

# ALLEGHENY COLLEGE

History 610  
Senior Project

The Toll of the Old World: Smallpox and Healthcare in  
the Viceroyalty of Peru

Davis Piazza

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Program

# ALLEGHENY COLLEGE

## History/GHS 610 Senior Project

The Toll of the Old World: Smallpox and Healthcare in the Viceroyalty of Peru

Davis Piazza

Honor Code Signature \_\_\_\_\_

Approved:

\_\_\_\_\_  
History Advisor's Signature

Professor. Haywood

\_\_\_\_\_  
GHS Advisor's Signature

Professor. Pinnow

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## **Abstract**

This project examines the role that smallpox played in the creation of new medical culture in the Viceroyalty of Peru. Due to the increased number of infections of smallpox and the increased morbidity, the Spanish were forced to create new methods of healthcare and policies aimed at assisting with the problem of smallpox. However the distribution of these new methods wasn't equivalent. Different cities with different demographics received care on a basis that often only helped further Spanish goals and economic policy. All of this medical change eventually culminated in the 1803 Royal Philanthropic Vaccination Mission which represents the totality of what Spain produced in their time controlling the Andes. Incorporating evidence from chroniclers, scholars, and letters, this project shows that Spanish medical culture was transformed by smallpox into a tool of governance.

## Introduction

On April 2<sup>nd</sup>, 1535, almost 488 years ago to the day, a young 15 year old boy managed to get his name on the *Asientos de Pasajeros* for transportation from Sevilla, Spain, to Cartagena in South America (modern day Colombia). This 15-year-old boy was a young Pedro Cieza de Leon, son of Lope de Leon and of Leonor de Cazalla. Just a couple months prior he would have read the newly printed *La Conquista de Peru* which detailed the capture and execution of a powerful king by Spanish soldiers in the newly contacted land of the Inkas. Pedro Cieza de Leon would eventually travel up north of the land of the Inkas and begin writing his *Cronica del Peru* which is considered to be one of the most ethnographic depiction of the Inkas. Cieza de Leon was enamored by the Andes and all of the aspects of its culture. As just a 15-year-old he created what might be the most important documentation of the Inkas that's ever been made. Without him, the written history of the Inkas would almost fully be obfuscated with Spanish dogma and religiosity and not allowed to stand on its own. The story that originally inspired Cieza de Leon to travel to Peru and begin his chronicle is the story of Atawalpa, the Inkan civil war, and the arrival of the Spanish. But even more than the important people in the Andes, this is a story of disease.

The Andes have been a seat of great civilization for millennia. The Norte Chico civilization, the first signs of material culture found by archaeologists in South America, is commonly dated to be around 3200 BCE. Sometime around the 1170s a culture rose as the descendants of the Wari, Chavin and Nazca cultures, led by Manco Capac. This culture is what would come to be known today as the Inkas (the word "Inka" in Quechua is the word for "king" or "emperor" and sometimes "Son of the Sun"). According to myth, Manco Capac was the direct descendant of the Sun itself, Inti. Manco Capac, was said to have started the laws that would go on to govern Tawantinsuyu (the land of four quarters, and what the Inkas called themselves) for

centuries. At this time, the Inkas could hardly be considered an empire. They were organized much more as a loose confederation of smaller city-state powers with the main capital being Cusco. It wasn't until the Inkan emperor Pachacuti conquered the Chanca people that the Inkan empire began spreading and became a true empire. Pachacuti's rule is estimated to be either in the late 1300s or the early 1400s however it is difficult to know the exact year that he ruled from due to how the noble court in Cusco remembered the line of emperors. Pachacuti, whose name means the World Recreator (his real name was Cusi Yupanqui, he received the name Pachacuti



Figure 1 Depiction of Pachacuti illustrated by Guaman Poma de Ayala

after his exploits conquering many of the surrounding areas), was the first real Inka. He first started calling the land that he conquered Tawantinsuyu and divided up control into four areas (as described by the “land of four quarters”). These areas of control are Chinchay Suyu (the northwest), Antisuyu (the northeast, as a small fact, this is where we get the name “Andes”), Kuntisuyu (the southwest), and Qullasuyu (the southeast). Each quarter was governed from Cusco on a very different basis of changing agreements on taxes and what levels

of food would be distributed to each town. The last Inka before contact was Wayna Capac (Huayna Capac in Spanish spellings). Wayna Capac was born around 1464 and died in 1524. The death of Wayna Capac was what sparked the beginning of the Inkan civil war between two powerful claimants, Atawalpa and Waskar. Waskar had the support of Cusco while Atawalpa had support in the north around Quito where he ruled from. After a bloody conflict, Atawalpa eventually won and imprisoned his brother just months before the Spanish arrived. This is the

Inkan empire that Spain encountered, one recently wounded by civil war and severely weakened by the turmoil.

In terms of diction and naming I want to be clear with who I am referring to and when. Different groups can be described under many different elements and umbrellas. The Andes within the confines of this paper is used to define the nebulous geographic location surrounding the Andes as a mountain range on the western half of the South American continent. I have separated the Inkas from the Andes in order to catch any peoples that were affected by the introduction of smallpox and other European endemic diseases that weren't citizens of Tawantinsuyu. This distinction is important because in later sections, I will need to refer to the entirety of the Andes when there are two governments present within it as well as separating government, ethnicity, and geography from each other when they are too often conflated, especially in discussions of Native American history. Andean refers to many different ethnic groups that all live in the vicinity of the Andes, the largest being the Quechua and the Aymara. Inkan refers to the empire that was the most dominant force within the Andes at the time of the arrival of the Spanish.

Of all the aspects that define the creation of healthcare systems throughout the history of medicine, one of the most important ones is disease. Among those diseases smallpox is one of the most defining in all of history. Smallpox was an agent of cultural and medical change for the entire world however this is none more clear than in Latin America. Whole empires were toppled by smallpox and other epidemic diseases. Because of the morbidity of smallpox upon Latin America, smallpox was the defining agent of change and creation in healthcare systems. All aspects of healthcare were defined in response to smallpox and endemic disease. As such I seek to observe how smallpox was the agent of change in healthcare and healthcare systems in the

Viceroyalty of Peru, specifically through looking at Cusco, Lima, and Potosi, leading up to the 1803 Royal Vaccination campaigns. To understand the medical and healthcare practices within the Viceroyalty of Peru and to grasp how and why public health measures were implemented due to epidemics one must understand both the cultural history of Peru, beginning with the Inkas, as well as the epidemiological impacts of smallpox. As so, my research question is: How did smallpox affect healthcare and healthcare systems within Cusco and Lima, from 1531 leading up to the 1806 smallpox vaccination campaign? This question has led to my thesis: Smallpox was the catalyst for creating hospitals and healthcare systems that wouldn't have existed otherwise. The Spanish were forced to produce new and adaptive public health and healthcare measures to properly respond to smallpox. There are also many reasons why smallpox was uniquely important to create solutions for in colonial Spanish territories, including genetic predisposition to smallpox specifically. The main goal or understanding is how Spanish healthcare systems had to adapt to smallpox and how the Spanish came to the public health decisions that they did. Understanding these decisions would help gain a much more holistic understanding of the culture that arose from Spanish colonization and disease in Latin America. The historical context surrounding public health infrastructure in the Viceroyalty of Peru is the general history and culture of the Inkas and how Spanish colonialism affected the Andes. This includes just before the conquest of the Inkas and the world that Spain was entering into in addition to the world that was being created by the Spanish overtop of the Inkas instead of just replacing it. Another important context is smallpox as an agent of conquest. Smallpox permanently altered the stage that the Spanish were conquering, leaving permanent effects on the people of the Americas in general. The Global Health Studies portion of my project is about vaccination, healthcare systems and endemic disease as well as smallpox as a cultural element of the Andes post-

conquest and how smallpox affected all aspects of culture within the Viceroyalty of Peru. Smallpox has been a defining point in describing the demographics of Latin America; Understanding how distinct medical systems change in response to novel disease can provide contemporary Global Health scholars with a more robust way of analyzing our own medical systems. There's also a biological element to smallpox, making its impact on the Americas considerably bigger than on Eurasia. Recent studies have shown that even beyond being a novel infection in a naive population, there's also the factor of genetic predisposition to smallpox among all indigenous people in the Americas. This only exacerbated the already deadly disease.

My Chapters are as follows: 1) Smallpox and Andean Epidemic History. 2) Iberian and Colonial Medicine and Public Health. 3) Cusco, Lima, and Potosi as a case study on hospitalization and healthcare in response to Smallpox in Peru. 4) Eradication efforts and the vaccination missions of 1806. The first chapter is a first dive into smallpox as a disease and the geographic location and years that affected the Andes. Within this chapter I describe the symptoms, impacts, and origins of smallpox, the creation of the smallpox vaccine and when it arrived in the Andes. I then go on to describe what years that the Andes were affected by smallpox, and the ways that demographic shifted due to this. The focus of the second chapter is on Iberian medical practices, including public health prior to colonization, and then how medical practices changed in response to colonization. The third chapter, examining Cusco, Lima, and Potosi as specific examples of what the Spanish medical logos is and how medicine was implemented differently across different populations. The goal of this chapter is to compare and contrast how healthcare was approached by the Spanish government in three very different circumstances. Cusco is a good example of a more indigenous perspective because it was the capital of the Inkan empire and the heart of Andean culture. Lima, a Spanish city, had a different

experience of healthcare and hospitalization. Because Lima had a very small Indigenous population, the ways that it was treated were very different from Cusco. The third city I am including is Potosi because of its economic benefits to Spain and how that afforded it more protections. By looking at and analyzing power structures in relation to healthcare I seek to understand the ways that governance, and power played a role in creating a system of healthcare. The fourth chapter is focused on the Royal Philanthropic Vaccination Mission. The expedition was the first global public health initiative in history and as so I seek to analyze it from the perspective of how it interacted with the world it was entering, as well as its successes and failures, and what that implies about our modern public health initiatives.

## **Chapter 1: Smallpox and Andean Epidemic History**

### **Smallpox**

On May 8th, 1980, at the 33rd World Health Assembly in Geneva, the World Health Organization (WHO) announced its victory over smallpox to the world. The complete eradication of smallpox was an unprecedented triumph over a disease. A triumph of that scale hasn't been replicated since. Through a rigorous and oftentimes intrusive vaccination campaign, the WHO managed to eradicate Variola Vera or smallpox completely. The WHO declared its victory over smallpox with great triumph during that assembly: "...the world and all its peoples have won freedom from smallpox...a most devastating disease...since earliest time, leaving death, blindness and disfigurement in its wake and which only a decade ago was rampant in Africa, Asia and South America."<sup>1</sup> This victory over disease comes after millennia of smallpox being a blight on humanity. By almost every metric (such as infectivity, morbidity, and

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<sup>1</sup> 33rd World Health Assembly, Geneva, May 8, 1980.

mortality), smallpox was one of the most persistent and deadly diseases in human history. To begin this first chapter I would like to give a brief description of smallpox, its symptoms, and the creation of the smallpox vaccine by Dr. Edward Jenner before delving into how smallpox devastated naive societies because of the American transfer of diseases in 1492.

Smallpox is almost always (and rightfully) characterized by the complete covering of the body with the pustules or pox alongside fever. The CDC, on its website, describes the symptoms and onset of smallpox. The first three major symptoms are: 1-4 days before the onset of the rash the patient presents a fever with headache, chills, vomiting or severe abdominal pain. The second symptom is the smallpox lesions: “Deep-seated, firm/hard, round well circumscribed vesicles or pustules; may umbilicate or become confluent.” The third major symptom is lesions in some the same stage of development across the entire body.<sup>2</sup> The CDC contains and lists many different diagrams and posters for doctors to evaluate their patients for smallpox. These posters are all written with a certain fear that’s not present in most of their disease identification posters because of the seriousness of a potential reintroduction of smallpox into human populations. Each poster contains warnings about reporting possible infections without waiting for lab results if a patient meets each symptom as well as warnings about all of the dangers of smallpox that aren’t always present in these types of posters. A return of smallpox is something that is almost unthinkable in the modern day as there are very few vectors for smallpox to return from. A possible (however extremely unlikely) breach could be from the remaining samples of smallpox that are held in the CDC. These samples are for researching purposes only and are kept at a very high level of containment, as so, the chances of reintroduced smallpox are very low. Another possibility that has become a threat for the modern era is through climate change. As icecaps are

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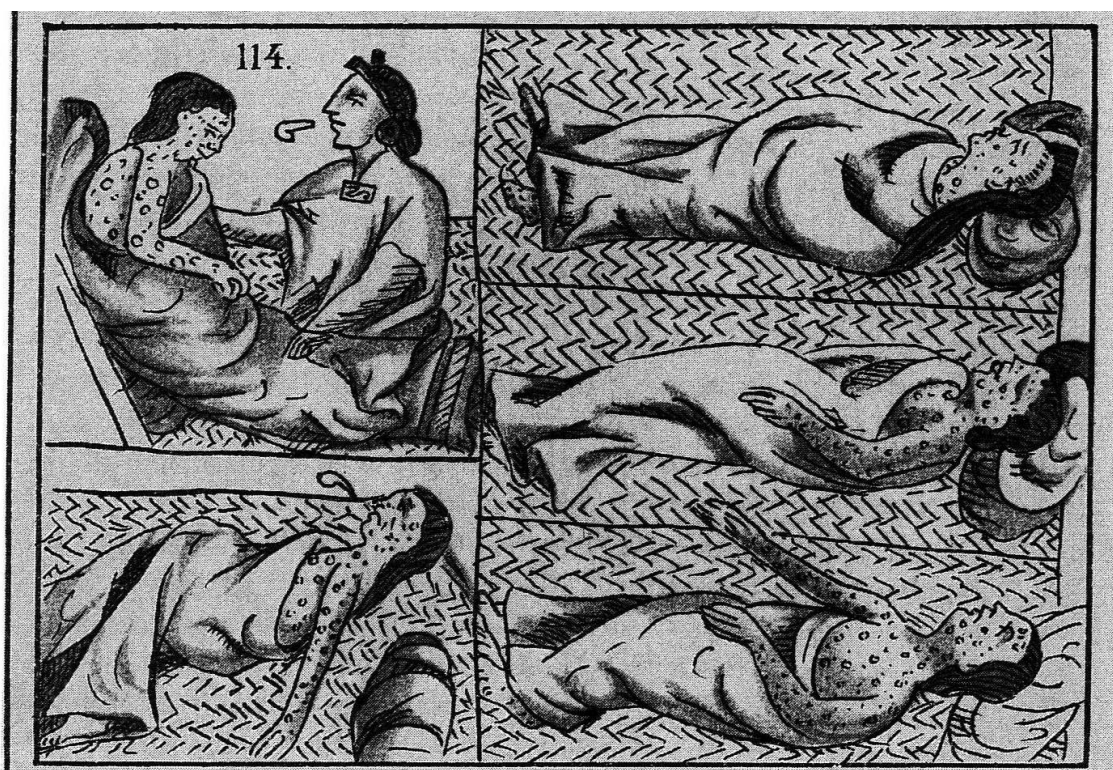
<sup>2</sup> “Prevention and Treatment,” Centers for Disease Control and Prevention (Centers for Disease Control and Prevention, August 8, 2022), <https://www.cdc.gov/smallpox/prevention-treatment/index.html>.

melting, there is the threat of older diseases being released that had previously been kept dormant. The reintroduction of smallpox into our modern world would be devastating initially, however due to modern vaccination, it would hopefully not be the worst possible scenario.

Smallpox is often listed as having a 30% mortality rate among unvaccinated patients.<sup>3</sup> 3 out of every 10 people that got smallpox would die under ordinary circumstances with smallpox. Post eradication there has been research into newer drugs that would be implemented in the event of an outbreak of smallpox. As recently as 2021, antiviral drugs have been invented for the purpose of lessening the damage that smallpox does to people. The other modern advantage that we have is vaccination. Smallpox vaccines have been shown to be effective even if they are administered post infection.<sup>3</sup> When discussing the dangers of smallpox, another factor is the lingering effects of smallpox in the form of scarring, from the pox left on the skin. There are also lingering effects such as blindness and other disfiguring outcomes.

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<sup>3</sup> *ibid.*



An Aztec citizen afflicted with smallpox as depicted in the Florentine codex from the 16th century

The physical pox were described as painful, giving victims of smallpox no respite because smallpox covered their entire bodies. In terms of transmission vectors, smallpox was able to be spread through water droplets from the body. Patients with smallpox also remained contagious until the last scabs of smallpox had fallen off their body. One of the other more dangerous characteristics for smallpox was its ability to remain on surfaces. This meant that clothing, bedding, and other contaminated materials were fomites. Even the scabs that would fall off of someone's body were infectious. Another unique aspect of smallpox was the smell it produced. A lot of doctors describe that smallpox produces a sweet smell that fills hospital wings that were dedicated to treating it.

It is generally accepted by scholars that the first infections of smallpox occurred around 3000 BCE somewhere around Egypt due to signs of rashes remaining on mummified bodies that have been examined in recent years. This is also corroborated by Hittite accounts of an epidemic

arriving to their territory from Egypt although those descriptions don't give any descriptors that would definitively place it as smallpox.<sup>4</sup> Physical evidence of smallpox within remains found in Egypt continues to be our best resource to discovering the origins of smallpox within human populations. There is, however, a debate on whether the rash present on these bodies actually is smallpox as it has some similar traits to pox type infections but cannot be confirmed.<sup>5</sup> Oftentimes we have difficulties in discovering what historical outbreaks actually were. This is both due to the vagueness in language describing disease but also in how remains of diseases are difficult to discern so many centuries removed. In most places across the world, smallpox has been a considerable element of morbidity. While smallpox has been a deadly force throughout Europe and Africa, with a mortality rate of around 30 percent, in Eurasia it was never as deadly as in Siberia.

The Yakut and Tungus people of Siberia are an important example of how naive populations interact with a new disease. The Yakut and Tungus were rather isolated in comparison to any other group in Eurasia. That isolation led to a less immune population that was more likely to die from smallpox and other diseases. In more recent studies there has been a focus on observing genetic predisposition to severe cases of smallpox and other novel diseases in Siberia (as well as all indigenous American populations) as a factor as to why smallpox could be so devastating in those populations. This genetic predisposition would mean that there are factors beyond a population's naivety to a disease that would affect the health outcomes of said disease. "As a result, confusion between diseases (Among Tungus populations affected) remained, especially in more remote areas, where these isolated Tungus populations were most susceptible

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<sup>4</sup> Frank Fenner, "The History of Smallpox and Its Spread Around the World," in *Smallpox and Its Eradication* (Geneva: World Health Organization, 1988), pp. 209-244.

<sup>5</sup> *ibid*

when outbreaks did occur.”<sup>6</sup> The Siberian example is a very close approximation to how deadly smallpox was to Indigenous Americans and it provides another example of how deadly smallpox could be when encountering a population that had no previous contact with the disease. This is important because smallpox wasn’t just deadly to the Indigenous Americans at a normal rate but instead presented a considerably higher mortality rate in Indigenous populations over Europeans. During individual outbreaks within indigenous populations, the mortality rate was at around 40 percent, however mortality was exacerbated by lacking conferred immunity. People would get smallpox and if they didn’t die, they could get it again. Overall, smallpox is anticipated to have killed anywhere between 85-90 percent of all indigenous populations in North and South America.<sup>7</sup> Another facet of understanding the morbidity of smallpox in indigenous populations is a modern study into genetics and genetic predisposition to disease. In *Racism, Not Race: Answers to Frequently Asked Questions* by Joseph L. Graves, and Alan H. Goodman, there is a section about disease occurrence and morbidity at higher rates among different races. This section highlights a genetic aspect that impacted Indigenous American populations and their incidence of smallpox: “The high susceptibility of Amerindians to smallpox resulted from the fact that the virus was new to their populations, their means of subsistence had been disrupted, and the lower human leukocyte antigen (HLA) diversity of Amerindians compared with Africans, Europeans, and East Asians.”<sup>8</sup> In Graves and Goodman attribute this high susceptibility to three outlined factors that were at play within the system that they were introduced to. However, one of the most understated ones is the genetic reason. Indigenous

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<sup>6</sup> Meserve, Ruth I. “Smallpox among the Tungus Peoples: The Language of a Disease.” *Central Asiatic Journal* 50, no. 1 (2006): 75–100. <http://www.jstor.org/stable/41928411>.

<sup>7</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

<sup>8</sup> Graves, Joseph L., and Alan H. Goodman. “Why Do Races Differ in Disease Incidence?” In *Racism, Not Race: Answers to Frequently Asked Questions*, 82–101. Columbia University Press, 2022. <http://www.jstor.org/stable/10.7312/grav20066.9>.

populations had not received millennia of genetically conferred protection from smallpox that people from Africa and Eurasia had.

Before a vaccine was invented, a common way of protecting oneself from smallpox was through variolation or inoculation. Inoculation was a method of contracting smallpox through means that would produce a safer version of the infection to receive the immunity conferred by having smallpox without the dangers associated with just getting smallpox. The first examples of inoculation are found in China as early as 1000 BCE. The common example of inoculation was the practice of collecting the scabs left behind by smallpox, grinding them into a powder, and then inhaling them through the nose, in order to get a mild case of smallpox over a severe one.<sup>9</sup> Towards the beginning of the 18th century, the method of removing some of the smallpox matter from a pustule and rubbing it into a cut made with a needle became common practice within the Ottoman Empire. This method was called variolation. Variolation gained much more popularity outside of Anatolia when the British ambassador to the Ottomans had her children inoculated with this method. The mild nature of Smallpox that presented in her children impressed British doctors, making them call for variolation as a common practice.<sup>10</sup> Inoculation and variolation weren't without risks, however. There were still risks of some of the negative effects of smallpox, such as permanent scarring and blindness.

A vaccine for smallpox was produced until 1798 when Dr. Edward Jenner reported that inoculation with cowpox would confer a form of immunity to smallpox in much the same way that actually getting smallpox and surviving would. This was a monumental achievement as cowpox wasn't nearly as deadly as smallpox. Cowpox produces only a mild infection in humans

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<sup>9</sup> Thein, MM, LG GOH, and KH Phua. "The Smallpox Story: From Variolation to Victory." *Asia Pacific Journal of Public Health* 2, no. 3 (1988): 203–10. <http://www.jstor.org/stable/26720502>.

<sup>10</sup> Ibid.

and only at the site of inoculation, meaning all of the long-term detrimental effects, like scars, blindness, and other deformations were a non-risk factor when using cowpox inoculation to confer immunity.<sup>11</sup> Jenner began his studies of smallpox around Berkeley in England around 1775 after he noticed a similar form of skin eruptions to smallpox present in many farmer populations that worked with cows. The farmers called this disease cowpox



“Engraving representing a child with a puppy and musical instruments that illustrates the applications sites” Archivo General de Indias because of how similar it was to smallpox. After Jenner studied the effects of cowpox on this sample population, he determined that inoculation would be an effective way to reduce the prevalence and morbidity of smallpox overall. On May 14th, 1796, Jenner performed his first official inoculation where he inoculated an eight year old boy, James Philips, with matter from a

<sup>11</sup>Bardell, David. “Edward Jenner and the First Vaccination.” *The American Biology Teacher* 39, no. 7 (1977): 440–41. <https://doi.org/10.2307/4445992>.

cowpox sore off of the hand of Sarah Nelmes, who was a dairymaid. James Philips' parents had requested the inoculation from Jenner prior because it was considered to be no more of a risk than standard smallpox inoculation. This method of inoculation received the name vaccination after the latin word for cow (vacca) and inoculation.<sup>12</sup> After the first vaccination, Jenner's method of using cowpox became a common practice all over the world because of how effective and safe it was compared to the original methods of inoculation.

With Jenner's vaccination becoming common among primarily rich populations in Europe, there was a worldwide push to spread the vaccine to the rest of the world to start reducing the impact of one of the deadliest diseases. This was no different with Spain who sought to spread its vaccine to all of its colonies without vaccination being a cost to its subjects. This endeavor was managed through the Spanish Royal Philanthropic Expedition. Spain sent out a fleet of smaller ships called corvettes to Spanish colonies in the Americas in 1803. This was the largest distribution of vaccines on a wide scale at the time. The voyage set out from Spain, first stopping at Puerto Rico, traveling down to Cartagena de Indias in Colombia and then proceeded up the Magdalena river to vaccinate any Natives that they found along the way. The expedition then split into several groups that spread the vaccine throughout Panama, Ecuador, and Peru, with some vaccines also being sent up the Amazon river to vaccinate people who lived up and down it. Around this time, a second expedition was sent out from Spain to vaccinate Venezuela, Mexico, and Cuba. This second expedition was then ordered by Charles IV to continue on to the Philippines to continue vaccination. This expedition was one of the largest public health ventures of the day, covering vast swathes of land that otherwise wouldn't have received the vaccination for a long time. I will continue discussions of the Royal Philanthropic Vaccination Expedition in

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<sup>12</sup> Henderson, Donald A. "Edward Jenner's Vaccine." *Public Health Reports* (1974-) 112, no. 2 (1997): 116–21. <http://www.jstor.org/stable/4598107>.

the fourth chapter which will discuss the wider public health implications of the expedition and its direct impacts on and the climate it was introduced in, in the Viceroyalty of Peru.

## **Epidemics**

Following the arrival of Europeans to the Americas, disease became one of the largest agents of change. The introduction of smallpox into the Americas brought about the largest cultural and societal changes that the Americas had ever seen. The social orders of colonialism that arrived in the wake of these large epidemics would only exacerbate the deaths caused by disease with social, and physical control. With multiple different diseases, such as typhus, measles, and smallpox, being transferred to Indigenous population centers, smallpox being perhaps the most important and mortal of them, the Spanish were met with perfect conditions to proceed with their conquests and implementation of colonization.

When Francisco Pizarro arrived in the Andes in 1531, he was arriving at a world that had already been devastated by disease. Scholars such as Suzanne Austin Alchon and Noble David Cook posit that the first instances of smallpox arrived in the Andes at an earlier date of sometime between 1524 and 1527. Alchon describes the levels of mortality of this outbreak of smallpox as being “One third to one half” of the population of the Andes succumbing to this outbreak alone<sup>13</sup>. This outbreak was prior to the arrival of the Spanish to the Andes and likely arrived from Panama overland or from infected seafaring travelers from prior expedition attempts. Alchon also makes mention of the possibility of other non-smallpox outbreaks within the Andes prior to the arrival of the Spanish. The mortality of disease as it appeared into the Andes wasn’t the only consequence of these diseases, however. It is thought by most scholars (Cook, Alchon) that the

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<sup>13</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

Inkan emperor, Wayna Capac, died of smallpox or other disease prior to the Spanish arrival to the Andes. The death of Wayna Capac and his chosen heir would plunge the Inkas into a brutal civil war between Atawalpa and Waskar, who were both claimants to the Inkan throne. Only a year after Atawalpa defeated his half-brother and claimed the throne, did the Spanish arrive. The Spanish arrived at a severely weakened Inkan empire, which was just recovering from civil war and recently devastated by a new disease.

The death of Wayna Capac (as well as anywhere between a third and half of the population of the Andes) and his eldest son, Ninan Cuyochi had much larger consequences than just being the death of another emperor and his heir. This event was the catalyst for a civil conflict between the two children of Wayna Capac that were most poised to assume the throne, Atawalpa and Waskar. Both Waskar and Atawalpa were the children of Wayna Capac; however only Waskar had the direct support of the nobility in Cusco. Atawalpa and Waskar were only two of dozens of children to Wayna Capac. According to Titu Cusi Yupanqui, Wayna Capac's grandson, and Atawalpa's nephew, neither Atawalpa or Waskar had strong claim to the throne because both were the children of commoners. Atawalpa, who was heavily supported by the northernmost regions of the Inkan empire (By modern day Quito), ended up being a better tactician and military leader as he defeated his half-brother in the Inka Civil War and moved to assume the throne. Atawalpa was the emperor of the Inkan empire when the Spanish arrived less than a year after the end of the Civil War. Smallpox wasn't just a mortal disease that killed so many people, it was more dangerous than even the worst European diseases. Smallpox became the catalyst for destabilization and change within the Inkan Empire. The Inkan Empire that the Spanish arrived at and eventually conquered was immediately in the wake of a massive outbreak of disease and fresh off the heels of a Civil War.

After the defeat of the Inkas at Cajamarca in 1532 that ended in the capture of Atawalpa, the Spanish marched on and conquered Cusco, the heart of the Inkan empire and founded their own colonial empire within the Andes called the Viceroyalty of Peru. Interestingly, Peru as a foundation existed adjacent to an Inkan state up until the 1570s. Unfortunately, the Neo-Inka state did not record accounts of disease in the same way that Spanish sources did. Undoubtedly there was an equal burden of disease within the Neo-Inka state and the Viceroyalty of Peru, but sources are sparse. The Neo-Inka state was an important institution to the political climate of the Andes in the 1500s because of the consistent war that was fought between the Spanish and the Inkas after the capture and eventual execution of Atawalpa.

With the Spanish having cemented themselves within the Andes as a prominent and powerful player within the Andes, they began creating similar (if not the same) governmental institutions and hierarchies as they did within Mexico a decade prior. The first epidemic that the Spanish had to deal with was an unknown disease that spread throughout all of Peru. This outbreak occurred in 1546 marking the beginning of what would be a centuries long struggle against disease in the Andes under the rule of the Spanish.

A general pestilence spread throughout all of Peru, beginning south of Cuzco and covering all of the land; countless people died. The illness began with a headache and high fever, and later the headache passed to the left ear, and the disease was so severe that most of the sick died within two to three days.<sup>14</sup>

Alchon makes mention that some scholars think that this outbreak was an extension of the matlazahuatl typhus outbreak in Mexico just one year earlier due to similarities in symptoms. This outbreak, even beyond being a deadly epidemic that is a direct result of contact between

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<sup>14</sup> Cieza de Leon, *Obras Completas*, 1:36

Andean natives and Europeans, is an important lesson on difficulties presented by premodern descriptions of diseases. The symptoms that are described aren't exclusive or point to any conclusive singular disease. As so, identifying what each individual epidemic was from accounts was a very difficult process. Within the confines of this paper, which is solely focused on the impacts of smallpox, the existence of these difficult to identify diseases poses a challenge to providing examples of impacts that were due to other diseases. To avoid misattribution, I will be using examples that were most likely, if not confirmed, smallpox instead of using outbreaks that I am unsure of.

The next large smallpox outbreak was in 1558 in the general Quito area. Apart from being another outbreak that again killed another massive amount of indigenous people, this outbreak shows a greater trend among outbreaks within the area. This trend is that many of the outbreaks that occurred were of a combination of diseases. This smallpox outbreak was accompanied by an outbreak of Influenza. This meant that this specific outbreak was potentially fatal to both Spanish and Indigenous people alike.<sup>15</sup> Regardless of the increased mortality as an outcome, this combination of outbreaks as a repeated occurrence provided interesting insight into not only the diseases within this system, but also of medical knowledge of the time as well. Most of the outbreaks in this earlier time period have at a minimum of two identifiable diseases. Smallpox was easily identifiable because of the pox and pustules that it produces on the body, as well as the scarring it left behind. One of the symptoms that wasn't attributed to smallpox is a severe cough. Alchon comments on the effects of combined smallpox and influenza outbreaks and on the synergies that exist between the two diseases: "Recent studies of influenza epidemics indicate that children, the elderly, pregnant women, and individuals suffering from other

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<sup>15</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

infections such as smallpox are especially likely to develop severe cases of the disease...”<sup>16</sup> This is an important factor to consider when looking at these outbreaks that have multiple diseases; oftentimes mortality is increased when there are multiple diseases present within a given system. As so the increased chances of more severe cases of not only smallpox but also the other diseases within populations should be no surprise.

Around this time is when it’s generally considered that smallpox became endemic in the Andes (and wider Spanish colonies). In spring of 1589 the viceroy of Peru, Fernando Torres de Portugal y Mesía, described an epidemic of smallpox and measles breaking out in Quito and spreading southward into the rest of Peru<sup>17</sup>. This outbreak was also followed by typhus nearly immediately after. Disease had become a commonality throughout Peru; beyond just smallpox, there was a constant onslaught of deadly disease. While disease had been prevalent in the Andes prior to Spanish colonization, the scale of disease had never been this bad. As noted in the audiencia of Quito this mixture of disease is noted to have devastated the eastern lowland provinces of Yaguarsongo and Jaen, leaving only a population of one thousand remaining from what was once thirty thousand.

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<sup>16</sup> Ibid.

<sup>17</sup> Ibid.



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Alchon, and Cook both agree that beginning in the late 1500s is when smallpox, along with the other concoction of diseases, was endemic. Smallpox returned at regular intervals every five or so years, until populations reached their lowest levels between 1600 and 1650. By 1650 around 75 to 80 percent of native populations in the Andes were gone. The mortality rate in the coastal areas was even worse, as noted by Alchon: “Colonial documents indicate that mortality rates were even higher here because of the frequent arrival of ships bearing newcomers. The infectious organisms that accompanied the new arrivals exposed the native populations to a greater variety of ills. The coastal population around the port of Guayaquil, for example,

<sup>18</sup> Lionel Pincus and Princess Firyal Map Division, The New York Public Library. "Peru" New York Public Library Digital Collections. Accessed April 2, 2023. <https://digitalcollections.nypl.org/items/510d47e1-f5ce-a3d9-e040-e00a18064a99>

virtually disappeared by the end of the sixteenth century”<sup>19</sup> In the eastern lowlands, where the Spanish encountered heavy resistance from the Indigenous peoples, it is more ambiguous as to when European disease arrived. Alchon states that first references to the large scale population, similar to morbidity and mortality in other places in the Andes, happened in the 1580s. From then, smallpox and measles was an endemic occurrence, having large scale outbreaks around the 1620s, 1640s, 1650s, 1660s, and 1680s. The widespread impact of smallpox and the mixture of other diseases had diminished the native populations by around 75-80% overall by the year 1700. This wouldn’t be the end of disease in the Andes but it would be the lowest that the population of the Andean natives would ever reach. Prior to the arrival of the Spanish and smallpox, around six to nine million indigenous people were estimated to have lived in the Andes with some scholars putting numbers even higher. After these waves of smallpox, indigenous populations sank to just six hundred thousand in 1640.<sup>20</sup>

### **Nonmedical impacts of smallpox on Andean societies**

As discussed in the previous section of this chapter, smallpox played no small role in the downfall of the Inkas. Without smallpox as an operating factor on the Andes, there’s a serious question of if the Spanish could have conquered the Inkas (or even the Aztecs). Smallpox in itself was a tool for the conquest that the Spanish didn’t know was their ally. However, it was also one of the biggest hurdles that they would face when governing their new colonies. This extended even beyond the public health sector as smallpox left its own marks on indigenous ideology and identity that defined the ways in which culture was created. This brief section is

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<sup>19</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

<sup>20</sup> Noble David Cook, *Demographic Collapse Indian Peru, 1520-1620* (Cambridge: Cambridge University Press, 2004).

included in this chapter to make mention that there are other social factors that are an important facet of the creation of new culture. The Andes were no different. New ideology, and religious beliefs were forged in the advent of new disease and an oppressive government that enforced itself in unfair ways.

Because of the introduction of smallpox (and other endemic disease), Native American societies were faced with an ideological conundrum. Europeans, especially the Spanish were very concerned with converting the Natives they encountered to Christianity. One of the theological perspectives that was used by Europeans that oftentimes worked in producing converts was framing the introduction of disease as a divine retribution against non-Christians. The Spanish use of these theological perspectives on disease wasn't just a tactic to produce converts, as in many ways, the Spanish perspective required them to believe it. This perspective came in the wake of disease in Europe being perceived in a religious sense. In the wake of medical disasters such as the black death, religiosity was one of the only ways to conceptualize disease on such a scale. This was no different in the Andes as the Spanish often framed disease as a punishment for a reliance on false gods. In an interesting twist the Andeans sometimes would frame disease and divine retribution as a war between their own gods (Wakas) and the Christian god, with disease being a punishment for abandoning their traditional ways<sup>21</sup>. This was led by a movement called Taki Onqoy that spread the belief that a war between the Andean and the Christian gods was inevitable and that anyone that sought refuge from smallpox should pray to the Wakas to save themselves from disease. According to Alchon, Taki Onqoy was a serious threat to Spanish control in the southern highlands of Peru. This philosophy was soon replaced with a general belief that an Andean savior would return and restore the Andes to a proper state

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<sup>21</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

as it became more and more clear that Spanish influence was in the Andes to stay. A century and a half later, the Tupac Amaru rebellion stoked the flames of Taki Onqoy by introducing an Andean hero for people to rally behind.

Even beyond the framing of disease as a divine conflict, many chroniclers note the persistence of a strong feeling of despair in the wake of epidemics and colonialism. Spanish chronicler noted that Cuban natives were often driven to suicide. Spanish chronicler, Bartolome de Las Casas, documented the detrimental mental effects that Spanish colonialism had on natives during the conquest of Cuba: “Some began to flee into the hills while others were in such despair that they took their own lives. Men and women hanged themselves and even strung up their own children. As a direct result of the barbarity of one Spaniard (a man I knew personally) more than two hundred locals committed suicide, countless thousands in all dying this way.”<sup>22</sup> Disease and colonialism clearly took a toll on the mental health of indigenous people that added to the already deadly weight of disease.

This isn't all to say that the Spanish weren't producing measures to help. Spain had interests in keeping indigenous people alive as a workforce. Spain introduced many different public health measures that weren't just novel to the Andes but also were novel to Spanish policy in general. The absolute weight of death that was brought by smallpox was unprecedented to the Spanish and their public health system would have to be adapted to an entirely new system to the one that they were used to in Europe. The medical disaster that helped the Spanish to conquer their American territories would be a challenge to their control. Even though disease was unexpected, its influence would be one of the defining facets of culture in Latin America. The

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<sup>22</sup> Bartolome De Las Casa, *A Short Account of the Destruction of the Indies*

following chapter will show how colonial medicine was ineffective until new public health measures were needed to be put in place.

## **Chapter 2: Medicine, Public Health, and Religion in Colonial Iberia.**

The Spanish, when faced with this onslaught of disease across their colonies, produced new pathways and new medical practices that allowed for their medical knowledge to be imparted to people that they colonized as well as their own countrymen. The medicine that they introduced in their colonies, for the most part, had a very different sense of urgency in comparison to how medicine presented itself in Europe. Unique to their colonies was the sense of governmentality associated with health and healthcare. Governmentality, originally used by Michel Foucault, is usually used to define a system of government that is primarily focused on how people conduct themselves under a government. Those who were placed within the medical system in the Viceroyalty of Peru were subject to the social controls and self-governing often associated with Foucault and a Panopticon. Medicine was equated with religion, and religion with social control. In Spain proper, the main focus of medicine was humoralism and the balancing of the humors as the main form of healthcare and medicine. There was a form of social control based on class in Spain, however the focus was on the individual rather than the populations. Medicine was focused on humoralism, which is an individualistic system rather than the populationwide methods used in Latin America.<sup>1</sup> While there were remedies for known diseases, such as the use of balsam and other herbal remedies and to alleviate symptoms, the focus of medicine was on balancing the humors to solve medical issues, with miasmas as the primary cause.<sup>2</sup>

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<sup>1</sup> Ida Altman, David Wheat, and Pablo Gómez, “Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean,” in *The Spanish Caribbean Et the Atlantic World in the Long Sixteenth Century* (Lincoln: University of Nebraska Press, 2019), pp. 211-232.

<sup>2</sup> J. N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (New Brunswick, NJ: Rutgers University Press, 2009).

## European Medicine and Public Health

European medicine during the time of Spanish colonization was different from both modern and colonial medicine. What medicine, healthcare, and public health were was drastically different from what it would become. One such example of how the focus of Spanish medicine was different is the ways that diseases were categorized. Oftentimes, with our modern view, we separate diseases out as far as they possibly can be. To the Spanish, those distinctions aren't often noted. Large groups of disease can be placed under the category of *Pestilencias* such as Typhus, Bubonic Plague, and Influenza which are all different to us but carried the same labels to the Spanish.<sup>3</sup> These diseases being grouped together as *Pestilencia* can be understood as the Spanish interest in miasmas and other respiratory and gastrointestinal diseases being caused by bad air instead of our modern understanding of germs and germ theory. Another important understanding of disease at the time is the different ways that disease took shape. Rather than understanding disease as being caused by microbes and small organisms, a large portion of the burden of disease in Europe, and Spain (and later Spanish colonies), was nutritional deficiencies and other effects of malnutrition.<sup>4</sup> “Vitamin-deficiency diseases remained rampant: scurvy, rickets, beriberi, stunted growth, and eye trouble from lack of vitamin A. Maldistribution of wealth put too much food –especially meat– in the hands (and constipated digestions) of a few, and left the great majority heavily dependent on grain.”<sup>5</sup> Proper nutrition was the basis for the idea of hospitals and hospitalization due to lacking nutritional standards and food shortages. Hospitals' primary purpose under colonial Spain was to treat the effects of poverty. They were

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<sup>3</sup> Ida Altman, David Wheat, and Pablo Gómez, “Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean,” in *The Spanish Caribbean Et the Atlantic World in the Long Sixteenth Century* (Lincoln: University of Nebraska Press, 2019), pp. 211-232.

<sup>4</sup> J. N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (New Brunswick, NJ: Rutgers University Press, 2009).

<sup>5</sup> Ibid.

not the medical facilities and institutions that we understand today. They were a place that would provide free housing and food to assist with malnutrition but also were almost exclusively staffed with religious figures, like monks, clerics and priests, who would enforce the social hierarchy of Spain upon whoever was within their walls. In other words, in order to receive care for malnutrition and poverty one had to be Catholic and within Spain's allowed versions of Catholicism.<sup>6</sup> This same logic was applied throughout all Spanish colonies as well, where hospitals and hospice care centers for controlling disease were also hubs of social control and governance. Oftentimes, these centers of governance were directly tied with larger cities and the urban world. As populations grew in Europe, disease began to increase within large cities.

The medical landscape during the renaissance was directly tied to urbanization. With rising populations during the Renaissance, with several cities reaching over 100,000 people between the 1500s and the 1700s, many more diseases were becoming endemic amongst the much larger populations. It is difficult to know specifically whether there was an emergence of new disease, or whether there were more robust and novel ways of classifying diseases brought upon by the urbanization of the time. European authors note that there were many new diseases at this time; however, there is a debate among scholars as to whether these diseases were actually new, or just more rampant due to the sharp uptick in population density. "Whether early modern Western civilization really suffered from 'new' diseases or not remains a perhaps unsolvable question, disturbed as it is by perceptions and shifting terminologies and nosologies (systems of classification) of diseases; certainly, many seventeenth and eighteenth century authorities said that new disease was among them. But if we leave the question of 'newness' to one side, we may recognize instead that whether new or not many epidemic diseases could flourish in early

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<sup>6</sup> Cahill, David. "Financing Health Care in the Viceroyalty of Peru: The Hospitals of Lima in the Late Colonial Period." *The Americas* 52, no. 2 (1995): 123–54. <https://doi.org/10.2307/1008259>.

modern Europe more readily than they could have in earlier centuries.”<sup>7</sup> Urban populations encountering either new, or newly redoubled cases of diseases was not an uncommon occurrence.

Notions of what can be called public health in colonial Spain were different from our current understanding of public health. The internal logic for public health was not the same as how ours is now. And even internally, Spanish public health changed from location to location. The systems of Public Health that existed within the Iberian Peninsula, the Netherlands, Latin America, and the Philippines presented themselves differently based on the needs for each individual colony and the protection of the workforce. Spanish medicine and public health had always been associated with governance and religion even before colonization began. In almost all western traditions of medicine, nobility was often associated with religious power and often Kings in Europe would perform rituals and miracles to cure people of disease in a way to grab more authority. An example of this is the idea of the royal touch, where a king or other monarch would touch someone affected by scrofula in an attempt to heal the very visible disease.<sup>8</sup> The divine powers of royalty were often used as a political tool to prove a ruler’s divine right to rule. Spain was no exception to this adherence to ritual power among nobility. The reliance on nobility as a giver of health would continue even as the mysticism around the king and divine right to rule began to wane with the Magna Carta. The understanding of the duty of royalty and its relation to health still remained an important facet of the job of any royals.

As so, an important distinction between modern Public Health and how it was implemented in all Spanish territories was the understanding of the King as a giver of Public

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<sup>7</sup> J. N. Hays, *The Burdens of Disease: Epidemics and Human Response in Western History* (New Brunswick, NJ: Rutgers University Press, 2009).

<sup>8</sup> Ibid.

Health. It was the King's duty to provide public services and promote healthcare across all of these territories. Healthcare was also considered integral because of how disease and pestilence would be a disruption to the government and the ability to govern. People burdened by disease weren't capable of providing normal services to the government, or participating in social actions that could enforce governmentality at any location. Pablo Gomez discusses ways that government and public health under the Spanish in "Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean". In this piece he discusses the role of royalty on medicine and general health.: "Pestilences and mortality as such were seen as a disruption of equilibrium within the physical body of the realm that spoke ill of the abilities of rulers to govern. Public health was thus already a central preoccupation for Spanish monarchs during the late fifteenth and early sixteenth centuries."<sup>9</sup> Public health was therefore a very important task that the crown felt pressured to perform. Oftentimes, keeping the peace relied on at least producing some forms of public health to enforce the government and equilibrium of society. However, this also meant that healthcare was provided at the discretion of royalty who sometimes did not have the compassion or the vision to provide adequate care for everything. An example of this is in how the Spanish King, Charles IV, didn't understand the gravity of public health needs in the Americas until the death of his own family members.<sup>10</sup> "These incidents (the infection of the Bourbon Court with Smallpox) inevitably attracted king Charles' attention to the medical and social implications of smallpox..."<sup>11</sup>. Later on, in chapter 4, I will delve more deeply into the

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<sup>9</sup> Ida Altman, David Wheat, and Pablo Gómez, "Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean," in *The Spanish Caribbean Et the Atlantic World in the Long Sixteenth Century* (Lincoln: University of Nebraska Press, 2019), pp. 211-232.

<sup>10</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

<sup>11</sup> Ibid.

specific legislation and action introduced in the aftermath of the Bourbon court's scrape with smallpox. The attention of the crown was often sought by viceregal courts to secure public health funds or any other form of aid.

### **Colonial Medicine and Public Health.**

As a system, humoralism is all about the understanding of the body as containing four components that need to be properly balanced: phlegm, blood, black bile, and yellow bile. Each of those bodily fluids could fall out of balance and cause the ailments that affect people. Each of the humors was associated with a temperature, a season, and various other factors that allowed doctors to perform procedures. As so Spain brought the humoral system within their colonies. Humoralism became the main medical practice within Spanish colonies in the Americas and took on its own characteristics, divergent from those present exclusively within European medicine.<sup>12</sup> Spanish medicine was changing when it encountered indigenous medical culture as well as new challenges. An example of a difference is the idea of Hot and Cold Humors as a distinct dichotomy within humoralism itself. Prior to Spanish control, Inkan medicine was similar in concept to Spanish humoralism, as so the hot and cold dichotomy that was present in Inkan medicine was an easy concept to convert into Spanish medicine. One explanation for this transformation and evolution of the humoral medical system is the similarities between humoralism and indigenous medical culture. Some scholars argue that the variety of humoral medicine in Spanish colonies originated from preexisting beliefs within indigenous societies. However, George M. Foster argues, within his article "On the Origins of Humoral Medicine in Latin America" that the humoralism within Spanish colonies originated from the transfer of

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<sup>12</sup> Foster, G. M., (1987). On the Origins of Humoral Medicine in Latin America. *Medical Anthropology Quarterly*, 1(4). Retrieved from <https://www.jstor.org/stable/648542>

medical knowledge from Eurasia to the Americas. He writes, “A few have suggested that an indigenous New World dichotomous world view that included hot and cold concepts may help to explain the rapid assimilation into Native American societies of foreign medical beliefs and practice... I base my case for an Old-World origin on a comparative ethnographic-historical model. I compare Latin American humoral pathology with its contemporary Asian counterparts, stressing the similarities and probable common origin for all such systems.”<sup>13</sup> This quote, being the main argument of Foster’s paper, shows the transfer of medical knowledge between the Americas and Europe. The primary direction of transfer was from Spanish sources integrating aspects of Indigenous medicine rather than the other way around. The systems of medicine practiced by both the colonizers and the colonized were derived primarily from Spanish sources.

Hospitals in Latin America were also places for people with non-malnutrition to be treated for various conditions, including smallpox. This doesn’t mean that treatment was always successful but instead that they would provide a place to treat disease as well as they could. This is partially due to the intense burden that disease had on Latin America. In my next chapter I will analyze more in depth the reasonings behind healthcare in Latin America and how disease played a role in that. The Bishop of Cartagena in 1576 wrote about the differences between Latin American hospitals and Iberian ones based on how many people sought hospitalization to escape disease. “He (The bishop of Cartagena) wrote that in 1576 alone more than four hundred men from the Indies fleet were cured at the hospital in addition to all the poor from the city and its hinterlands that came to it.”<sup>14</sup> The statement of the bishop of Cartagena is important because it

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<sup>13</sup> Foster, G. M., (1987). On the Origins of Humoral Medicine in Latin America. *Medical Anthropology Quarterly*, 1(4). Retrieved from <https://www.jstor.org/stable/648542>

<sup>14</sup> Ida Altman, David Wheat, and Pablo Gómez, “Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean,” in *The Spanish Caribbean Et the Atlantic World in the Long Sixteenth Century* (Lincoln: University of Nebraska Press, 2019), pp. 211-232.

shows the results of the introduction of hospitals into especially disease ridden locales. Having a location to contain diseases and even provide what basic care they could was enough to save hundreds of lives and provide help to the poor from around the city. Cartagena, being in modern day Columbia, was heavily affected by disease. Because the Spanish divided their funding for medicine and hospitals between different cities it might be understood that the Bishop of Cartagena was trying to appeal to the Spanish crown to show how effective the hospital was at curing people or how necessary it was to get more funding for a chaplain for San Sebastian hospital. It should be noted that the bishop is writing these numbers in an attempt to gain more funding and a chaplain for San Sebastian hospital. What's important about the statement of the Bishop of Cartagena is how it shows that there weren't just problems of malnutrition and poverty. People flooded into hospitals seeking reprieve from disease, when this wasn't the task that hospitals were used to solving. One of the reasons that hospitalization was faced with a new burden of disease is the new, and easy, food sources that were available within the Americas. There were several new sources of calories and nutrients in the form of potatoes and maize corn, both of which were easy to grow in European agricultural systems. The importation of food allowed for a much larger population within European urban societies. This, alongside the introduction of crop rotations as a standard way to yield much higher amounts of food every year, made it much easier for urban centers to sustain themselves. The reduction of the burdens of malnutrition were what most likely caused the apparent introduction of new diseases.

Because of the burdens of disease becoming both larger and more apparently different from malnutrition, the different understandings of what diseases were needed to change. This different understanding about the nature of disease, however, did not inherently mean that Spain, or all of European medicine didn't have a good understanding of what caused disease or how to

control it. On the contrary, a lot of their actions show direct intent to control the various *Pestilencias* that they encountered while running hospitals and colonies across the world. Even if they did not have as robust understandings of the mechanisms of disease that we do today, their understanding of the importance of public health was nevertheless profound as they often took many different actions to control devastating diseases when they presented mortal threat. Spanish public health operated under a different logic than our own modern understandings, however that doesn't mean that there was no logic to their actions at all. Gomez again addresses understandings of medicine: "If Europeans thought differently about disease, this did not mean that they were not keenly aware of the relationship between epidemic illness and the arrival of sick people and vessels from different Atlantic locales. This is evident in measures that the Spanish crown enacted in its early colonial project."<sup>15</sup> The direct and intentional actions that the Spanish took when sending people back and forth from Spain and the Americas, shows the specific measures taken against diseases and an understanding of some of the mechanical reasonings and patterns that went into who and why people contracted disease. All of this came together into a public health system that was aware of disease and somewhat aware of its causes, but lacked as many medical solutions to infections.

Oftentimes, public health also took the form of mass quarantines and the blocking of ships entering ports. In the Caribbean specifically, barring entry to a port due to disease was an important way for the Spanish to control spreads of disease especially in a colonial context. In these colonial contexts, controlling disease meant controlling labor and protecting laboring populations. Gomez highlights the public health measures that would be taken by the Spanish:

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<sup>15</sup> Ida Altman, David Wheat, and Pablo Gómez, "Hospitals and Public Health in the Sixteenth-Century Spanish Caribbean," in *The Spanish Caribbean Et the Atlantic World in the Long Sixteenth Century* (Lincoln: University of Nebraska Press, 2019), pp. 211-232.

“In 1507, for example, the crown ordered a temporary halt to travel to Hispaniola because of the fear that a pestilencia that was raging in the Atlantic would spread to the island. This prohibition applied to everybody, even those “who go [to Hispaniola] to work.” This measure undoubtedly was informed by Europeans’ experiences with repeated episodes of bubonic plague since the fourteenth century when quarantines were first imposed.”<sup>16</sup> The use of quarantine and restriction of ship movements is especially poignant in the Caribbean case which served as an entry point into Latin America. Without the use of quarantine, the damage would range much further than just the Caribbean. This is particularly evident in the medical infrastructure that Queen Juana ordered to be constructed in the Caribbean to combat the onslaught of disease on a necessary traveling location for anyone going in and out of Latin America. “Some of these issues are evident in a December 1535 decree that Queen Juana sent to Tierra Firme. In it the queen ordered the founding and provisioning of a hospital in the city of Nombre de Dios, ‘because [Nombre De Dios] is a very busy port with many poor and sick people.’”<sup>17</sup> These newer measures were an important part of the ways in which the Spanish dealt with the increasing burdens of disease that were threatening the systems of power and control that they desperately wanted to maintain. The use of quarantine was especially important as a new form of public health because of its effectiveness as well as its own forms of control. Quarantine was a common solution in Europe but was completely novel in the Americas. Another novel aspect was consideration of quarantine on a much larger scale. Closing an entire island, port city, or even entry into a continent to control disease was something unheard of beforehand. Isolation due to sickness was an easy way to both eliminate disease and quell dissent among people who would otherwise be able to organize.

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<sup>16</sup> Ibid.

<sup>17</sup> Ibid.

## Religion as a Form of Healthcare

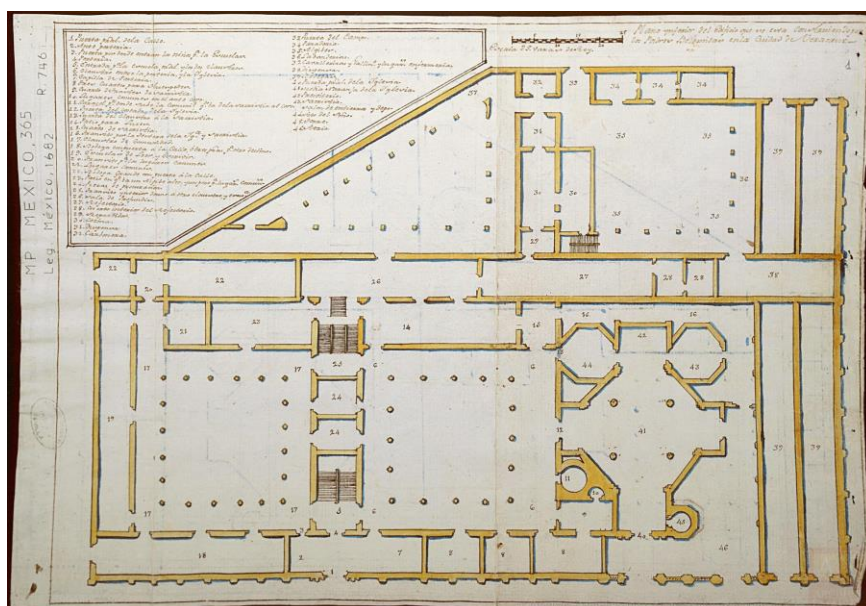
Religion was the most important facet of healthcare and its form to the Spanish. the Spanish understood the threats that disease posed and the mechanics that disease generally operated from; however, they lacked the ability to provide medicines and solutions to many diseases that were present. As so, oftentimes the solution to disease was through religiosity and prayer. Hospitals in particular served as a religious controlled area, with many hospitals being controlled by religious orders or other civic councils. One of the reasons that hospitals were religious institutions particularly was because of the consolidation of medical knowledge within the clergy. Oftentimes, religious orders were the only repository of people who could read and as so they were the only ones who had access to documents necessary to provide adequate care.

The most important religious order to hospitals and health care was the Bethlehemite order (Betlemitas), who were solely dedicated to staffing and running hospitals. The Bethlehemites were founded in Guatemala in 1656 with the specific intention of founding and running hospitals that would be allowed to serve anyone, including indigenous populations, who would otherwise be barred entry from other hospitals. The Bethlehemites set up hospitals and other hospice care facilities all over Spanish colonies, including locations in Mexico, Guatemala, Peru, the Philippines, and Cuba. At each of these sites, a larger hospital would be built from the hospice centers that originally consisted of usually a collection of houses.<sup>18</sup> The main goal of Bethlehemite hospitals was ultimately to convert people to Catholicism and in certain cases, Bethlehemite hospitals became known as “Escuelas Pías” or Pious Schools because of their dedication to

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<sup>18</sup> Estrada, Dorothy T. de. “The ‘Escuelas Pías’ of Mexico City: 1786-1820.” *The Americas* 31, no. 1 (1974): 51–71. <https://doi.org/10.2307/980381>.

religion. In Veracruz specifically, the Bethlehemite order operated both as a hospital and a direct religious school.



Plano inferior del Edificio que está construyendo por los Padres Belemitas en la ciudad de Veracruz"; "Plano superior"

Religion also played a large part in the interpretation of disease for both the Spanish and the people they conquered. Whole religious movements were founded around the concept of disease as a divine punishment from multiple angles. Catholic perspectives claimed disease as divine retribution for pagan worship while Andean religious organizations claimed the same legitimacy. As mentioned in my previous chapter, a movement called Taki Onqoy started sprouting up within the Andes in the wake of the many outbreaks of disease, but especially smallpox. Taki Onqoy was an important social, religious and political movement of the late 1500s that served as a direct counter to the conversion to Christianity. The specific beliefs of Taki Onqoy was the idea of divine conflict; Taki Onqoy saw the Inkan deities, the Wakas, as being in direct conflict with the God of Christianity. In some cases Taki Onqoy was said to believe that the Wakas had already overcome God and that soon the Spanish would suffer as the

Inkan people had.<sup>19</sup> Other groups of Taki Onqoy believed that disease was a direct result of disrespecting the wakas, and that disease came as a divine punishment for abandoning their traditional ways. The ways that indigenous rationalized such a massive loss of life and destruction of their culture was through religious thought.<sup>20</sup> Interestingly, for the governmental aspects of Spanish colonialism, Taki Onqoy wasn't stamped out in every place immediately. In some cases the Spanish allowed Taki Onqoy to start spreading in order to further rationalize their conquest and christianization of Andeans. This is because Taki Onqoy existed during the time period in which the Spanish were still in conflict with the Neo Inkan state. As so, by allowing some roots to spread of what would be abhorrent and sinful in the eyes of the Spanish, they further rationalized their conflict through it.

### **Movement towards the Andes**

Medicine, hospitalization, and public health had to change in response to the Americas. The new challenges of disease, and the scale of the public health disaster led to the Americas being the largest challenge that Spanish medicine had to face. Spanish medicine before contact was constructed around royalty and the ways that royalty would seek to protect people from disease as a duty to their subjects. This didn't change when reaching the Americas as it served as a base for what public health structures would and wouldn't be implemented. What was the largest change is the idea of control. While medicine was used for systems of control within Europe, the ways, and scales of that use in the Americas were much different. The Spanish were dealing with peoples with completely different belief systems, culture, and languages. These

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<sup>19</sup> Mumford, Jeremy. "The Taki Onqoy and the Andean Nation: Sources and Interpretations." *Latin American Research Review* 33, no. 1 (1998): 150–65. <http://www.jstor.org/stable/2503902>.

<sup>20</sup> Alchon

indigenous subjects weren't often quiet converts either. Conquests were a necessary part of gaining military control over the indigenous populations the Spanish encountered. After conquest however, the Spanish needed a way to socially control people. Control manifested in many ways such as social and racial hierarchy, Encomienda, and lastly medicine. Since disease was such a unique tool for Spanish control, the repurposing of hospitals and medicines to be strong centers of Spanish cultural control was an obvious move towards controlling natives.

Medicine, medical philosophy, and public health as practiced by the Spanish overall faced unique challenges across the entirety of their empire. While in many cases, they lacked the medical technology to prevent the spread and dangers of endemic diseases both in Europe and in Latin America, they still showed their adaptability, a quality that would define the entirety of Spanish colonization. This adaptability was expressed differently across all of their different viceroyalties. However, this is none more evident than in the viceroyalty of Peru where the differences between medical practice, and public health between individual cities reflect the ways that the Spanish valued each one differently; The Spanish provided more help to the cities that would produce value for them over the ones that wouldn't. In the next chapter I will look at three different cities being Cusco, Lima, and Potosi as examples of where the Spanish used their medical knowledge and infrastructure differently based on the value of each city and how much it needed to be controlled.

### **Chapter 3: Healthcare, Governance, and Disease in Cusco, Lima, and Potosi**

When analyzing the impacts of smallpox on the Viceroyalty of Peru, especially during colonization, it's important to look at the differences between different demographics and how public health systems were produced in response to different people. One of the obvious ways to do that is through looking at the major cities because of the demographic, and geographic differences that they present. As such, I selected Cusco, Lima, and Potosi as the main focus points of my analysis. These three cities represent different major groups within Peru that required different methods, and different amounts of attention, to keep up with public health needs. Cusco was selected because of how it was the heartland of the Inkan descendants, maintaining a much higher indigenous population. That demographic, mixed with the higher morbidity of smallpox (due in part to indigenous genetic predisposition), and a high population density, made Cusco vulnerable to outbreaks. Those outbreaks coupled with the endemic nature of smallpox, forced the government of Cusco to take novel measures at trying to stop it. Lima, on the other hand, had a very low indigenous population, being a Spanish-founded city, represents the traditional face of European medicine. There were outbreaks of smallpox that were not as morbid as in places with higher concentrations of indigenous people. Lastly, Potosi represents the Spanish economic incentive with forced indigenous labor, being one of the most important mining cities in South America to the Spanish. This means that there were direct incentives from the Spanish to preserve the indigenous peoples as a labor force. Those incentives produced more novel medical practices and public health measures.

Public health, at this time, was understood very differently from our modern understanding. Instead of there being a centralized governmental process that can serve as both a federal mandate, and a source of organization, public health was managed by local governments

called cabildos. These cabildos would produce legislation to manage sanitation and disease as well as found and acquire funding for hospitals.<sup>1</sup> Around 1553, hospitals were founded in many places throughout Spanish colonies including in Lima because of the growing demand for treatments for smallpox and other diseases. These hospitals would see a mixture of success in different locations. Religiosity was also an important aspect of public health at the time. Hospitals would have a church built in, and one of the precursors to receiving care was displays of religiosity. This presented little issue in the Spanish built cities and amongst Spaniards, but presented a very large issue among natives who were desperate for care but were resistant to conversion.<sup>2</sup> Another important understanding about healthcare in this setting is that divides between public and private health care didn't exist. David Cahill explains this in his article "Financing Health Care in the Viceroyalty of Peru: The Hospitals of Lima in the Late Colonial Period": "Perhaps the best point of departure for an understanding of colonial health care is to dispense with the distinction between public and private health provision, inasmuch as all institutions benefited to some extent from royal patronage and financial support, whether in the form of a tithe share, a subvention (*situacion*), partial or total fiscal exemptions, shares in Indian tribute (the *tomin*)..."<sup>3</sup> All healthcare was funded by some aspect of society. Whether through royal decree, or other Spanish institutions, there was a philanthropic nature to care. As a result, all of the institutions that were providing healthcare were doing so through the lens of furthering either royal or religious interests. Healthcare with intent of control, or from a perspective of the government over patient experience is not made to produce good healthcare outcomes but

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<sup>1</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

<sup>2</sup> Cahill, David. "Financing Health Care in the Viceroyalty of Peru: The Hospitals of Lima in the Late Colonial Period." *The Americas* 52, no. 2 (1995): 123–54. <https://doi.org/10.2307/1008259>.

<sup>3</sup> *ibid*

instead turns medicine into a tool of government control. As so, the actual medical practice matches the governmental intent placed upon it.

## **Cusco**

For centuries Cusco was at the heart of the Andes. It was the capital city of the Inkas, and had been since their inception sometime in the 1200s. Even after the conquest, Cusco remained an important political and cultural city to the Spanish and to Andeans in general. Cusco, like all of the major cities in the Americas, had major outbreaks of both smallpox and other endemic diseases.<sup>4</sup> Compared to the other cities examined in this chapter there were close to no incentives to produce public health infrastructure to save native lives. However the Spanish did use a certain logic to produce some form of healthcare. The Spanish, with previous rebellion experience from their prior colonies in the Americas, decided to use medicine, healthcare and biopower as a form of governance. From when the city was sacked by the Spanish in 1537, the Andeans were taken from their traditional homelands within and around the city and placed into smaller reducciones or reductions to control any uprisings, and as a form of quarantine. The use of Reducciones wasn't unique to Cusco, or even the Andes as it had been tested previously in the Mexico valley.

Reductions were employed all over Spanish colonies. They were a multifaceted approach to governance, social control, and public health that allowed for the Spanish to maintain control over indigenous spaces by creating small districts that natives weren't allowed to leave. The Spanish primarily weren't interested in the healthcare applications of reductions but more the control that they offered. The healthcare benefits was a justification to control recently

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<sup>4</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

conquered people. Reductions were also a way to enforce the Encomienda economic system which forced natives to work in slavelike conditions. The encomienda system was based on the principles of forced labor in return for hypothetical military protection and education from the Spanish. The encomienda system also enforced Spanish right to tax indigenous peoples. The practice of moving natives into smaller encampments was started in Cusco on April 28th 1559 when twenty thousand Andeans, who lived around and in the city of Cusco were separated into the four reductions, Carmendo, Coampata, Cavicache, and Tocoache. Each of these reductions were then placed under the control of four different religious orders who would oversee most local governance and convert natives to Catholicism.<sup>5</sup> As stated before, one of the purposes of reductions was to divide people into groups to form a kind of quarantine so that smallpox, and other disease couldn't be spread amongst the total population. Alejandro Malaga Medina writes about the many purposes of reductions in *Las Reducciones en el Virreinato del Perú (1532-1580)*:

“Una de las instituciones más importantes que España establece en el Nuevo Mundo para el gobierno de los indios es la de las reducciones o pueblos de indios, que tuvo por finalidad la concentración de la población nativa para facilitar la recaudación del tributo, permitir los repartimientos de mercaderías y sacerdotes pidieran los diezmos y primicias y, particularmente para disponer de abundante mano de obra y dark mejor cuplimiento a la mita en las minas y en los obrajes, en las sementerasy guarda de ganados, en los tambos y caminos, en las obras públicas y en la edificación de ciudades, etc. “<sup>6</sup>

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<sup>5</sup> Medina, Alejandro Málaga. “Las Reducciones En El Virreinato Del Peru (1532-1580).” *Revista de Historia de América*, no. 80 (1975): 9–42. <http://www.jstor.org/stable/20139179>.

<sup>6</sup> Ibid., Translation: One of the most important institutions that Spain established in the new world for for the government of the indies is the reductions of indian homes, whose purpose was to concentrate the native populations to facilitate the collection of tributes (or taxes), allow the distribution of merchandise, and priest could collect tithes and first fruits, and particularly to have an abundant workforce and better compliance with the mita in the mines.and

This quote shows the multifaceted uses that the Spanish had for the institutions of reductions. All of the purposes that were listed, from overseeing taxation, to patrolling streets, was a method of control to the Spanish. The overbearingness of the Spanish on urban life in Cusco was at every level as they oversaw every facet of life itself. The mixture of public health measures and governance was a common thing to the new viceroyalty, who were thinking not just about how to control a recently conquered population, but now how to provide enough care to them in order to continue their economic goals.

Following the foundation of a major hospital being founded in Lima in 1552 El Hospital de los Naturales (The hospital of the Naturals, meaning it was for exclusively indigenous people) was founded in Cusco. This hospital was primarily funded by a budget offered by Spanish nobility and was controlled by the cabildo working under the Viceroy. The mission statement of this hospital (and all of the hospitals of this time) was not to treat disease primarily. Instead, hospitals were a place to treat malnourishment from poverty. As such, the founding of this hospital showed no results in reducing the weight of smallpox in Cusco. There was also the founding of various private medical institutions, such as the Bethlemite order's hospitals, and the Casas de Misericordia that enforced religiosity and adherence to christianity as a prerequisite to receiving care. Overall Cusco was one of the places where Spanish innovation failed due to lacking innovations and inability to control rampant diseases. The Hospital de los Naturales was equally a medical facility and a form of religious control. The foundation of hospitals in the early Viceroyalty was not an uncommon practice. Many cities, such as Lima, Quito, and Arequipa founded their own hospitals for indigenous people all around the same time.<sup>7</sup> As stated earlier,

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the factories, in the fields and cattle guarding, in dairy farms, *tambos* (quechua word for an administration building) and streets, in the public works and building of cities.

<sup>7</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).



Miguel asked the curacas (chieftains of indigenous lineage groups) if they thought that a hospital where poor Indians could be treated should be established in the province. While some expressed their agreement, others replied that ‘there was no need for a hospital’.<sup>9</sup> Ramos then explores the question of why there was a refusal from a native perspective to have a hospital built at all. Ramos’ thesis is that Hospitals represented an inherent form of religious and governmental control.

In Spanish America, this principle was applied to the governance of the Indians, conceptualizing them as miserables (wretches) and the king as ‘patron of the poor’ or ‘protector of the Indians’. From this point of view, the Indian hospital must have been an instrument of government through which the role of the king was made tangible, creating a bond between the king and his subjects which was replete with the political and not a little of the sacred.<sup>10</sup>

The perspective of looking at hospitals as governmental tools is a necessary part of Spanish governing strategy. To the Spanish, hospitals were an invaluable tool for social control. Ramos also focuses on the social status of natives within Spanish society as an indicator for what the actual effects of a hospital would be. While Ramos is primarily observing how some more rural natives reacted to the idea of hospitals, the foundation of hospitals within Cusco implies a rampant problem with poverty and malnourishment, and the intrinsic desire from the Spanish side to provide a hospital as a way to control the populace.

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<sup>9</sup> Ramos, Gabriela. (2013). Indian Hospitals and Government in the Colonial Andes. *Medical history*. 57. 186-205. 10.1017/mdh.2012.102.

<sup>10</sup> Ibid

## Lima

Lima wasn't a native city. It was founded by the Spanish in 1535 along with its port, Callao. Because of this, Lima has a relatively low indigenous population, being predominantly European. The very few indigenous people that did live in Lima were mostly brought in as labor as a part of *encomienda*. The other largest populace was Africans brought in as slaves to work agricultural jobs. The demographics of Lima were its best defense against disease that ravaged the lowlands of Peru because of genetic resistance to smallpox. For a territory that was so severely impacted by smallpox, the seat of the viceroyalty was relatively well defended from disease. This doesn't mean that Lima didn't face disease, just that the mortality that it faced was much lower than other places, like Cusco or Potosi. Other problems arose throughout Lima, however. One of the most significant was the 1746 earthquake and subsequent tsunami that completely destroyed the port of Callao and permanently altered the skyline of Lima all in the matter of a day. The death toll of the earthquake was put at somewhere around 10,000 and structural damages ranged up to 600 million Pesos.<sup>11</sup> The Viceroy at the time, Conde de Superunda said that the city looked as if it had been besieged.<sup>12</sup> This means that in the late 1700s there was a grand effort to rebuild the city, including all of its amenities. The 1746 earthquake occurred at an interesting time for healthcare (and government in general). The native population of the Andes had hit its nadir around the mid-1600s<sup>13</sup> when around 85-90% of its members had been wiped out by smallpox. The 1600s were followed up by a century defined by rebellion. Without the unspoken tool of control, through disease, the Spanish were beginning to lose their

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<sup>11</sup> Cahill, David. "Financing Health Care in the Viceroyalty of Peru: The Hospitals of Lima in the Late Colonial Period." *The Americas* 52, no. 2 (1995): 123–54. <https://doi.org/10.2307/1008259>.

<sup>12</sup> *Relación y documentos de gobierno del virrey del Perú*, José A. Manso de Velasco, Conde de Superunda (1745-1761)

<sup>13</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

grasp on the Andes. This was also highlighted by Bourbon reforms and the growing political influence of Cusco in comparison to Lima. This turbulence was culminated by the Tupac Amaru rebellion of 1788. Jose Gabriel Condoranki Tupac Amaru started the most important rebellion in the history of Peru. This rebellion influenced not only the governance but also at the intersection of healthcare approaches. That governance is what directly led to the introduction of vaccination along with the crackdown of the government post-rebellion.

The most important facet of healthcare in Lima was class. Class was the single determinant that would impact someone's ability to receive care and the castes and hierarchies that were present in Lima (and Peru in general) were all encompassing. These castes were generally constructed around ethnic closeness to Spain. The top of this hierarchy would be Spaniards (who among themselves had classes based on wealth and nobility), followed by any other European, followed by Mestizo or mixed Indigenous-Spanish people, followed by full indigenous people, and lastly there were Africans who were brought to Peru mostly as slaves with there being a not insignificant free African population as well. At the top of the hierarchy, one's ability to receive healthcare would be no different than in Spain itself. That being said, there was a distinct focus in Lima on healthcare as an enterprise for which the government could make money. A census conducted by Viceroy Fray Francisco Gil de Taboada y Lemos in 1790, reported 11 hospitals and 3 casas de misericordia throughout the city.<sup>14</sup> This increase in the number of hospitals came in the wake of the earthquake that had devastated Callao and Lima and nearly wiped out every edifice in the city. Similarly to Cusco, each of these hospitals were run by different religious orders with different ethos and methods of care. These hospitals also had specific and different target demographics: "These included the three largest: San Andrés for

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<sup>14</sup> Cahill

(male) españoles, Santa Ana for both male and female Indians (“indios”), and San Bartolomé for slaves and free blacks.”<sup>15</sup> Cahill illustrates in this quote how class and race intersect for socioeconomic standings in Lima. Hospitals were divided up based on racial demographics as well as these socioeconomic factors. The 1746 earthquake also affected the quality of care from these hospitals. Their primary purpose was to help serve against malnutrition from poverty; however, in the wake of the earthquake

Picture of the interior of the Hospital de San Andrés in 2010<sup>16</sup>

they were oftentimes repurposed as temporary homes for anyone displaced.

Beyond just access to healthcare, there was also a commodification of the natural medicines present within Peru that were shipped out of Callao, Lima. Globalization allowed for access to Peruvian balsams and other natural remedies across the world, which had traditionally been only present in the Andes. The value of Peru to Spain was in the resources it could extract



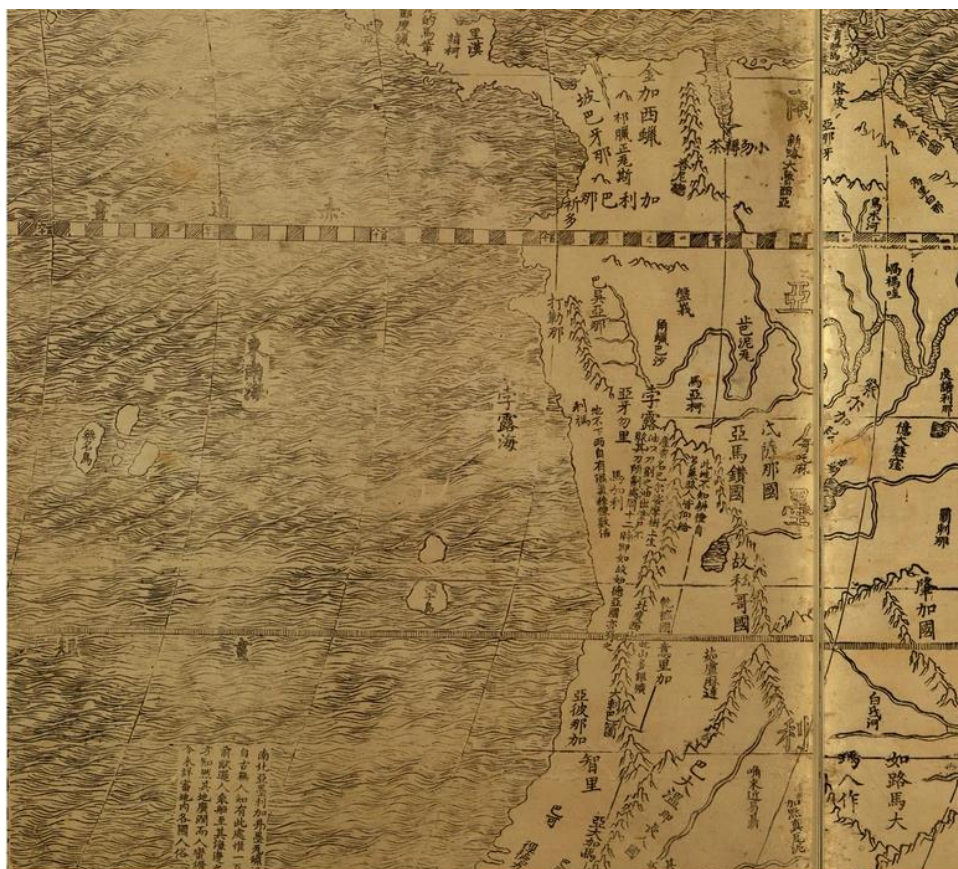
from it, through silver and in some cases these balsams.

Angela Schottenhammer discusses the transpacific transfer of medical knowledge in her short article discussing Qing dynasty Chinese maps and how they viewed Peru as a

<sup>15</sup> Ibid

<sup>16</sup>Santiago Stucchi-Portocarrero, “El Hospital De San Andrés,” El Hospital de San Andrés, accessed April 3, 2023, <https://psiquiatriahistorica.blogspot.com/2010/03/el-hospital-de-san-andres.html>.

source of balsam and natural medical resources. A major export from Peru across the Pacific, beyond just silver and silks, was Balsam and other medicines.<sup>17</sup>



Peru section from Matteo Ricci's Kunyu Wanguo Quantu 坤輿萬國全圖;

Lima was of central importance to the Spanish. They treated health as a different tool in Lima as compared to Cusco. There were similar metrics for ranking of importance. Lima was important to the Spanish, not only as an entry point into South America and the Andes, but also as an economic hub. Cusco, conversely, didn't have the same importance to the Spanish. There wasn't the same incentive to create modes of healthcare. The cultural significance of Cusco was lost on the Spanish and thus they were close to abandoning it medically. What is significant

<sup>17</sup> Schottenhammer, A. Peruvian balsam: an example of transoceanic transfer of medicinal knowledge. *Journal of Ethnobiology and Ethnomedicine*, 16. 2020 <https://rdcu.be/cV8KD>

about this is that Spain had a logos to where they chose to provide healthcare and it wasn't exclusively on racial or ethnic lines (this isn't to say that there was not any racial motivation, however, there appears to be more nuance than just racism). Had Cusco been able to produce some material to export on mass, or been an equal economic center for Spain, perhaps they would have invested more into healthcare. In the next section, I will analyze the city, Potosi, that was both of indigenous majority and received more investment in healthcare due to economic production and importance to Spain.

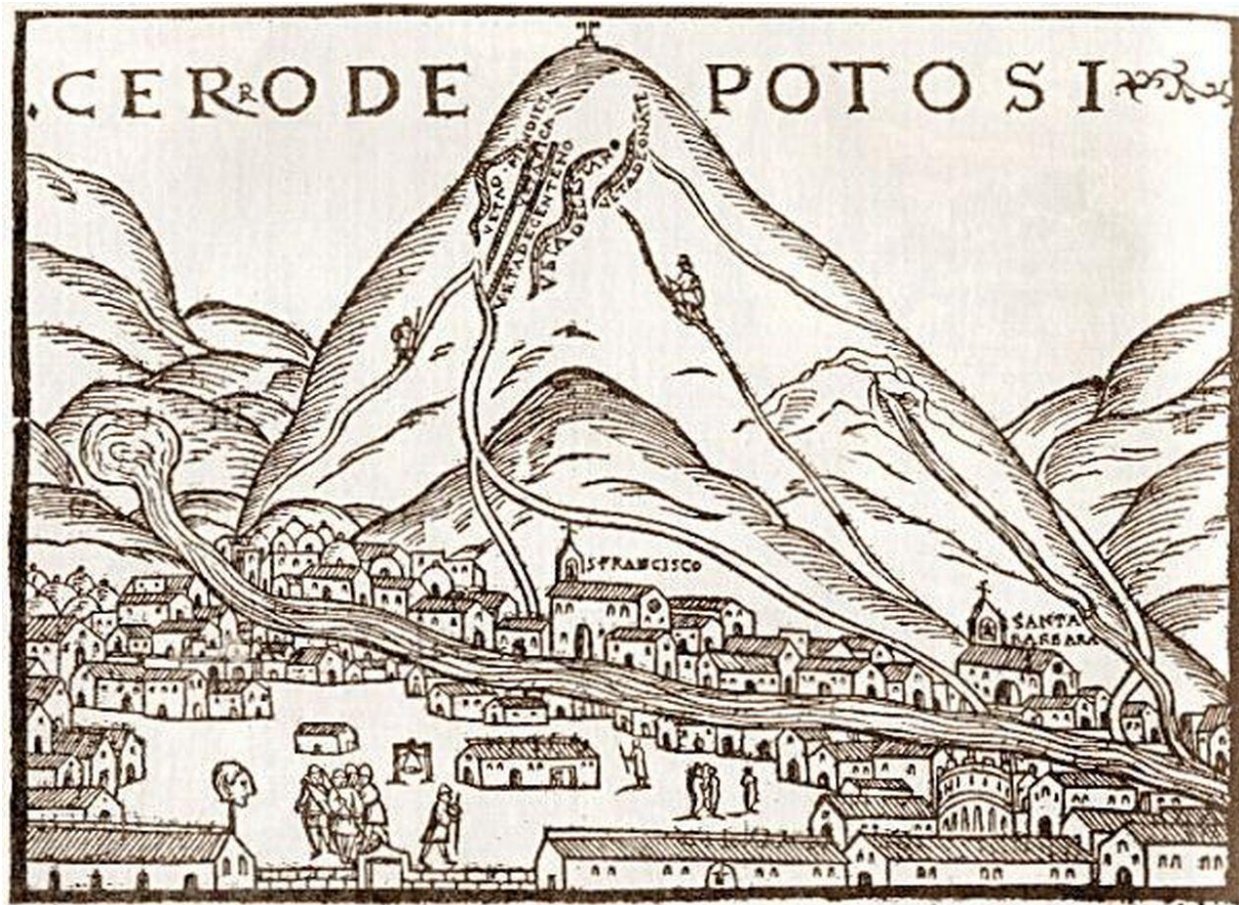
## **Potosi**

Potosi was a very valuable city to the Spanish. Founded in 1545 as a mining town, Potosi is built on the side of the mountain, Cerro de Potosi, or Sumaq Urqu, which was (and still is) very rich in silver. This immediately drew the attention of the Spanish, who were looking for any material wealth to extract from the Andes. The city of Potosi was mainly worked by an indigenous labor force.<sup>18</sup> The gathering of many people into just one location allowed for disease to spread at a fast rate. Potosi's economic value to the Spanish is what made it such an important city, that would further incentivize them to use full measures when it came to protecting the population. In the early 1700s, apart from smallpox, which was a continuous concern, there was a widespread outbreak of what is thought to be the plague. This outbreak would spread throughout several cities in Peru, but it most predominantly affected Potosi and its supply lines. This outbreak of plague is thought to have arrived in Peru from several French ships that arrived through the port city of Cadiz. This led to Spanish King, Philip V issuing a statement trying to quarantine the infected ships. This measure was taken far too late as the plague had already

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<sup>18</sup> Kris E. Lane, *Pandemic in potosí: Fear, Loathing, and Public Piety in a Colonial Mining Metropolis* (University Park, PA: The Pennsylvania State University Press, 2021).

begun spreading throughout the Andes.<sup>19</sup>



Drawing of the Mountain of Potosi from 1787

Without access to treatments, the main Spanish response to the epidemic was an increase in religiosity. The introduction of this plague into Potosi prompted responses from the clergy in accordance with the religious and medical doctrine of the time. Clerics were expected to both help treat plague victims, but to do so without any forms of protection to further emulate religious icons who treated disease without regard for self.<sup>20</sup> As with all diseases in Peru, the plague harmed indigenous people the most. This is discussed by Kris Lane in his discussion of

<sup>19</sup> Kris E. Lane, *Pandemic in potosí: Fear, Loathing, and Public Piety in a Colonial Mining Metropolis* (University Park, PA: The Pennsylvania State University Press, 2021).

<sup>20</sup> Ibid

Chronicler Bartolome Arzans de Orsua y Vela, who chronicled the plague and its effects on Potosi: “For the author, these individuals (Pious Men) charitable deeds were worthy of memorializing in writing, whereas the majority of Indigenous victims, the city’s poorest and most vulnerable remain all but nameless, pitiful exempla. Either way, Arzans makes clear that the poor and Indigenous suffered most, by a huge margin.”<sup>21</sup> We can see through Arzans, and Lane that the class and cultural hierarchy systems of healthcare that existed throughout Lima specifically are also in effect here in Potosi. This also reinforces the absolute and overreaching grasp that religion had on the interpretations and the creations of medical systems within this world. The only way that Arzans can rationalize disease in this context, is that the pious are the ones who survive, and the indigenous, who aren’t as pious are those that suffer. Religiosity is the key to that understanding of disease and suffering. This correlates with how both Spanish and Andean sources treat smallpox upon its introduction into a naive system. The Spanish through Arzans, and many others rationalize the impacts of smallpox through divine punishment towards the indigenous Andeans for being pagan. The Andeans corroborate the divine punishment portion but frame it from an Andean perspective. Smallpox is a punishment for abandoning the traditional gods of the Inkas.

Doctors in Potosi were, for the time, reasonably well equipped to deal with these outbreaks. In their writings they were able to compare outbreaks to previous diseases. This did not mean that they were in any way equipped to deal with the scale of disease in Potosi. According to Lane, “It was a common occurrence for priests to go out with one body from one house, and by the time they reached the church they had eight or nine that joined along the way,

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<sup>21</sup> Ibid

the citizens carrying them in procession.”<sup>22</sup> Disease again, disproportionately affected the Andeans, who in turn, couldn’t receive the care that the Spaniards could. Arzans reinforces this: “In this villa it often happened that in the Indian barrios not a single rational being of the twenty or thirty formerly housed together remained alive; not even the animals remained, and in the hinterland the Indian pueblos were so devastated that some had only five or ten persons remaining.”<sup>23</sup> A reliable and more common solution for disease was mobility. Oftentimes, the only way for people to escape oncoming outbreaks was to flee Potosi (or any other population center).

The people went out, to live in the countryside to flee the death striking the towns, and not only people abandoned cities but also chickens, dogs, cats and others domestic animals, fleeing from the company of man, and all fled to the deserts, and there everyone died of plague of hunger, [beasts and] owners. They did not understand what to do except to carry out processions and perform other pious work to placate the ire of the Lord.<sup>24</sup> Even that mobility, moving from population centers to rural spaces wasn’t a complete solution as fleeing to the deserts also ended in dying. The scale of death seemed so unimaginable that the only solution that could be thought of to the people of Potosi was to continue their religious works, hoping that a divine force would save them from the unimaginable death that surrounded them.

## **Implications**

Cusco, Lima, and Potosi represent different parts of the Spanish governmental strategy over the Andes. What can be gleaned from this different treatment are Spanish priorities, Spanish

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<sup>22</sup> Kris E. Lane, *Pandemic in potosí: Fear, Loathing, and Public Piety in a Colonial Mining Metropolis* (University Park, PA: The Pennsylvania State University Press, 2021).

<sup>23</sup> Ibid.

<sup>24</sup> Ibid.

worries, and the fault lines of Spanish healthcare. The demographics of all three are vastly different and as so, each city is treated differently. Cusco, being a primarily indigenous city, is host to some of the worst treatment from the Spanish, where people are uprooted from where they used to live and are transported to live in bad conditions and work to produce more material wealth for the Spanish government. What treatments for disease did exist, weren't effective and were more focused on socially controlling indigenous people's thought and quelling any ideas of resistance. Lima, being a primarily European city, had better medical treatments. Because Lima was of importance to the Spanish, it received much more support and funding for hospitals and other hospice care. Cusco's treatment in comparison to Lima might initially spur the reaction that the Spanish only cared about their own and were more inclined to defend the lives of Spanish citizens over indigenous ones, and undoubtedly this is true, however the inclusion of Potosi provides more insight into the Spanish perspective. While treatments for Indigenous people did not ever reach the levels that Europeans had access to, the Spanish provided support to locations that they felt needed it or were profitable to them. Potosi in particular, being one of the major Spanish income sources, received a lot of healthcare focus in comparison to Cusco. The economic value of a city played a role in whether the Spanish chose to care about healthcare.

Another important question about the healthcare in Peru is that of how much was wanted by indigenous people. The rejection of the creation of a hospital from indigenous sources outside of Cusco gives us an insight into how healthcare was viewed from indigenous perspectives. The Spanish understood that because of the onslaught of disease in the Andes that they held a form of power through the access to medicine. As so, hospitals and other medical treatments were held behind social ideas. In Cusco, it was through the *casas de misericordia*, and the religious nature of the Hospital de los Naturales, and in Potosi through the religious orders that dominated

healthcare throughout the mining city. The rejection of a hospital from indigenous people might seem like a ludicrous rejection of help against deadly diseases to us, but from an indigenous perspective, hospitals were governmental tools put in place to help control them. The rejection of a hospital was the rejection of the Spanish government. However this wouldn't dissuade the Spanish from making more attempts to provide healthcare and more governance in their colonies. The shift in the zeitgeist of the Andes towards revolution in the later half of the 18th century coincided with medical innovation in Europe that would allow the Spanish to produce new forms of governance and control at the end of their colonial control in Latin America. In the next chapter I will cover the 1803-1811 Royal Philanthropic Vaccination Mission and the journey to bring the smallpox vaccine to the Americas.

## Chapter 4: The Royal Philanthropic Vaccination Mission

### Creating the Mission

Towards the end of Spanish colonial control in Latin America, smallpox and public health came to the forefront of Iberian focus. For so long, the question of how to deal with the insurmountable and ever-present force of smallpox in Latin America had been unthinkable. The Spanish royal family became the victims of an outbreak of Smallpox that killed and disfigured many of the royals and nobles in the Bourbon court as detailed in *The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century* by Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado : “At the end of the 18th century in Europe, during the reign of King Charles IV of Spain, many members of the Bourbon royal family became infected with the smallpox virus. Gabriel, King Charles's brother, and his sister-in-law, the Portuguese queen Maria Ana Victoria, succumbed to smallpox. In addition, the king's daughter, Queen Maria Luisa, and the Princess of Parma were all infected with the smallpox virus but survived.”<sup>1</sup> After the epidemic, King Charles IV had a very different perspective on smallpox and how devastating it actually is. With his more personal interest, he declared that the Spanish people should be inoculated in order to prevent future outbreaks of smallpox in 1798.<sup>2</sup> Just one year later, the book detailing Jenner’s smallpox vaccine was officially published and translated into Spanish. Charles IV became further interested in the prevention of smallpox. Around this time, Charles IV received a letter from Santa Fe in modern day Colombia, which properly brought just how devastating smallpox was in Latin America to

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<sup>1</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. “The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century.” *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>2</sup> Ibid.

his attention. After convening the Council of the Indies, a plan was made to vaccinate Latin America on a large scale.

Within this chapter I seek to analyze the effectiveness of the solution that the Council of the Indies came up with. The Royal Philanthropic Vaccination Mission represents one of the first modern, global, public health initiatives with a lot of initiatives, ideas and actions that were taken that would be recognizable to anyone interested in public health. Because it was one of the first, it doesn't have some of the modern important ethical understandings that we have, as well as improvisation was needed when there were unexpected challenges, however it does represent in many ways, a leap forward into the modern era. The context surrounding the vaccination mission is also an important part of understanding the faults and limitations that were placed upon it. At the end of the chapter, I will discuss the vaccination mission with the contexts of governance and unequal distribution of medicine in Latin America that I provided in my earlier chapters. Another struggle for the expedition was the political climate of Europe. Charles IV was trying to organize this expedition while Napoleon was invading Spain. This political climate made it difficult for Charles IV to focus on this humanitarian mission of vaccination. After the defeat of the armies of France and Spain at Trafalgar, it was a very politically tense moment. Despite the political tension, Charles IV managed to go ahead with the Royal Philanthropic mission.

With the invention of the smallpox vaccine, and its implementation in Spain and most of Europe, a debate began about how to export the vaccine to all Spanish colonies. In 1799, Dr. Jenner's method became common knowledge throughout Spain, and by 1804 there were reports of vaccination being a common practice to provide widespread immunity to smallpox. Before the vaccine the major practice, both in Spain and Latin America, was inoculation. Inoculation was introduced from Africa and Asia into Europe and America following the 1721 London and

Boston epidemics. Inoculation produced some protection from smallpox. However, inoculation met some push back as critics of the method complained that it just spread smallpox more and often caused some of the more disfiguring and physically damaging effects of smallpox in people who were inoculated.<sup>3</sup> Inoculation wasn't very popular in Spain because of the critics of the practice. It was used in 1723 but wasn't widely practiced before Jenner's smallpox vaccine. In Latin America, however, inoculation was a popular practice during times of epidemics. Variolation was so popular in Latin America because of how common smallpox outbreaks were. The dangers of inoculation were ignored in favor of its benefits.

The first major problem that the mission had to get over was the problem of transportation. Jenner's method relied on inoculation with pus from an infection of cowpox. With a mission starting in Spain and sailing across the Atlantic, the preservation of matter from cowpox virus was a serious concern. One of the first attempts at preservation was soaking silk strands in the vaccine material, and then placing that silk in between small glass plates. However, this method was considered unreliable, especially when traveling through warmer climates.<sup>4</sup> Charles IV appointed Dr. Joseph Flores to the task of producing methods that would allow the transportation of the vaccine as well as recommendations for how it should be distributed upon its arrival in Latin America. Flores was selected because he was originally from Chiapas in Mexico, giving him prior experience with the area. Flores recommended that a Spanish corvette, a small ship primarily meant as a transport or military guard, be sent carrying the vaccine. Children were chosen as the means for maintaining the cowpox matter during the voyage. The expedition would bring along children and would slowly pass cowpox through each other,

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<sup>3</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

<sup>4</sup> Ibid.

preserving the infection as they crossed the Atlantic Ocean. Another recommendation from Flores was to allow the Catholic church to oversee the vaccination campaigns once the mission arrived in Latin America because of the legal authority and influence they had over the people of Latin America.<sup>5</sup>

Flores was not selected, however, to physically lead the mission. Instead, Francisco Xavier Balmis was chosen to be the leader of the mission. Balmis was chosen because he had previously traveled back and forth between Latin America and Spain. He was also in charge of translating the treatise of Moreau de la Sarthe, which was about the vaccine.<sup>6</sup> Charles IV determined that Balmis was the most eligible candidate to lead the expedition. The corvette *Maria Pita* was selected to be the main transportation along with its standard crew and captain. Balmis was accompanied by a crew of doctors, nurses, surgeons and other first aid practitioners to help secure and oversee the transportation of the vaccine from Spain to Latin America. Balmis



also brought along 500 copies of the treatise of *Moreau de la Sarthe*, in order to distribute them at their destinations for education purposes. Balmis' goal wasn't just to transport the vaccine itself but also to bring knowledge about how the vaccine worked and how to replicate it in the future. Alongside this, 22 orphans were selected to be the main vessels of cowpox. These orphans, who had never been inoculated,

vaccinated, or had smallpox, were between the ages of 8-10. Alongside the orphans, Ms. Zendala y Gomez, the director of the orphanage was brought along to help supervise and care for the

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<sup>5</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>6</sup> Ibid.

children during the voyage. She also brought along her son to participate in the preservation efforts.<sup>7</sup> After all of the personnel was procured, the *Maria Pita* disembarked from La Coruña in Spain on November 30th, 1803. The first stop was going to be the Canary Islands, and then Puerto Rico.

### **The Voyage**

Unbeknownst to Balmis, the smallpox vaccine had reached Puerto Rico before he had even arrived. Puerto Rico had received the vaccine prior to Balmis by getting information from the Virgin Islands through the British. Despite this disappointment, Balmis carried out the other part of the expedition; Balmis decided that one of the primary policies that he would enforce at each stop would be the creation of a vaccination board at each location. Balmis constructed the boards with the instructions to 1) educate the public on the benefits of vaccination; 2) oversee the production of more cowpox lymph for further vaccination, 3. administer the vaccine, 4. keep a registry of who is vaccinated, and finally, 5), monitor the burdens of disease to watch out for any disasters.<sup>8</sup> The creation of these boards was a consistent throughline of each stop that Balmis made. Even if locations had already received the vaccine, or were producing their own, Balmis was making public health councils that would help in the future, instead of just providing relief for the present. This aspect of the expedition is perhaps the most modern feeling in scope. Balmis was making an effort to produce infrastructure for the future of smallpox and disease, as well as organize ways to know who is vaccinated and who isn't.

Balmis then traveled south to modern day Venezuela, first stopping in Caracas. Balmis' experience in Caracas was much more positive than in Puerto Rico. When Balmis arrived in

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<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

Caracas, he was met with a much livelier crowd that celebrated the arrival of the vaccine. There were celebrations in the streets due to the arrival of Balmis, with fireworks and many other festivities. Again noted by Mark and Rigau-Perez: “Due to the enthusiastic collaboration of the civil and ecclesiastical authorities, the course of activities in Venezuela matched Balmis's expectations, with mass vaccinations (more than 12,000 in less than a month), training of local physicians, vaccine distribution in cities and outlying regions, and the creation of the first central vaccination board, on which all others in Spanish America would be modeled”<sup>9</sup> The mass vaccination was the first real success of the expedition as well as the foundation of what the rest of the mission would look like. Balmis’ reception in Caracas was a reinvigoration after what was a disappointing beginning in Puerto Rico. From here it was decided that Balmis would lead the mission to New Spain and Central America, and eventually to the Philippines while Joseph Salvany would travel south to Rio de Plata, New Granada, and the Viceroyalty of Peru.

Balmis’ group departed from Caracas after the mass vaccination heading first towards Cuba. Balmis’ group took most of the original expedition from Spain with them, including the orphans carrying cowpox, and the *Maria Pita*.<sup>10</sup> When Balmis arrived in Cuba, he found it very similar to Puerto Rico. Many people in Cuba were already being vaccinated. Balmis helped to set up another central vaccination board which helped to regulate vaccination in Cuba for years after the expedition had ended entirely.<sup>11</sup> Balmis then set sail from Havana headed towards the Yucatan peninsula, and the port of Sisal. The first stop in New Spain would be the city Veracruz.

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<sup>9</sup> Mark, Catherine, and José G. Rigau-Pérez. “The World’s First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813.” *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

<sup>10</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. “The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century.” *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>11</sup> Mark, Catherine, and José G. Rigau-Pérez. “The World’s First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813.” *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

Balmis and his crew knew before their arrival that the vaccine had already reached Mexico from Cuba and as so, went with the intention of creating another central vaccination board to help with regulation. Prior to his arrival, Balmis sent letters to the viceroy of New Spain about the mission and what Balmis' plans were for another vaccination board.<sup>12</sup> When Balmis arrived in Veracruz, he found that vaccination was completely disorganized. Balmis got to work organizing the central vaccination board for each city that he encountered. Balmis worked specifically on vaccinating the most vulnerable with the supply of vaccines they had, as well as training anyone capable of how to produce more vaccines as he traveled from Veracruz to many other towns and cities in New Spain.<sup>13</sup> Throughout New Spain, Balmis specifically created the vaccination boards as an extension of the clergy. Vaccination records were kept in churches and clerics were the ones primarily responsible for overseeing vaccination efforts.<sup>14</sup> By the end of his time in Mexico, Balmis is estimated to have vaccinated over 100,000 people and spread a lot of the knowledge of how to replicate, distribute and document the vaccine through a network all across Mexico. The overall population of New Spain at this time was around 6.2 million, however the organization of the vaccination efforts and the ability to further replicate the vaccine was invaluable<sup>15</sup>

Balmis' next stop was the Philippines, starting in Manila. Balmis took along 26 children from Mexico as more carriers for vaccine material. These children weren't orphans, unlike their spanish counterparts. These children were recruited after the promise of monetary recompense

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<sup>12</sup> Cook, S. F. "FRANCISCO XAVIER BALMIS AND THE INTRODUCTION OF VACCINATION TO LATIN AMERICA." *Bulletin of the History of Medicine* 11, no. 5 (1942): 543–60. <http://www.jstor.org/stable/44440723>.

<sup>13</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

<sup>14</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>15</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

was given to their parents. The orphans who were originally from Spain were placed under the care of the Bishop of Puebla and left in Mexico. Isabela de Zendala y Gomez continued to travel with the expedition despite her contract ending. Balmis described the journey to the Philippines to be a particularly bad experience with very low rations, tight quarters, and stormy weather.<sup>16</sup> Balmis arrived in Manila in April of 1805 where he continued to set up vaccination boards and provide vaccines. Balmis is estimated to have vaccinated around 20,000 people in the Philippines before continuing the expedition.<sup>17</sup> Balmis' next stop was in the Portuguese colony, Macau (now in modern day China). From Macau, Balmis traveled to Canton (now Guangzhou) and continued to set up vaccination boards in the cities and towns he came across. When there were difficulties in convincing people to create vaccination boards, Balmis turned towards the British East India Company as an authority to help with the distribution of the vaccine in a rare example of cooperation between England and Spain.<sup>18</sup>

Balmis then sailed back to Spain after declaring his expedition a success. Balmis returned to Europe aboard a Portuguese frigate which arrived in Lisbon in mid-1806. Balmis was welcomed back into the court of Charles IV in September of 1806 after his long journey. After the expedition, Balmis was appointed to be the inspector general of the smallpox vaccine for all of Spain and Latin America. He was soon sent back to Mexico to continue to help the organization of vaccination efforts and to help find cattle that carried cowpox to assist in replication efforts.<sup>19</sup> While Spain was being engulfed in the Napoleonic wars, Balmis was

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<sup>16</sup> Ibid.

<sup>17</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>18</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

<sup>19</sup> Ibid.

continuing to work in Mexico up until the Mexican War of Independence in 1811. Balmis recounts that he was one of the surgeons who was left to treat the wounded in the Veracruz region. Balmis returned to Spain where he eventually died at sixty-five in Madrid in 1819. The Balmis side of the expedition was widely considered a success, having distributed many vaccines and created much of the medical infrastructure necessary to maintain public health needs. The other branch of the mission, led by Salvany, would run into more trouble.

### **The Arrival of the Smallpox Vaccine in the Andes**

Before the vaccine arrived in the Andes, Joseph Salvany had considerably more obstacles to overcome. Salvany's expedition planned on sailing from Caracas to Cartagena de Indias (Columbia) through the Magdalena River and then to Santa fe de Bogotá. However, their ship crashed on the side of the river, and required the assistance of local natives to help them continue on their way. Salvany had the natives vaccinated and set up some local vaccination boards as they traveled, mostly by foot, to Cartagena. This setback wasn't enough to stop Salvany from continuing to Bogotá. After vaccinating around 200 people across the Magdalena River, Salvany and his crew made it to Bogota where they created more vaccination boards and led several classes on how to replicate and protect against smallpox. Salvany left from Bogota on towards Peru. Around this time, Salvany himself became sick with tuberculosis and lost the use of one of his eyes.<sup>20</sup>

Salvany's crew reached Piura, Peru in December of 1805. Around this time, Salvany also sent a portion of his crew to Quito to continue their vaccination efforts. Salvany received a letter

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<sup>20</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

from the Viceroy of Peru stating that vaccination had already started in most major cities in the Andes. Salvany and his crew made their way towards Lima from Piura, while vaccinating anyone they found along the way.<sup>21</sup> According to Salvany, they were greeted very well by most indigenous people they met along the way. Salvany mentions himself that while the ease of this leg of the voyage was initially met with relief, Salvany and his crew soon found out that the situation wasn't exactly what it was made out to be in the letter from Lima. Upon arriving in Cajamarca and Lima, Salvany discovered that the local physicians had been making a lot of money from vaccinations. The usual welcome that Salvany had grown accustomed to wasn't present here because Salvany was seen as a potential threat to their income.<sup>22</sup> Salvany tried to appeal to the Viceroy of Peru in an attempt to garner more support for mass vaccination, however it still wasn't met with much support. Salvany was also discouraged by the haphazard ways that the vaccine was being distributed, with little documentation of who had received it and when. Eventually, a new Viceroy was sent to Lima, who advocated for mass vaccination.<sup>23</sup>

Despite these setbacks, Salvany continued on to Cusco where he was met with more support. Salvany distributed vaccines in Cusco as well as set up the central vaccination board. Salvany continued to travel all over Peru to Ica, Nasca, and Arequipa where he did the same.<sup>24</sup> Salvany was forced to stop at Puno due to his worsening health. He managed to continue the expedition, however, traveling towards La Paz where he made his final report. He reported his poor health as well as giving the figure that he distributed around 200,000 vaccinations in Peru.

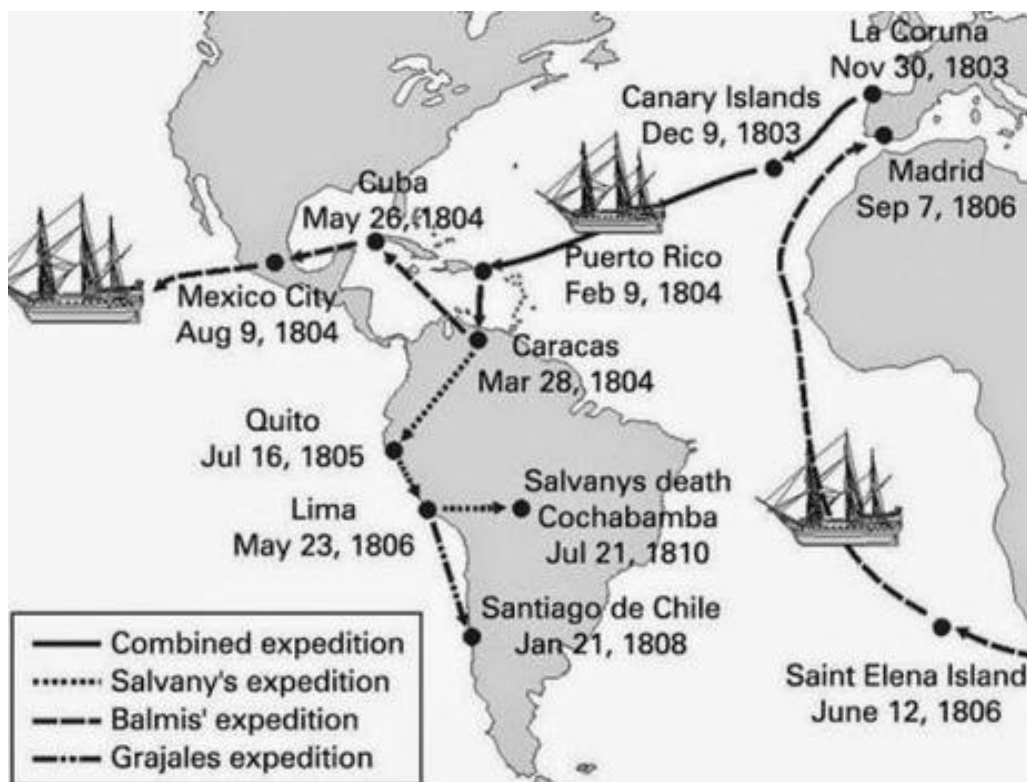
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<sup>21</sup> Ibid.

<sup>22</sup> Mark, Rigau-Perez

<sup>23</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>24</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.



He also stated that he fully intended to continue his journey towards Santiago and Rio de Plata despite his health. Salvany, however, succumbed to tuberculosis in Cochabamba in 1810 while on the way to Buenos Aires.<sup>25</sup> Other Members of Salvany's crew decided to continue the expedition further south

through Chile. Manuel Grajales and Basilio Bolaños continued on to Santiago and eventually ended up in Valparaíso as their final destination. They were, however, unable to return to Spain until years later, after the Chilean War of Independence starting in 1810. From Valparaíso, they sailed to Callao in Peru and then finally to Spain, concluding the South American section of the expedition.<sup>26</sup>

<sup>25</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

<sup>26</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

### **Successes, failures, and implications**

As one of the first major global public health initiatives, the Royal Philanthropic Vaccination Mission suffered from many problems. The first, and perhaps most evident challenge was the problem of communication. It was assumed by doctors, and nobles in Spain that there was no access to the vaccine anywhere in their colonies. This was clearly not the case. Many colonies had already gained access to the vaccine. From our modern globalized world, it seems strange that there could be so little communication between a central government and its territories on something so broad as what information one has access to, but without the ability for instant communication (or even timely communication), it makes sense. The point of communication also brings up the circulation of medical knowledge at the time. Even though Spain was uninformed about the dissemination of the vaccine, medical knowledge was being circulated through local areas. Another of the major problems was the political and economic climate of Spain at the time. As mentioned throughout my descriptions of the expedition and what led up to it, the main political issue in Spain at the time was the Napoleonic wars. The Bourbon royal family was at imminent risk of being overthrown, and despite that this mission was miraculously able to even happen. Humanitarian expeditions and policy usually are put on hold while there's wide scale crises, however it's most likely that Charles IV's personal experiences with smallpox that maintained interest in the expedition. Beyond just political turmoil in Europe, Latin America was also in the midst of political turmoil. In the immediate wake of the Expedition there were multiple rebellions that permanently altered the political landscape of Latin America.

In Peru specifically, the vaccine missions came right at the end of the Tupac Amaru rebellions at the end of the 18th century. While unsuccessful, the Tupac Amaru rebellion, led by

Jose Gabriel Condoranki Tupac Amaru II was still a massive catalyst for rebellion and social change in Peru. As discussed in the first chapter in terms of Andean epidemic history, the mid half of the 17th century is when Indigenous population had reached its lowest. After this time in the latter half of the 17th century and into the 18th century indigenous populations began to rise again. As indigenous populations began to rise again, mostly due to newly acquired immunity against smallpox, the opportunity for resistance against Spanish control and government became more plausible.<sup>27</sup> This led to the political landscape of Peru being very tumultuous during the 18th century, with peasant rebellions being a constant threat. The Tupac Amaru rebellion represented the culmination of the rebellious 18th century with a direct descendant of the line of the Inkan throne trying to expel Spanish authority. The landscape that the expedition was entering into was one where wide scale rebellions were not just freshly on people's minds but were also one of the primary determinants of the Viceroy's policies. Only a few years after the Expedition had left Peru is when Simon Bolivar started to lead his successful rebellion.

The question of transportation was also one of the most difficult hurdles to overcome. In our modern day where we have widespread access to refrigeration to assist in transportation of medical materials, transportation of perishable medical materials isn't as novel of a concern; with individual medical instances where transportation is necessary, logistical problems are a concern, however, there isn't the same novel issue of how to preserve vaccination materials. It might be argued that a modern equivalent is our challenges with refrigeration and cooling the Covid-19 vaccine for preservation purposes. With the innovations of technology, we were more readily able to preserve Covid-19 vaccines, without resorting to passing disease between children as a means of preservation. The solution that was chosen also brings out ethical issues. One of the

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<sup>27</sup> Suzanne Austin Alchon, *A Pest in the Land* (Albuquerque: University of New Mexico, 2003).

most evident problems that stood out as I was reading materials about the expedition was the ethical implications of using orphans as the transportation vessel for the vaccine. While cowpox isn't a dangerous infection to have, taking children from orphanages or paying their parents to slowly transport it for vaccination purposes is something that would be absolutely unthinkable and unacceptable with our modern understanding of ethics. When I first started researching the methods used by Balmis to cross the Atlantic Ocean with the vaccine, maintaining the vaccine itself was not even something that crossed my mind in terms of problems to solve, and while morally and ethically dubious, the orphan method certainly is novel and functional. Every historical account of the mission that I saw is completely devoid of the children's accounts, and their autonomy. The children were selected from a specific orphanage in Spain and then left at another in Mexico without any question of where they wanted to stay at all. The children were being used for their biopower without any recompense. The ethical implication of bringing a novel medical invention into indigenous lands and immunizing them, in the middle of a large Spanish government crackdown (where a lot of indigenous people couldn't refuse certain Spanish Governmental positions) post Tupac Amaru rebellion also brings about ethical concerns not unsimilar to the concerns about our eradication of smallpox. However, the only primary account of vaccinating people in rural places is from Salvany, who only ever says that they were welcomed wherever they traveled.<sup>28</sup>

Despite all of the challenges, the Royal Philanthropic Vaccination Expedition did have many successes. As the first real large-scale semi globalized public health initiative, the expedition immunized close to half a million people overall and brought instructions to replicate

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<sup>28</sup> Carlos Franco-Paredes, Lorena Lammoglia, and José Ignacio Santos-Preciado. "The Spanish Royal Philanthropic Expedition to Bring Smallpox Vaccination to the New World and Asia in the 19th Century." *Clinical Infectious Diseases* 41, no. 9 (2005): 1285–89. <http://www.jstor.org/stable/4463512>.

and immunize more people. The other major accomplishment was the creation of the central vaccination boards. These boards served as very good documentation for vaccination records, as well as provide a lot of the services that we commonly associate with public health outreach. Providing information on why vaccination was a good process for the general public is a function that is commonly associated with public health infrastructure and public outreach programs in the modern world. These vaccination boards lasted for a while as well, providing and explaining why public health was a good service for the general public. It is unfortunate for most of these vaccination boards that they were founded just before most Latin American countries revolted from Spain. In many countries, the record of what happened to most of the vaccination boards is not clear after revolutions. In Cuba specifically, the vaccination board lasted for a longer time under the patronage of the Havana Economic Society.<sup>29</sup> The central vaccine boards were also very good for the organization of future immunization needs. Balmis noted how especially in Mexico there was very little central oversight of vaccination and the whole process was disordered until the vaccine boards were created. Balmis got into legendary arguments with the viceroy of Mexico about the state of vaccination and the state of vaccination and organization of public health in Mexico overall. Overall, the Royal Philanthropic Vaccination Mission provided organization and order to a process which was plagued with disorder. In terms of recognition, Balmis falls short of other contemporaries who were important for the field of Global Health. If someone (especially a global health scholar, or immunologist) was asked about the importance of Dr. Jenner, they're likely to not only know what Dr. Jenner did for the field of immunology, but also how important he is to the field of public health overall.

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<sup>29</sup> Mark, Catherine, and José G. Rigau-Pérez. "The World's First Immunization Campaign: The Spanish Smallpox Vaccine Expedition, 1803–1813." *Bulletin of the History of Medicine* 83, no. 1 (2009): 63–94. <http://www.jstor.org/stable/44448715>.

That veneration isn't there for Balmis and his visionary public health work nearly 150 years before the WHO would be founded. Most of the scholars that I cite in this chapter even discuss at the end of their chapters how the work of Balmis is much too quickly forgotten.<sup>30</sup> The work of Balmis, which has gone underappreciated, provided a lot of necessary public health foundations for all of Latin America.

## **Conclusion**

Over the course of this project, I grew to understand the ways that the Spanish controlled the indigenous way better. I always understood the outcomes: Spain managed to topple the great empire of Andes through an immense amount of luck, and through the unseen weapon of disease, and then rule over the conquered territories for around 300 years. I also always knew that the devastation that Smallpox brought was intense, and completely defined Spanish rule over the indigenous peoples. However, what I did not know was the intense ways that the Spanish weaved their hierarchical control. One of the primary takeaways from this project is that the intense hierarchies and slave-like (and sometimes true slavery) working conditions that the Spanish used to control the indigenous people they conquered. However, the exact methods of control were something that was foreign to me. Over the course of this project I learned rather quickly the patterns that the Spanish used in implementing their healthcare. The Spanish made use of healthcare as a tool of governance. The healthcare systems that the Spanish used were intentionally produced to enforce Spanish culture, ideas, and hierarchy, further stripping indigenous people of their identity. The Spanish were also deliberate in the selection of healthcare as a medium for this governance; with the spread of smallpox (and other endemic

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<sup>30</sup> Ibid.

diseases), hospitalization and healthcare became a desired commodity that could only be paid with adherence to Spanish control. Because of the nigh constant onslaught of disease, and both lacking treatments and exclusively governmental hospice care, religiosity was one of the only solaces that was afforded to the sick indigenous populations. That religiosity presented itself in multiple different ways. The religious group, Taki Onqoy being a one of the prime examples of non-European religiosity becoming somewhat widespread among dissenters to Spanish rule. The existence of Taki Onqoy represents the rebels spirit remaining within the Andeans, as well as the role that divinity played within understandings of disease. Both European and Andean belief systems tried to account for the invisible force of disease as an existential retribution for a lack of belief. However, as mentioned in chapter 2, Taki Onqoy might have been allowed to prosper simply on the basis of allowing the Spanish more justification to increase government involvement. Regardless, Taki Onqoy and Catholicism (the latter in particular) were widespread responses to epidemic disease.

Andean history post 1520 is completely dominated by discussion of disease. Looking at a timeline of how when epidemics did break out, what immediately stands out is just how constant the onslaught of disease was. From the moment that smallpox was introduced into the Andes, almost all of the sequential events were impacted. From the death of Wayna Capac and Ninan Cuyochi due to smallpox, to the eventual military downfall of the Inkas, disease played a major role in the defeat of the Inkas and the colonial control of the Spanish. Smallpox in itself is the worst calamity for Indigenous people because of aforementioned genetic predisposition. In particular, the Inkas were vulnerable to a disease like Smallpox due to the way they built large cities with dense populations. Spanish medicine wasn't constructed to deal with such large numbers of disease as well. Spanish public health was constructed with sovereignty and

adherence to societal norms in mind. The shift towards using medicine as a way to control the populace of the Andes was not a difficult one. And while there was a not insignificant change in Spanish medicine in response to the medicine of the Andes, the more significant change is the introduction of these modes of social control. The perfect example of this is through the different treatments of different demographics. Cusco, being the most important city for Inkan history was given very little support in terms of healthcare. There were hospitals built, however, the quality of care was considerably worse in comparison to the care that was in Spanish majority cities, and cities of great economic importance. The inclusion of many different hospitals and hospice care locations in Lima is evidence of this. The Spanish were more interested in taking care of their own instead of the people who were most affected by disease. However, this didn't always work with Spanish colonial ethos. The Spanish, who were primarily concerned with the material wealth extraction from their colonies, became much more interested in preserving the lives of Indigenous people when they needed a workforce. In Potosi, one of the largest silver mines in the Americas, the Spanish produced more hospitals, and other hospice cares in response to disease. Regardless of whether we in the modern day would see increased religiosity as proper healthcare or not, that increase shows how much more the Spanish cared. Finally, once the Spanish crown understood just how bad the burden of disease in Latin America was, they chose to send an expedition across all of their colonies to distribute the new medical technology of the smallpox vaccine. This journey that spanned over a whole decade was the first global public health mission. This mission entered into the Andes, with a humanitarian goal of distribution considerably past when smallpox first made its appearance. The reception was positive among indigenous people who were encountered.

My research question at the beginning of this project is: How did smallpox affect healthcare and healthcare systems within Cusco Lima and Potosi, from 1531 leading up to the 1803 smallpox vaccination campaign? And the answer I arrived at after looking through 275 years of history is that healthcare was changed by the Andes in multiple ways. A minor way was the actual medical culture and practices. Humoralism was different in the Andes than in Spain. However, the bigger change that I noticed was the implementation of healthcare and medical culture as governance. The Spanish used medicine, biopower and hospitalization as tools for colonial control when they were met with difficult task of controlling a massive swath of land. The 1803 vaccination mission is a good capstone both as a first example of a modern public health initiative, but also as the outcome of the century long Spanish governmental control over the Andes. The ultimate outcome, apart from the dispersal of vaccines and methods of producing more was the creation of further government processes to register vaccine use. While not an inherently bad outcome, the combination of public health, governance, and religious control was a defining and important aspect of what was done by the expedition. Overall, Spanish control was a tight knit web that encompassed every aspect of life in the colonies and a massive part of building that control was the use of medicine, medical culture, and hospitalization.

Andinokunaman, Liberato Kanki.

Kausachun Inka.

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