantlie, "The Bacteriology of Plague," *British Medical Journal*, Vol. 1, 1882 (January 23, 1897), 238.

insisted that his work with Kitasato's assistant proved his suspicions.⁷⁴ This dislike for the French doctor was probably due to the old Anglo-French rivalry as well as Lowson's own temperament and distrust of many other doctors. In other instances, Lowson accepted the conclusions of Kitasato as fact simply because he made them.⁷⁵

Disregard for Chinese Practices, 1894

Apart from holding Dr. Kitasato in such high esteem, the European doctors of the Pearl River Delta, the area encompassing Hong Kong and Guangzhou, eager to prove the superiority of their methods, glorified the small triumphs and exaggerated them. Although discovery of the plague bacillus did not result in an immediate remedy, many European doctors considered Kitasato's success important for curing the disease. Foreign doctors had often dismissed the work of Chinese doctors, considering their work inferior even when they had been trained by Europeans. In contrast, the British accepted the Japanese and their contributions to medicine, but rejected the work of Chinese doctors, which, at least in the eyes of the British, was considered worthless. In part, it took the Chinese longer to become contributing members to global scientific medicine simply because they were considered inferior to the West in European eyes, not due to indifference or distrust on the part of the Chinese. In fact, many intellectuals of the Qing attempted to study modern medicine and practice it in China but were met with foreign rejection. One famous instance can be found in the writing of future revolutionary, Dr. Sun Yat-sen.

Sun Yat-sen believed that his initial dream of becoming a doctor also set him on the course to becoming a revolutionary, yet this may have been because his hopes of a medical career were not realized. Sun Yat-sen began his formal medical education with the Anglo-American China Medical Missionary Society. The society's chief doctor, John Kerr, trained Sun Yat-sen in modern medical practices. Kerr was greatly respected by the young Chinese medical student, and the missionary would go on to teach over one hundred men and women in

⁷⁴ *Ibid.*

⁷⁵ Lowson, "The Outbreak of Bubonic Plague in Hongkong," 29. Throughout this report Dr. Lowson constantly cites only the work of Kitasato and his Kitasato's assistants. At the very end of the report he says that he is seeking the opinion of Dr. Kitasato on more plague work.

modern medicine.⁷⁶ As a medical missionary, part of Dr. Kerr's work included the conversion of his students to Christianity, although Sun Yat-sen was already baptized in the Christian faith. Sun Yat-sen studied in Guangzhou until the College of Medicine in Hong Kong opened. He graduated with a degree in 1892, securing a diploma allowing him to title himself, "Licentiate in Medicine and Surgery, Hong Kong."⁷⁷

Sun Yat-sen took his degree with him to Macao after being denied a license to practice in Hong Kong. There he was accepted by the board of directors in a Chinese hospital in Macao. The directors gave him his own ward and allowed him to practice surgery, but it was not long before he faced a confrontation with the Portuguese authorities. Sun Yat-sen wrote that, "it was not the obstructive ignorance of the East, but the jealousy of the West, which stepped in to thwart my progress."⁷⁸ Sun Yat-sen moved back to Guangzhou to offer his services to fight the epidemic in 1894, but he was again denied a job as a physician. In the end, Sun Yat-sen became the founder of the Republic of China, and he considered his medical education and experiences in medicine to be the catalyst of his entry into politics.⁷⁹ Yet Sun Yat-sen was not the only Chinese doctor who considered the study of scientific medicine to be a reason for revolution.

The bubonic plague of Hong Kong may have been an impetus for revolution. Other doctors trained in modern scientific medicine, like Vung Piau Suvoong, suggested that the plague highlighted the deplorable condition of medicine in China and highlighted the weakness of every component of Chinese society, a reliance on old ideas. Vung Piau Suvoong graduated from Columbia University in 1873 but was closely associated with the China Medical Missionary Society. Although he was not ethnically Han Chinese, he was a Chinese national who believed China required Christianity to be an equal of the West. His writing contained colorful criticism about the ways in which medicine in China functioned. In one mocking statement about Chinese medical facilities, he said:

⁷⁶ Editor, "Dr. John G. Kerr, LL.D.," *China Medical Missionary Journal* Vol. 15, 4 (October 1901): 294.

⁷⁷ Sun Yat-sen, *Kidnapped in London: Being the Story of My Capture by, Detention at, and Release from the Chinese Legation, London* (London: Simpkin, Marshall, Hamilton, Kent and Company Limited, 1897), 10.

⁷⁸ *Ibid.*, 12.

⁷⁹ Sun Yat-sen, *Memoirs of a Chinese Revolutionary: A Programme of National Reconstruction for China* (Philadelphia, PA: David McKay Company, 1927), 185-186. See also: Echenberg, *Plague Ports*, 37-38.

The patients that go to those places for a cure are generally well off in other worldly means, so they are either hypochondriacs, having been surfeited with the good things of the world, or are incurables in the eleventh hour of their existence. The one class come back better imagining the doctors did them good - really it is the journey that benefited them; the second class come back much more worse from the fatigue of the travel, and die satisfied after having seen the most celebrated doctors in China.⁸⁰

Evidence proves that as of 1894 this was true of both traditional Chinese practices as well as germ theory understandings of medicine. Neither traditional Chinese practices nor germ theory truly knew how to treat a plague patient.

V. P. Suvoong promoted something more in his argument, evidence that the Qing dynasty needed to embrace scientific medicine rather than remain indifferent to its practices. The Qing government, partially due to the distance between the capital and the heartland of the plague, remained largely indifferent to preventative measures for plague during this epidemic. Simply because the government remained apathetic did not, however, mean that the medicine practiced in the south during the epidemic was “Western” in nature. Chinese intellectuals in the south were eager to practice scientific medicine even if those ideas were rejected. Doctors like Sun Yat-sen and Ho Kai were unable to make contributions to the epidemic simply because they went up against Western governments and received no support from the apathetic Qing. Yet the will of these doctors to practice scientific medicine showed that it did not belong to the “West,” but rather the global community.

In a break from his overt assault on traditional Chinese medicinal practices, V. P. Suvoong stated that certain empirical observations of the Chinese pharmacopeia led to the development of useful drugs for modern medicine. He chided the West for categorizing everything developed by the Chinese as ineffective. He provided examples of Chinese ideas that Europeans had rejected simply because they originated in China. On the other hand, the doctor admitted that the Chinese, “have never refused the offices of the Christian physician; some

⁸⁰ V. P. Suvoong, “Medicine in China,” *China Medical Missionary Journal* Vol. 8, 4, (December 1894): 193.

may receive Christianity, but all will accept medicine.”⁸¹ He contended that in time scientific medicine would become a global phenomenon, and like the plague itself, not be confined to borders.

Even as its borders were unbound, Westerners still attempted to present modern medicine as their province. Due to the location of the plague in China, they only had to expose the beliefs of trained doctors to the Chinese public. Furthermore, the foreign doctors refused to accept Chinese contributions, whether of doctors or medicine. Insofar as medical practice remained exclusively foreign, doctors during the epidemic could criticize the beliefs and the practices of Chinese attempting to cope with the epidemic. They could claim ownership of “Western medicine”, considering they could practice it freely, behind closed doors, and without interference from the Chinese. However, it appeared that foreigners could handle the plague only as well as their Chinese counterparts, even if that was not at all.

In containing the plague, the British lacked personnel. British troops stationed in India were brought in to act as police during the plague in 1894. This supplementary force was not enough, as Chinese were highly resistant to inspections and removal from their own homes.⁸² The First Battalion of the King’s Shropshire Light Infantry arrived to assist in house-to-house inspections and cleaning. Due to their heavy usage of chlorine of lime and whitewash, the Shropshire regiment in Hong Kong became known as the Whitewash Brigade. Apart from the generous application of sanitation, the Whitewash Brigade was also amply supplied with rum to help them cope with their work. To add to this recipe for disaster, the Shropshire Regiment was supplemented by convicts who would join despite the dangers of the job. Despite the obvious reasons for protest by the Chinese, Robinson was again baffled by the fact that the Chinese felt their wives and daughters were in danger when soldiers and criminals, who may or may not have been heavily intoxicated, entered their homes.⁸³ Of course, inebriated lawbreakers working as agents of sanitation was not the norm in Britain either.

⁸¹ *Ibid.*, 199.

⁸² F. H. May, ‘Report of the Captain Superintendent of Police for 1894,’ *Hong Kong Government Gazette* (HKGRO), (January 31, 1895), 197.

⁸³ “Hong Kong Plague, 1894-1895,” *Shropshire Regimental Museum*, accessed on August 9, 2016, <http://shropshireregimentalmuseum.co.uk/regimental-history/shropshire-light-infantry/the-hong-kong-plague-1894-95/>. See also: William Robinson, “Government Notification 319,” *Hong Kong Government Gazette* (HKGRO), September 1, 1894, 726. Echenberg, *Plague Ports*, 30.

Robinson figured that these concerns had to wait as protests around Donghua and Guangzhou were at a breaking point in the summer of 1894. Mary Niles and another female medical missionary in Guangzhou were attacked on the street for being foreigners in the medical field.⁸⁴ Around Donghua, doctors complained of the need to carry handguns because they feared the possibility of assault by angry Chinese.⁸⁵ It was reported that eighty thousand Chinese inhabitants of Hong Kong left the city during the plague. British officials called on the Donghua Hospital as well as the *shantangs* of Guangzhou to put a stop to the Chinese flight due to concern that the Chinese were spreading the plague to other cities.⁸⁶ This assessment was probably very accurate, but the British remained oblivious to the fact that it was their own draconian sanitary measures that were causing the Chinese to flee.

The flight of the Chinese demonstrated the challenges that the British faced in dealing with an epidemic in another culture. By causing the Chinese to flee, they were furthering the spread of the plague to other cities and towns nearby. Global medicine could not fully emerge until governments could apply public health measures to specific cultures. In time, the British would learn to be more mindful of the Chinese culture to prevent the spread of the disease, and would even take the advice of Chinese doctors. Europeans doctors would soon become aware that scientific medicine was not yet ready to combat plague, and that collaborative responses were necessary to prevent its spread.

Bubonic Plague in the Later Years of the Epidemic, 1895 - 1903

By 1898, Sir William Robinson would be succeeded as governor of Hong Kong by Sir Henry Arthur Blake who proved more tolerant of Chinese concerns with sanitary practices in the colony. The new governor revamped the entire system of dealing with the plague and responded to the concerns of the Chinese coolies. Governor Blake's 1903 report on the plague was more considerate of the

⁸⁴ Robinson, "Government Notification 319," 727.

⁸⁵ Lei, "Sovereignty and the Microscope," 83.

⁸⁶ Robinson, "Government Notification 319," 725. Apart from the fact the the flight of Chinese to other Chinese cities thus spreading infection, another concern mentioned by Robinson and quite possibly of higher priority to the British governor was the effect that a labor shortage would have on British commercial activities.

cultural sentiments of the Chinese, and in this way, the British and the Chinese each benefitted.

By the year of Governor Blake's report, Dr. William John Simpson, Britain's foremost plague expert, accepted the fact that rats were a reservoir for the bubonic plague. He provided convincing evidence to prove this point to fellow doctors, and he suggested that fleas were responsible for spreading the plague as well. In doing so, he validated the many stories in which epidemic was rampant on one side of a river while both rats and humans on the other side of a river remained healthy.⁸⁷ Due to the observations of Dr. Simpson as well as those who conducted experiments with rats and fleas, ratproofing became popular among European doctors and scientists in Hong Kong and across the world where plague was an issue. These European scientists confirmed Chinese suspicions about a connection between rats and the plague, expecting the Chinese to comply with new sanitary measures.

In 1902, the systematic examination of rats, both alive and dead, was begun by the Hong Kong government bacteriologist, a new position that was filled by a doctor named William Hunter. He carried out this work with "Chinese Qualified Doctors" trained in the methods of scientific medicine.⁸⁸ Gradually the government of Hong Kong accepted native Chinese doctors among its ranks, although their jobs often entailed assisting other officials.

Among the methods employed to apply this systematic examination was the requirement of rattraps inside the homes of Chinese residents of Hong Kong. Governor Blake noted that these rattraps were often sprung without rats, as coolies feared sanitary inspectors more than plague rats. Other problems centered on the bonuses paid for rats caught in the streets, so fewer rats were caught inside homes where they were more dangerous to individuals. A rumor also arose about a black market for rats being imported from other cities and villages to take advantage of the government's cash incentive for captured rats. More potentially infected rats were being brought to the city.

Finally, some coolies used the sanitation system to avenge a slight by

⁸⁷ W. J. Simpson, "Appendices to the Report on the Causes and Continuance of Plague in Hong Kong," *Report on the Causes and Continuance of Plague in Hong Kong and Suggestions as to Remedial Measures* (London: Waterlow and Sons Limited, Printers, 1903), 15.

⁸⁸ William Hunter "Report of the Government Bacteriologist, for the year 1902," *Sessional Papers* (HKGRO), April 14, 1902, 221-222.

another with raids by sanitation inspectors.⁸⁹ Nonetheless, Governor Blake appeared willing to work with the Chinese and the British in solving the problems of the plague. In his 1903 report, Governor Blake's emphasized tolerance:

On the 13th April, I proceeded to the district accompanied by the Principal Civil Medical Officer, the Medical Officer of Health, the Director of Public Works, the Hon. Ho Kai, M.B., C.M.G., and Mr. Fung Wa Chün, a Member of the Sanitary Board, and, collecting the people, I told them, through the Chinese gentlemen present, that the Sanitary Board had offered no objection to my trying how far they would be prepared to help themselves and assist the Government in carrying out the necessary measures. I emphasized the necessity of personal cleanliness and the destruction of vermin in their houses, and undertook that, if they would give timely notice of sickness, they could be attended by either European or Chinese doctors, whichever they elected, at their own houses. To enable them to clean their houses and themselves I proposed to erect tanks for boiling water and Jeye's fluid into which their bed boards and most of their simple furniture could be dipped, and to supply wash houses in which both sexes could have a supply of hot water for washing purposes. To carry out these proposals I asked the people to form a Kai-fong, or committee who would assist by their supervision. The Kai-fong is a Chinese institution in every Chinese town, each street or ward having its Kai-fong formed of men of consideration among its inhabitants... I may say that I am entirely satisfied by the work done by them. They disseminated my views as to cleansing operations, and assisted by their personal efforts in seeing that they were carried out. They reported cases of sickness, and at every visit to the district all who were not away at their work were ready to accompany me to show me what had been done.⁹⁰

The development of the Kai-fong discussed in Governor Blake's report showed that he was aware of Chinese cultural practices and prepared to implement them for the benefit of the community. As Governor Robinson had been described as a much-despised legalist, Governor Blake can be compared to a Confucian official.

⁸⁹ Henry A. Blake, "Bubonic Plague in Hong Kong: Memorandum By H. E. the Governor on the Result of the Treatment of Patients in Their Own Houses and Local Hospitals, During the Epidemic of 1903," *Sessional Papers* (HKGRO), August 3, 1903, 378-379.

⁹⁰ Ibid.

Governor Blake expected the Chinese to report disease to the government and to keep a certain personal cleanliness; however, he did so in a way resembling a fatherly ruler rather than a dictator. Personal cleanliness and reporting disease was emphasized to serve the government, but in turn Blake provided his subjects with the materials to accomplish cleanliness and paid for it with government money.

The work of Sir Henry Blake as governor of Hong Kong began the process of incorporating cultural considerations into the public health system of the colony. In this way, Blake was abandoning the imperialistic system of “Western medicine” in which Western nations attempted to force their medicinal beliefs on other cultures, and instead adopted a global medicine in which he worked with the people he governed. Further alterations to public health in southern China would develop throughout the successive waves of plague which affected the country in the early twentieth century.

Dr. Kerr stated that female physicians would be instrumental in administering the tenets of scientific medicine to Chinese commoners.⁹¹ This is evident by a report in the North-China Herald, an influential English-language newspaper published in Shanghai. A special meeting for the Committee of the Municipal Council stated that inspections of plague in Chinese houses could be carried out by female physicians instead of sanitary inspectors to calm worried Chinese husbands and fathers.⁹² This represented a further understanding between Europeans and Chinese on how to combat epidemic disease in China with methods sensitive to cultural practices. Furthermore, as the Third Plague Pandemic spread across the globe, Europeans were never as inconsiderate to their own populations as they were to the Chinese. This suggests that the “Western medicine” that was forcibly imposed upon the Chinese in Hong Kong was not the “Western medicine” practiced in the Western world.

Studies of the Third Plague Pandemic show that it was most devastating in China and India; however, this was not due to medical reasons. Myron Echenberg offers a differential understanding as to why the disease was more devastating in these two countries. The Asian rat flea, *Xenopsylla cheopis*, is the most effective plague vector. When feeding on an infected animal, this flea’s

⁹¹ J. G. Kerr, “The Bubonic Plague,” *China Medical Missionary Journal* 8: 4(December 1894): 180.

⁹² Correspondent, “Plague Measures,” *North-Herald China* (November 25, 1910): 458.

esophagus becomes clogged with plague bacteria and it begins to starve. To prevent starvation, the flea hops from one host to another to find a blood meal, but every time it attempts to feed, it regurgitates plague bacteria into the new host. Other fleas such as the European rat flea, *Ceratophyllus fasciatus*, and the human flea, *Pulex irritans*, can transmit plague, but neither one starves while infected and has less need to bite multiple animals.⁹³ This proves that high infection rate was not due to a better understanding of medicine the West than in China, but rather a result of the Asian ecosystems and the organisms living in them.

Foreigners in China claimed that the “filth” of China was responsible for spread of disease. During the Third Plague Pandemic in China, miasmatic theorists could justify this claim by looking at statistical figures proving more deaths occurred in China than in other regions around the globe. Foreigners who wanted to claim scientific medicine as “Western medicine” also justified the high case rate and mortality rate in the Pearl River Delta as evidence that “Western medicine” was superior to “Chinese medicine.” Realistically, no form of medicine could prevent the rapid spread of the plague due to the Asia rat flea, *X. cheopis*. Only preventative measures that were agreed upon by all parties present could prevent the spread of the bubonic plague in southern China.

This fact was not discovered until 1914, but after the Hong Kong epidemic, the world community thought that it understood plague. If plague were always spread by rats, both East and West learned from one another to advance the study of modern medicine. Nevertheless, scientific racism would still be present in China as many foreign doctors still claimed the superiority of “Western medicine.” Furthermore, the Chinese government still seemed unsuited to the task of combating epidemic disease, but this would change in the winter of 1910. Plague would strike again, this time in the north, and blatantly disregarding all knowledge that the world thought it knew about the plague’s epidemiology. The “Manchurian Plague” would paradoxically occur in the winter, would be entirely pneumonic relying on human- to-human transmission without the necessity of a rat or flea vector, and its mortality rate would shock and disturb even the most pessimistic doctors.

⁹³ Echenberg, *Plague Ports*, 7. See also: Rachel C. Abbott and Tonie E. Rocke, *Plague* (Reston, VA: United States Geological Survey, 2012), 5.

Eventually foreign nations would begin to see the Chinese as equal practitioners of scientific medicine truly showing that the imaginary term “Western medicine” was simply for political gains. A reporter for the North-China Herald claimed that many foreigners were only now “waking up” to the role the Chinese were playing in combatting plague:

Old residents [foreigners in China for a long time] are rubbing their eyes and wondering whether, after all, if it is not they who have been sleeping and are ignorant of what is going on around them. Many of us have been so accustomed to think lightly of our Chinese neighbors, that we are astounded when we realize how China, and especially this city, has advanced, during the last few years. We are visited by a very serious trial, in the form of the Mongolian Plague. The authorities could not realize, at first, that the matter was serious, and they were not alone, as other countries and other people, who claim to be more advanced, have made the same mistake, over and over again. Once they did take in the situation they acted with most praiseworthy swiftness. Chinese, Japanese, and Europeans are pulling together splendidly, and it looks quite as if the outbreak is now well under hand.⁹⁴

Further arguments supporting the Chinese method of combating of the plague include their less intrusive public health methods. Chinese authorities stationed knowledgeable police officers in front of infected buildings to quietly ask people to avoid the area. This precaution prevented the spread of plague without causing panic as people would not be informed that there was plague in their neighborhood. Chinese doctors and officials were making a phenomenal effort at combating the plague on their home soil where they faced the risk of upsetting a populace that was already unhappy with its government. Foreign nations on the other hand had no need to worry about upsetting the populace and could be as brutal as they wanted in the name of their false notion of “Western medicine.”

Comparing Two Epidemics

⁹⁴ Correspondent, “The Plague: An Awakening,” in *North-China Herald* (Jan. 27, 1911), 192.

As Europeans became more intimately familiar with the Chinese they also become increasingly intolerant of Chinese medicinal views. In initial contacts, Sinophiles viewed traditional Chinese practices as like European practices if not better, but as time went on, an increasing number of sinophobes countered these claims. To convert Chinese commoners to Christianity, Europeans used surgical practices, their only medical advantage. But in times of epidemic, especially when Europeans interests were at stake, they implemented strict sanitary measures to combat infectious disease that they did not entirely understand.

The implementation of these measures was in part, a device to reaffirm to themselves and the Chinese their false belief that “Western medicine,” was superior. But the concept they tried to sell did not actually exist. “Western medicine” was a fabrication of foreign powers attempting to subjugate the Chinese. In reality, scientific medicine was accepted by the intellectuals of the Western world and the East and was nothing other than global in its scope. This, however, would not be accepted right away, and the Chinese still need to find a way to make global scientific medicine fit into their cultural norms. Two epidemics would allow for this to happen and begin the age of global medicine.

In the first year of the plague in Hong Kong, that the British considered their understanding of medicine to be far beyond that of the Chinese. Reports of British doctors and politicians alike such as Dr. James Lowson and Gov. William Robinson revealed that the British felt their understanding of the plague was superior to that of any Chinese doctor, and that they should not be questioned in their sanitary measures. Yet as historian Myron Echenberg makes clear, prior to the advent of antibiotics, no method of treatment could possibly treat the plague. Expanding on this claim, it also seems that the arrogance of some British doctors, and their pride in Hong Kong as a model for the world caused them to make gross miscalculations in their handling of public health and sanitary measures for plague prevention. Rather than develop an understanding for Chinese culture, they instead created harsh and ignorant sanitary measures that propagated nothing but panic and resistance among the Chinese instead of a safe and plague-free environment. British measures to prevent the spread of the disease may have instead assisted the plague in its proliferation. Fearing Gov. Robinson and the Sanitary Board’s measure to prevent the disease, many Chinese fled Hong Kong.

When the plague was spread by those attempting to escape British

methods, the duration and virulence of the outbreak was generally like the places where it originated. This shows that no measures were effective in treating the disease. Scientific medicine based on the germ theory of disease was not yet capable of overcoming the plague just as traditional methods of medicine had failed. Only culturally sensitive prevention measures could stop the spread of the disease. But the government of Hong Kong in 1894 was not yet there. Those who fled Hong Kong due to the British sanitary methods feared sanitary methods more than the bubonic plague itself; thus, it cannot be argued that British sanitary methods were instrumental in shortening the duration of the epidemic. It was not until Governor Blake's culturally sensitive practices to prevent plague that the epidemic died down in its intensity. Although a correlation between these two events cannot implicitly justify a causation, a sense of community between the Chinese and Europeans was slowly being rebuilt from this event. With a greater respect for one another, many Chinese were willing to accept modified sanitary standards differentiated to align with traditional Chinese customs. At the same time, the Chinese helped establish the scientific understanding of disease as we treat it today. As the world unified to decipher the mysteries of disease and combat it during the late-Qing dynasty, it must continue to act out this role in the modern era.

Appendix: Maps

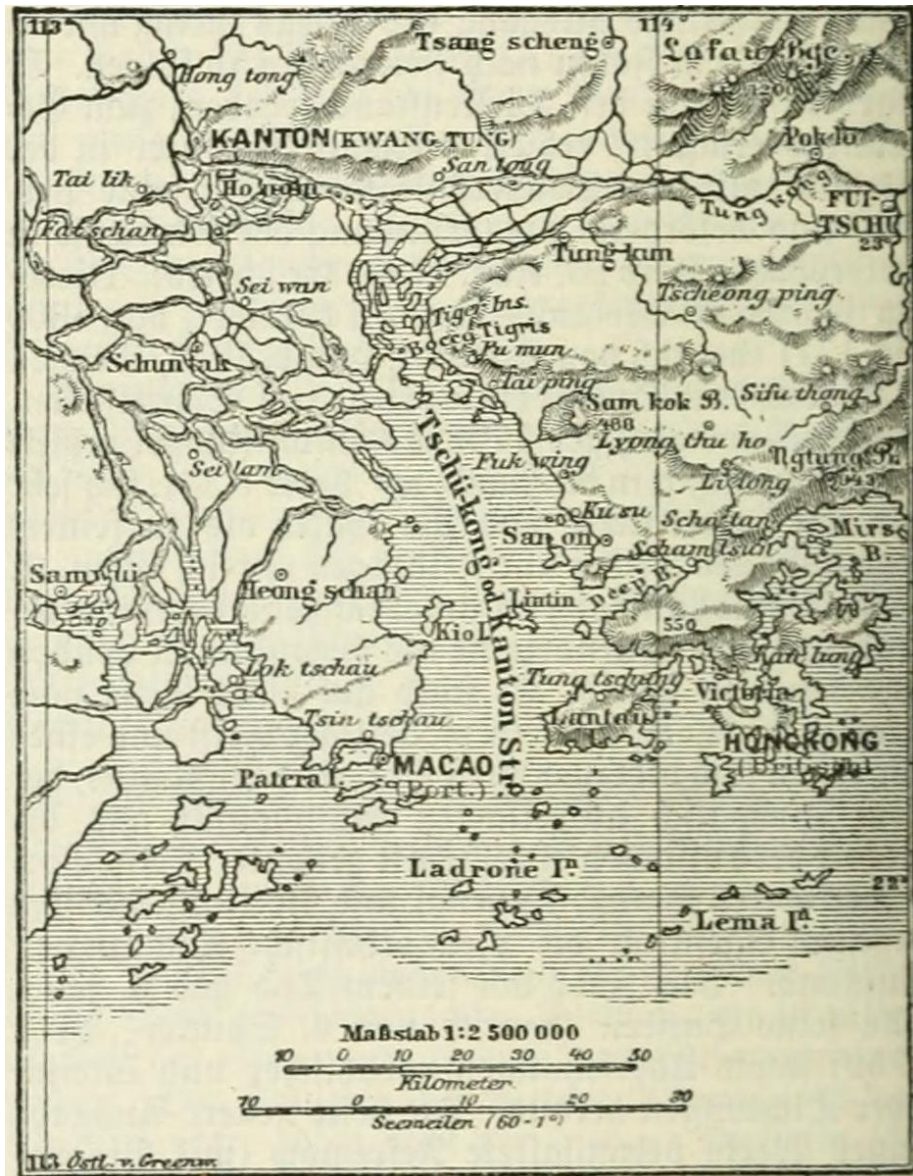


Figure 1: Map of the Pearl River Delta published in 1888. Map shows the location of Hong Kong (Hungkong), Macao, and Guangzhou (Kanton). Map originally published in the Meyers Konversations-Lexikon in 1890.



Figure 2: Map of Manchuria published in 1914. Map shows the location of Harbin on the Chinese Eastern Railway (listed as Russian Railway as it was owned by the Russians) and Shenyang (Moukden) along the Japanese owned railway (traveling south from Kwanchengtze to Dalny). Map was originally published in Dugald Christie's Thirty Years in Mukden in 1914.



Figure 3: Plague infested *Xenopsylla cheopis* flea. Image provided by CDC Public Health Image Library (PHIL).