

**Final Report for the Era of Epidemics Digital Humanities Grant, Submitted to
the National Endowment for the Humanities on August 17, 2009.**

1. What did you do during the tenure of your award, and how does this compare with what you had planned to do when you applied?

The project I am directing is called “Brazil in the Era of Epidemics” (EE). I received funding for this project through a Digital Fellowship Grant (FX-50020-08) to carry out research during a 12 month term (May 2008 to May 2009). The intent of EE was to explore an unusual six decade period (1850 -1910) when Brazil was struck by a series of unusual and devastating epidemic diseases. Historians know very little about when and where contagious diseases struck and why they appeared. Furthermore, scholars have acknowledged the enormous impact of these diseases, but their consequences are rarely explained.

This lacuna calls for more research. Fortunately, there are some new tools available. Epidemics are always limited by their physical environment and move in particular ways across different topologies. For this reason, this project has a strong geospatial component that is suitable for GIS and other digital tools such as database analysis that cross references multiple sources in a systematic way. Besides advancing our knowledge of this period of Brazilian history, I hope to demonstrate the utility of these new methodological technologies for historical research.

In my original proposal I included the following as goals during the year of NEH funded research:

- 1) To collect data of diverse types related to the impact and spread of epidemic and endemic diseases during the nineteenth and early twentieth century within Brazil;
- 2) To collect data from Imperial, provincial and municipal government reports, cemetery and hospital registers, and church obit records from a range of locations in the United States and Brazil;
- 3) To visit several Brazilian states in different regions that have libraries and public and private archives that hold relevant material;
- 4) To process data collected in the form of database entry, citation lists, and digitized books and articles relevant to the project’s scope and goals;
- 5) To evaluate and change short-term goals when new sources appeared in libraries and archives;
- 6) To revise and publish findings for an article in a peer-reviewed article of research that I could amplify using data collected during the NEH supported year.

I am pleased to report that all six of these goals were met during the year, and several new objectives were realized as new resources and opportunities opened. Returning to this list of goals:

- 1) We were able to collect statistical data on mortality and morbidity from a number of sources. This included:

- a. Death and health statistics from every Brazilian province that is available through the often detailed “Provincial Reports.” These were reports written by provincial presidents and submitted to the Imperial government annually. The presidents often summarized and attached reports written by their public health officers. Not only do these give long accounts of the many epidemics that struck different parts of Brazil during this time, they also tell of government efforts to combat the scourges, death tallies by regions and townships, and the impact of endemic diseases. I teamed with a computer program and database expert to devise a way that the hundreds of thousands of pages of these “Provincial Reports” and a related set of “Ministerial Reports” could be made “searchable” by characters, word or phrase. We have created a functional program and entered discussions with the Center for Research Libraries, who hold these collections, to partner. Our goal is to make this search tool available to the public without charge.
- b. Cemetery and hospital data from Santos, São Paulo. Few scholars have used these sources, yet they can contribute much to the social and economic history of Brazil. I collected some of these data in 2005 in Santos, São Paulo and I was able to return to this city to broaden my database by adding several thousand more individuals who were treated in the town’s single hospital or who were buried in the town’s single cemetery.
- c. Cemetery and hospital data from Porto Alegre, Rio Grande do Sul. I had the fortunate opportunity to use a small part of the grant money to buy an extraordinary database that has been compiled by the Misericórdia Hospital of Porto Alegre. The dataset, created by archivists in the Misericórdia Hospital, includes more than 50 thousand names of slaves and free people who died between 1850 and 1896. It took hospital archive staff more than a year with a team of students to compile this dataset. There is no other database like it in Brazil, and very few of this size for any part of the world.
- d. Cemetery and hospital data from Recife, Salvador, and Rio de Janeiro. All of these datasets are more modest in size and temporal scope, but they will prove invaluable in tracking the evolution of epidemics in Brazil and general health trends during this period.
- e. Church records. For decades, the Church of Latter Day Saint has sent missionaries into Brazilian church archives to reproduce millions of pages of primary source material. These can be loaned to researchers to centers in most US cities. This is one source that I have yet to explore, but I can do so with little cost.
- f. The Cooper Collection of Ohio State University. Professor Donald Cooper collected source material on the history of health and disease for Brazil for more than 20 years. He had intended to write a manuscript along the lines of the EE project but was prevented because of personal and family reasons. Instead, he donated all of his material to the Ohio State University Libraries. I visited the collection, digitized a good portion of it, and met Dr. Cooper, who is exceedingly helpful. I estimate that this collection will save us about a year of collection primary and secondary source material.

- 2) As detailed above, we were able to collect much data from government sources and also from a handful of hospitals and cemeteries scattered throughout Brazil. The “Mormon Collection” and Cooper Collection are two additional and invaluable sources in the United States.
- 3) I traveled for several months in Brazil in two separate trips. Visits were made to Rio Grande do Sul, in the far south, Rio de Janeiro and São Paulo in the southeast, and Recife in the northeast.
- 4) We have created several large databases to hold these data. Without a doubt, I now hold the largest repository of health data for Brazil. As this dataset grows, I continue to be willing to share it with other scholars. Eventually, I plan to make it available for download on an Internet database collection site.
- 5) Rudimentary analysis is always necessary during the data collection stage. Additionally, I had the goal of reaching out to other interested scholars. I decided that I could do both things through an interactive website in which I posted preliminary findings. I created the “Era of Epidemics Online Journal” in August 2008 and it has grown to include more than 100 pages of material and 50 online postings. I have made contact with a number of Brazilian and American scholars through the website and it has become a resource for some historians not only for research but also as a teaching tool. The website is:
www.eraofepidemics.squarespace.com
- 6) I published the initial findings of the EE research. This included research that I had conducted in 2005 and 2006 on disease and health in Santos, Brazil. The paper was published in *The Americas*, a peer-reviewed journal that has been the best forum for discoveries in the history of health and medicine in Latin America. The article is available here: http://muse.jhu.edu/journals/the_americas/summary/v066/66.1.read.html

2. Has either your understanding of your subject or your approach to it changed significantly as a result of the work conducted under your award? If so, in what way?

In order to answer the second question, I will need to give a brief overview of the history of this period to demonstrate what scholars have previously known and what we have discovered through this year of NEH funded research.

During the first half of the nineteenth century, there is little evidence of major epidemic activity beyond smallpox, measles, and scarlet fever in Brazil. Indeed, much of South America appears to have been spared from the cholera and influenza pandemics that killed millions in Asia, Europe and North America. Brazilians and foreign visitors noticed the country’s apparent immunity to these diseases. In fact, Brazil’s reputation of salubrity was widespread and frequently repeated in government publications and travelers’ reports. In late 1849, however, a strange new disease appeared in Bahia before spreading to Rio de Janeiro and other large Brazilian seaboard cities. The malady was recognizable as yellow fever to foreign doctors who had seen similar symptoms elsewhere. The Emperor hesitated for more than a year to officially declare yellow fever’s presence, probably because he and his ministers (correctly) feared the damage this would do to its international reputation.

Optimists predicted that Brazil would return to its previous good health after simple sanitary reforms, but they were soon proven terribly wrong. Once yellow fever gained a foothold on the shores of Brazil, it persisted and eventually worsened. In fact, epidemics of yellow fever struck during the wet seasons repeatedly in the 1850s. After a hiatus in the 1860s, it reappeared in the early 1870s and was a serious problem for residents of Brazilian cities and foreign sailors arriving in Brazilian harbors until the early 1900s. Not until Walter Reed confirmed Carlos Finley's hypothesis that the *aedis aegypti* mosquito was the disease vector could notable Brazilians like Oswaldo Cruz, Adolpho Lutz, and Guilherme Alvaro initiate eradication campaigns. These campaigns successfully diminished the breeding populations of the mosquito, lessening the grip of this dangerous disease in urban areas.

Yellow fever was not the only destructive disease that made an appearance. Cholera and bubonic plague were also new and deadly arrivals during these six decades. Cholera struck first in 1855, creating one of Brazil's most virulent epidemics in recorded history, matched only perhaps by the smallpox epidemics that desolated indigenous populations in the sixteenth century. It reappeared in a weaker form in the 1860s throughout Brazil and then in the Southeast in the 1890s. Added to this problem, the first officially diagnosed cases of bubonic plague were recorded in Santos, in 1899. During this year and the next, new cases of plague were diagnosed in Rio de Janeiro, Recife and other Brazilian cities creating a great tide of fear, spurring new energy and investment into sanitary reform programs. Bubonic plague killed many, but never became epidemic.

Epidemic diseases worsened during the second half of the nineteenth century. This paralleled and, perhaps, connected with heightened growth and integration into global networks of trade and communication. Much of the new growth was driven by coffee: world demand increased enormously at the same time that Brazil monopolized the market. This brought enormous profits, new development, especially in the Southeast, and attracted thousands of European immigrants. When deadly epidemics of different types began appearing regularly, they captured the attention of foreign newspapers nearly as much as news that coffee bean trees were spreading across large parts of the Brazilian Southeast. The provincial and Imperial (or Republican—after 1889) governments were determined to attract immigrants and were often desperate to find solutions that would reduce the negative publicity. Millions of dollars were spent on public sanitary reforms, but since etiology was largely unknown for the deadliest diseases (invisible “miasmas” were usually the suspect), these reforms often caused as much social upheaval and intrusive government regulations as it did lead to better public health.

Government efforts finally began to have an effect in the early 1900s for three important reasons. First, many deadly gastrointestinal disorders, including cholera, were eliminated by clean water programs. Little is still known about where and when the first drops of chlorine were added to water supplies in Brazil, but when the chemical was used, far fewer people were sickened and killed by contaminated water. Second, for the first time, government smallpox operations were funded and organized sufficiently to be effective. Many historians have recounted the famous 1904 “vaccine revolts” in Rio de Janeiro, but comparatively little has been written about the thousands of lives saved by increased levels of immunity. The smallpox vaccine came (and still comes) with many

risks, but these were outweighed by its benefits. Finally, anti-mosquito campaigns largely eliminated yellow fever, at least in most Brazilian urban areas.

Soon after these public health reforms, GDP growth and immigration accelerated. It is still an open question as to whether this is a correlation or a coincidence. It seems logical that once the era of epidemics ended, reputation improved, attracting more immigrants, capital, and trade.

Although the history that I recounted above can be confirmed with strong evidence, there is no major textbook or published overview of Brazilian history that this. Historians often acknowledge the worsening period of disease, but most authors either do not dedicate much attention or mistakenly give misinformation about the period of epidemics. I give examples here: <http://eraofepidemics.squarespace.com/journal/2009/3/20/the-history-of-brazilian-health-and-disease-in-textbooks.html>. As a consequence of the dearth of research on the medical history of Brazil, we do not know what diseases killed and sickened most Brazilians before 1950. Furthermore, hospitals have been assumed to have been dangerous places, but new research is revealing that most patients recovered and many probably improved because of their medical treatment. Finally, contrary to common belief, it appears that enslaved and free people faced the same epidemiological environment and did not receive dissimilar health care during the nineteenth century.

My understanding of the subject has deepened with this research. I am now more optimistic that the publications that will come from this research will influence scholars to not only think about health and disease in Brazilian history, but will also lead us to understand broad patterns of social and economic history of Brazil differently. For example, we still know little about how much epidemics dampened economic development, although there is some evidence that certain diseases had negative effects. (I have posted some preliminary findings on here: <http://eraofepidemics.squarespace.com/journal/2009/3/18/epidemics-and-economic-performance.html>). In another example, Brazilian society was (and is) highly stratified, and how different groups, separated by class, race or sex, were exposed to different disease environments is not a question many have asked, let alone attempted to answer. The book that will come from this project has the aim of creating within the subfield of medical history a narrative that ties national development with the changing disease environment. It is my hope that this narrative will be one that future scholars can build upon and revise, moving us closer to understanding the Brazilian past. Finally, I believe by approaching this subject using geospatial tools and statistics, I may provide an example for new uses of methodologies in the history of medicine and disease.

3. How has your award-supported work furthered your scholarly career? What are your publication plans?

The NEH award made a very large impact on my scholarly career. When I applied and was awarded the grant, I was an adjunct instructor at University of California, Berkeley. Before this, I had taught for a year as an adjunct Assistant Professor at the University of Puget Sound. In both these jobs, my contract was not renewable. I learned of the NEH award in the midst of a large nation-wide job search effort for a tenure-track job. The NEH award made me a much more hireable candidate. In fact, last year I accepted a position at Soka University of America for a tenure track job in International Studies. The university does a wonderful job giving both its students and

faculty a place to do hard work and grow. As I currently sit in my office overlooking the beautiful Aliso Woods Canyon, surrounded by a stimulating community of scholars and students, I must give credit to NEH for giving evidence that I can successfully write grants and conduct pertinent research.

As for publication goals, I have already mentioned that I was able to use some of the new EE research to revise and improve an article that was published this June in the peer-reviewed journal *The Americas*. In addition, I am currently working with Kaori Kodama, a historian at Instituto de Oswaldo Cruz in Rio de Janeiro to compare the impact of the cholera epidemics in Rio de Janeiro and Porto Alegre. I do not believe we will have trouble publishing this article because no scholar has extensively used death records to explore this terrible epidemic for any part of Brazil, despite this source's intrinsic richness.

The main goal of all this work is to produce a book length narrative recounting this "era of epidemics" and disease impact on society and economy in Brazil. I am nearly finished with the collection stage and will move this year into the analysis stage. With new teaching and service duties, I expect that I will need two years to analyze, outline and begin the writing stage. I hope to have a manuscript in the hands of a publisher by 2012. In the meantime, I expect that my previous research on slavery, with its related investigation of slave health and medical treatment, will be published sometime next year.

4. Does your award-supported work have implications for your teaching? Please provide titles if your research will contribute to new or revised courses.

The main implication for this research is that I have integrated more medical history and attention to environmental and health subjects into my courses. For example, I will be teaching an upper level class called Violence and Oppression in Latin America. For two weeks, we will be considering non-human agents of "violence and oppression" including sickness and death from microbes. I would like to teach a history of disease in Latin America or this subject with broader geographic coverage, but this will not come until I am able to fulfill initial needs for my concentration and university.

I must also point out that the internet journal that I created for EE will grow in value as a teaching tool as I add content. In one component of the journal, I present a variety of primary sources and their uses. Teachers who wish to demonstrate the "craft of history" can use these exemplary primary sources to examine the methodological steps that historians normally take in their creation of historical narratives.

5. To what extent will you be able to continue work on the project supported by the award? What assistance, if any, will you receive for this from your employer or from other sources

The NEH grant has allowed me to nearly finish the data collection stage of the project. This is also the most expensive step and one that requires a great deal of travel. Many of the sources I use are in Brazil. I intend to return to Brazil at least one more time next year to find new sources

that I will realize I need. Fortunately, my employer, Soka University of America gives its faculty a \$3000 research budget to cover the expenses of such research trips. I will be able to build on the contacts I formed this past year to make the most of this trip.

Eventually, once I have further established the importance of research into this era of epidemics, I intend to apply to several other grants through the NSF or NIH. Both institutions, I believe, would be willing to give money to a project that promises to advance our knowledge of how smallpox, cholera, yellow fever, and bubonic plague work within different populations. In this case, I believe that history is a laboratory for diseases that are often isolated, yet still dangerous, today.

6. For Faculty Research Award recipients: are there other ways in which your award-supported work will further the educational mission of your institution?

Soka University of America is one only a few higher education institutions where nearly all its students have memorized its mission statement “to foster a steady stream of global citizens committed to living a contributive life.” This mission fits very well with the EE project goals. I believe I will be able to excite and inspire many of my students on the ways that historical research can reveal as much about the present as it does about the past. Furthermore, when we better know the ways that epidemic environments and people have interacted, we might be able to take more effective steps to reduce the impact of future strains of influenza, plague, or other diseases. If historical trends continue virulent epidemics will continue to strike humanity but at a speed and power that is less than our ability to thwart them.