Final Project Summary
Bodies in Transit: Mapping 19th Century Ledgers
for the New York City Municipal Archives

ENGL-GA 2971: Practicum in Digital Humanities
Mapping Archives: Cultural Geographies of New York City
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Final Narrative

The group's first step in putting together a useful dataset for "Bodies in Transit" was to visit the Municipal Library in person in order to establish a rapport with the client and discuss project deliverables. Professor Augst, Professor Wolf, and Rubi met with Sylvia Kollar, a director at the NYC Municipal Archives, who presented them with the "Bodies in Transit" ledgers. The ledgers were large and required careful handling; inside, the records were written in the cursive handwriting of various scribes. Ms. Kollar explained that the records were commissioned by the New York Department of Health in the 1800s, ostensibly to track the prevalence and potentially inhibit the spread of disease.

The Municipal Archive's "Bodies in Transit" collection consists of three ledgers' worth of data that details the passage of deceased bodies through New York City from 1859-1894. Each record includes categories for the body's date of passage; name, age, nativity, residence, occupation, place of death, cause of death, and date of death for the deceased; place of interment of the body and the name of the person given charge of the body; and a space for miscellaneous remarks, which usually detailed the name of a doctor who came into contact with the deceased, although it is unknown if this would have been prior to the individual's death or as part of a posthumous examination.

Prior to analyzing the data and creating visualizations, it was necessary to create a schema that formatted the data in a computationally-manipulable way. The team replicated the ledger structure in the original documents, adding columns for regularized location and cause of death names to maximize accuracy and reduce redundancy when producing statistical breakdowns. Regularization of transcribed data occurred mostly by hand, with some help from Google Refine's ability to collapse information using a phonetic algorithm. Finally, pinging the

Google API produced georeferenced columns for each piece of location-related data for which there was a regularized value (i.e., a corresponding contemporary location). The data was then manipulated using original Python scripts in order to conform to CartoDB's format requirements for creating linestrings between coordinate points.

As a result, we were able to chronicle each corpse's individual path and ensure that each individual's series of locations was grounded at the project's locus: the Department of Health vital records offices in New York City. Because all categories were not available for each record, it was necessary to group together records with comparable plottable data and represent them on separate corresponding maps. Those records for which places of death and interment were available and plottable (a total of 811) were grouped for one map demonstrating the passage of the corpses into and out of New York City; another map of 469 records, a subset of the first, marks the same path but also includes data for nativity, taking advantage of the more extensive data available in some of the records. Because the resulting maps, produced in CartoDB, lacked directionality markers and made the data difficult to interpret due to sheer volume, each of the final maps highlights the paths of three individual records, annotated with the order of travel and posthumous transportation.

One of the most important questions of the project's final stages involved how best to utilize and represent the data. Due to the constrictions of time and technology, as well as the ledger's most pertinent scholarly applications, we chose to focus on cause of death and cemetery data in addition to mapped courses. Interested in changes in public health over time, we chose to consider the cause of death breakdown for the records transcribed both holistically and in temporal segments. The result, made possible by a piece of JavaScript, is a series of donut graphs demonstrating percentages for the most prevalent causes of death in each year. Because other

factors, such as occupation, may have contributed to causes of death — especially when considering soldiers in the Civil War era — a separate chart displays the cause of death breakdown based on records identified as belonging to soldiers. For a comprehensive look at cause of death, there is a chart that displays overall data. Finally, working through the records revealed the importance of a handful cemeteries, making for a potentially rich data set on local interment history. We settled on exploring interment rates over time, expressed in a bar graph on the project's site. We chose also to consider the relationships between these "popular" cemeteries (Bayview, Cypress Hills, Green-Wood, Evergreens, Trinity, and Lutheran All Faiths) to the places of death of their residents, visualized using Gephi and made interactive using scripts produced by Elijah Meeks.

Ultimately, even the most comprehensive display of data in our index represents only a portion of the data in the original "Bodies in Transit" database. The astute reader may have noticed that records included in our visualizations are dated from 1859-1864, the following thirty years in the ledgers woefully unaccounted for. The biggest challenge the group encountered while building a dataset was an abundance of records with which to work and a comparatively miniscule amount of time to dedicate to the endeavor. Scanning microfilm into PDF files and then transcribing each ledger page into a Google Sheets spreadsheet was a lengthy and tedious process, and to complete even one ledger proved unrealistic. After much deliberation, and with input from Professor Wolf and Ms. Kollar, the group made the executive decision to transcribe pages consecutively rather than through random sampling or sampling the first several pages of each alphabetical section in the ledger. As a result, the team produced transcriptions for 28 two-page spreads (scans 1-26 and 127-128, as Rob accidentally transcribed non-consecutive pages) from the ledger's first volume. This is the information included in our downloadable data set, in

our final data schema, and in the visualizations available on the "Bodies in Transit" project website.

Scholarly Significance

The Bodies in Transit ledgers, obtained from the New York Department of Health and housed at New York City Municipal Archives, document the passing of deceased persons' bodies into or through New York City in the mid- to late- nineteenth century and reveal various trends from the time. Our group has worked tirelessly to digitize and transcribe the portion of the ledgers spanning from 1859 to 1864. The documentation provides a plethora of information about individual people, including age at time of death, nativity, residence, cause of death, date of passage through New York City, place of burial, and names of those in charge of the bodies post-mortem. It depicts a historical record that is more often presented through personal and first hand accounts.

The data from the ledgers illustrates trends in place of burial for native and non-native New Yorkers who traveled through the city post-mortem. The well-known Green-Wood Cemetery in Brooklyn, New York, was the most-documented place for people or burial within New York City according to the records at the time. Other plots that are lesser-known but prominent in the record include Bayview Cemetery, Cemetery of the Evergreens, Cypress Hills Cemetery, Lutheran All Faiths Cemetery, and Trinity Church Cemetery. With this conclusive record, we go beyond a well-known fact that Green-Wood Cemetery was a popular plot in this time frame and can focus on other places New Yorkers were laid to rest. Questions to ask include: "How do the histories of these cemeteries explain the trends in numbers of individuals interred over time?" and "What changes in New York City policies allowed for their creation or expansion, especially when the building of new cemeteries in Manhattan was forbidden in

1843?" Lutheran All Faiths, for example, was created directly as a result of this latter policy, and became one of the most popular burial places for the individuals described in the "Bodies in Transit" ledgers.

Public health concerns and occupational hazards are also vital in a record where there is information on disease and cause of death. From these records, we acquire both a documentation of what people were dying from and how these diseases were classified. While modern technology enables us to better establish causes of illness, the names used in the ledgers allow us to ask questions about changes in epidemiological knowledge since the 19th century and transitions in naming conventions. Ten percent of the record consists of people whose cause of death was considered "consumption," a name for the slow failing of the body. These individuals could very well have died of cancer or autoimmune diseases with which people were still unfamiliar. The prevalence of diseases like typhoid fever, which makes up about sixteen percent of the records, suggests a society less capable of dealing with or aware of bacterial infection and the spread of disease via water supplies and between people. The result is an entry point into questions of public health history and changing public perceptions of infectious disease.

Occupational hazards like serving in the Civil War are prevalent in this data set, but soldiers are listed as dying most from typhoid fever: 33 percent compared to the 8 percent of deaths caused by gunshot wound and 12 percent of deaths caused by other wounds. These statistics confirm a widely-established historical narrative that cause of death during the Civil War was more related to conditions soldiers were in than the wounds received. The ledgers enable us to view this concept on an individual scale and put names to history rather than being confined to broader narratives. They also depict how the need for transportation of dead soldiers to burial sites fueled business for railway companies like the Adams Express Company, which is

mentioned frequently throughout the ledgers, as are names of doctors and coroners who had charge of bodies. The records finally provide a brief glimpse into immigration trends, demonstrating that people often died in America and never made it back to their homelands after emigrating.

The digitization and mapping of the "Bodies in Transit" ledgers is vital to making a historical document steeped in a local historical narrative that has been virtually unavailable more accessible to the public. This record is a record of the people, but has been stowed away at the New York Municipal Archives in microfilm format. The process that we have started could produce a record available to the people of New York City and elsewhere (especially useful for genealogical research) rather than just scholars or those with the time to visit the ledgers in person. From these records we can learn more about and contribute fuller narratives to the historical record of New York City.

Annotated Bibliography

Cliff, Andrew and Peter Haggett. "Time, travel, and infection." *British Medical Bulletin* 69.1 (June 2004): 87-99.

In their article, Cliff and Haggett examined the role of technology and travel in the spread of infectious diseases overtime. They argued that growing proximity to one another and the ease of travel over the last two hundred years made the spread of disease easier and more prominent. This article is a significant source because of its analysis of disease and its case study of cholera in the New York City area. It provides a greater understanding of the mobility of disease in the 19th century and its impact on urban areas like New York.

Condran, Gretchen. "Changing patterns of epidemic disease in New York City." In *Hives of Sickness: Public Health and Epidemics in New York City*. Eds. Rosner, D. New Brunswick, NJ: Rutgers University Press, 1995.

Analyzing the patterns of epidemic and endemic diseases throughout the course of New York City history, Condran's article provides an in-depth examination of health and mortality. By offering an argument about the patterns of disease, the article offers a detailed and concise history of disease in New York City helpful in providing context and understanding of basic epidemiology in the built environment, and in the city to which the "Bodies in Transit" ledgers correspond.

Condran, Gretchen and Eileen Crimmins-Gardner. "Public Health Measures and Mortality in U.S. Cities in the late 19th century." *Human Ecology* 6.1 (Mar 1978): 27-54.

Focused in the last decades of the 19th century, Condran and Crimmins-Gardner's article examines cause of death and mortality relates in American cities, specifically in relation to public health and means of social reform. Their analysis sheds significant light on the effects of

diseases on mortality rates and the various waves of epidemics and diseases in United States urban spaces at the end of the 19th century.

Duffy, John. "Nineteenth Century Public Health in New York and New Orleans: A
Comparison." *Louisiana History: The Journal of the Louisiana Historical Association*
15.4 (Autumn 1974): 325-337.

In his article, Duffy takes a comparative approach, analyzing the cities of New York and New Orleans and their public health measures during the 19th century. Duffy's analysis reveals that the two cities, while similar in aspects of geography and population, took varying public health measures when dealing with the same epidemic disease, which he largely attributes to differences in culture. This article is significant as a comparison that enables us to understand parallel public health measures outside the New York City, contributing to a larger picture of health in the United States during the 19th century.

Finseth, Ian. "The Civil War Dead: Realism and the Problem of Anonymity." *American
Literary History* 25.3 (Fall 2013): 535-562.

Finseth article provides context for a those ledger entries that record the bodies of men who were killed during the Civil War. The article examines how the volume of young men who died far from home transformed the way communities and families dealt with their death, specifically with the massive number of casualties who were never claimed. The significance of this article not only rests in the effect the Civil War had on mortality and customs, but on the increasing mobility of human corpses.

*Fourth Annual Report of the Board of Health of the Health Department, City of New
York.* New York: D. Appleton and Company, 1874.

In this report, presented to New York City Mayor William F. Havemeyer, the Board of Health outlined a number of issues and concerns that faced the city over the previous year, paying specific attention to sanitation reform, food and water, mortality, and disease, and in particular cholera. This report provides primary evidence about disease and public health in New York City, enabling us to situate the cause of death data which we have analyzed within historical context.

Green-Wood Cemetery Reports and Publications, 1843-1995. Brooklyn Historical Society Archives.

Having collaborated with Green-Wood on a strategic partnership to highlight the history of both institutions, the Brooklyn Historical Society is the source of the cemetery's reports and publications from nearly its entire history. The papers would provide excellent historical context for the cemetery data available in the New York Municipal Archives' ledgers, providing a window into the cemetery's operations.

Hacker, J. David. "Trends and Determinants of Adult Mortality in Early New England:
    Reconciling Old and New Evidence from the Long Eighteenth Century." *Social Science History* 21.4 (1997): 481-519.

Hacker's article, while an important analysis of mortality, does not hold the same significance as the other documents in this bibliography primarily because it discusses topics in health and disease a century before the ledgers began. However, the article is still important to understanding the history of disease spread and naming in the Northeastern United States.

Harris, Elisha. *Report on plans for securing complete and authentic records of deaths
    and the causes of death in the United States.* Cambridge: Riverside Press, 1878.

Presented to the American Public Health Association, the report demonstrated the need by the

medical and health communities for standardized and complete death certificates, including

cause of death. This report indicates a growing concern in the 19th century about the spread of

disease but also progress and awareness in public health and epidemiology. This report is

significant in contextualizing why the ledgers were recorded and the categories the Department

of Health chose to report.

Humphreys, Margaret. "No Safe Place: Disease and Panic in American History."
    American Literary History 14, no 4 (Winter 2002): 845-857.

In her article, Humphreys analyzes the spread of disease and the cultural aftermath of widespread

mortality. The evidence she presents addresses the emotional and social implications of death

caused by disease. Her approach offers information about the various epidemic and endemic

diseases contained in the ledgers (most commonly, typhoid), offering a contextual understanding

impossible without acknowledging the social implications of death by disease.

Laderman, Gary. "Locating the Dead: A Cultural History of Death in Antebellum, Anglo-
    Protestant Communities of the Northeast." *Journal of the American Academy of Religion*
    63.1 (Spring 1995): 27-52.

While Laderman's article addresses a very specific demographic, the author's analysis presents

additional information about the cultural and social implications of mortality and disease. The

author demonstrates that death was no longer seen as shrouded in religion, but was beginning to

change in the memory and practices of families and communities. His approach comments on the

cultural and social perceptions of death, providing historical context and greater understanding

about disease and mortality outside the realm of public health and reform.

Lederberg, Joshua. "Infectious History." *Science* 288.5464 (April 2000): 287-293.

Lederberg's article provided a general overview of infectious diseases throughout history and their impact on society. While not focused New York City, the article's analysis offers a comprehensive history of health and the spread of disease, dating back to the bubonic plague and moving forward in time toward swine flu and the Nipah virus. The article also includes a useful timeline of the history of infectious disease, enabling us to mark where certain outbreaks appeared and might coincide with the ledgers.

Lee, Chulhee. "Prior Exposure to Disease and Later Health and Mortality: Evidence from
   Civil War Medical Records." *Health and Labor Force Participation Over the Life Cycle: Evidence from the Past.* National Bureau of Economic Research. Chicago: University of Chicago Press, 2003.

In this article, Lee uses evidence from Civil War medical records to examine the spread of disease and other health effects on war veterans and surrounding communities. It also considers such themes as the impact of socioeconomic differences on mortality and morbidity, focusing on the relationship between economic grown and epidemiological conditions. This analysis provides excellent contextual information both about the causes of death central to Civil War data and about the ways in which socioeconomic shifts produced changing perceptions of those causes.

Pike, Martha. "In Memory Of: Artifacts Relating to Mourning in Nineteenth Century
   America." *Journal of American Culture* 3.4 (December 1980): 642-659.

While this article does not deal directly with health or disease in 19th century, it comments on the cultural and social aspect of death, providing context to the customs that would have been exhibited by the families of individuals represented in the ledgers. In the article, Pike specifically discusses the material cultural surrounding death and mourning in the 19th century, but the paper

as a whole addresses burial and mourning customs practiced by various social classes and their

evolving understanding of mortality.

Scott, Sean A. "'Earth Has No Sorrow that Heaven Cannot Cure': Northern Civilian
Perspectives on Death and Eternity during the Civil War." Journal of Social History 41,
no 4 (July 2008): 843-866.

This article provides a different view of health and mortality in 19th-century America. Scott

analyzes the changing perceptions of death and mortality that developed in the mid-19th century

during the massive bloodshed that engulfed the country during the Civil War. His analysis takes

a cultural approach to death and changing perceptions of mortality, analyzing such data as the

letters and diaries of civilians dealing with the realities of war, exposing the breakdown of

theology as a coping mechanism.

*Second Annual Report of the Board of Health of the Health Department, City of New
York.* New York: David H. Gildersleeve, 1872.

In this report presented to the mayor of New York City, A. Oakley Hall, the Board of Health of

the Health Department recounts aspects of health in the city between 1871 and 1872, outlining

topics that include sanitation, reform, mortality, and disease. This report provides another

significant primary account of health over the course of one year, providing contemporary

evidence about disease and the ledgers themselves.

Stuart, Schuyler Brandon. *Collection of Pamphlets on Evergreen Cemetery, Brooklyn, New
York, N.Y.* New York Historical Society Archives.

Although we did not thoroughly consider the history of local cemeteries, these papers, held by

the New York Historical Society, offer an inroad into the history and public perceptions of the

Cemetery of the Evergreens, one of the major six cemeteries recurring in the "Bodies in Transit" ledgers.

Susser, Mervyn and Ezra Susser. "Choosing a future for epidemiology: I. Eras and
    paradigms." *American Journal of Public Health* 86.5 (1996): 668-673.

Susser and Susser provide an analysis of the history of epidemiology and the practices that accompanied each era. They break history into three conceptual sections: the era of sanity statistics, the era of infectious disease analysis, and the era of chronic disease epidemiology. The article is useful in understanding the intellectual development of epidemiology as a field, and in examining how health and knowledge about disease were perceived in the 19th century by those in public health reform.

Wilford, John Noble. "Plague: How Cholera Helped Shape New York." *The New York
    Times* (April 15, 2008): F4.

Wilford analyzes the role cholera had in shaping public health and sanitation reform in New York City. The article offers a descriptive overview of the cholera epidemic of the mid-19th century and contextualizes public perception of disease and sanitation during the time. Wilford not only comments on the effects of the epidemic on reform but the cultural understanding of health and sanitation.

Woods, Margaret E. and Peter S. K. Chi. "Sanitary Reform in New York City in 1866 and
    the Professionalization of Public Health: A Case Study of Social Reform." *Sociological
    Focus* 19.4 (October 1986): 333-347.

In this case study, Woods and Chi examine the impact of the Metropolitan Health Board, established in 1866. The authors argue against the previously-established understanding that the Metropolitan Health Board was the result of sanitary reform in the public's interest, asserting

instead that that the city was attempting to establish medical authority and the foundation of a public health initiative. This article holds important significance in understanding the growing concern and common understanding of public health measures during the mid-19th century.

Proposal for Future Researchers

The first step for anyone expanding upon the Bodies in Transit database rests in its transcription. Because of the time constraint of a semester, the team was only able to complete a small fraction of the digitization and transcription process. Before any significant work can be done using the database, the transcription should be continued and completed. Currently, the majority of the data is still housed solely on microfilm, so a future team would be encouraged to pick up the conversion process where we have left off, at the beginning of the second volume on the first reel. This data subsequently needs to be transcribed before more holistic visualizations or mapping can move forward, although sampling the ledgers can certainly be employed to gain a greater understanding of the database and to update the models we have created. To some extent, the entire collection — all three ledgers — needs to be transcribed if the historical, cultural, and local impact of the dataset is to be fully realized.

As the data currently stands, it is easy for another scholar to come along and continue the transcription where we have left it (noting that images 127 and 128 were transcribed in lieu of 27 and 28 due to team error). Using the same spreadsheet, the ledgers can be completed in a standard format, ensuring the data set is transcribed in a uniform and consistent manner. We would also recommend continuing to use the "note" function in Google Sheets to raise questions to be resolved among the group, and to comment on cells that are illegible in Google Sheets or Excel so that they will be easy to identify. Once the transcription is completed, researchers can further analyze and contextualize the data.

Once the transcription is completed, future teams can expand upon the graph and map models we have employed and visualize new relationships between data points (such as age, presumed gender, or residence, where available). A completed transcription would allow for

more holistic visualizations regarding the deaths of Civil War soldiers, and more expansive cause of death charts. A future team might also choose to highlight more carefully-chosen paths on corpse transit maps and begin piecing together individual narratives. Of particular interest would be a graph of cause of death data against a timeline of major epidemics in the 19th century, and attention to the data about those having charge of the corpses, which we have largely ignored due to time constraints.

The potential for this dataset is extensive and can greatly contribute to the local and global history of epidemiology, public health, and 19th-century cultural perceptions of death. With the completed transcription and further visualizations, researchers can compare the data with the existing knowledge of public health and disease during the time. The database has the potential to expand upon what is already known about public health, epidemiology, and conceptions of mortality. As demonstrated in our bibliography, while there is no work directly related to the "Bodies in Transit" ledgers, plenty of analyses take up other available data sets to discuss trends in public health history; this database could greatly expand the scholarly community's understanding of disease and death in the 19th century, as least as it related to the history of New York City. Through a comparison of the dataset with preexisting theories and scholarship, the ledgers can be contextualized and the information they contain can contribute to the historical narrative. The ledgers contain a wealth of information that has yet to be explored. We suggest that researchers looking to continue with the project familiarize themselves with some of the existing scholarship and other related digital projects (like Columbia University's Living City Archive) and expand the model that we began, adapting it as necessary to fit the data.