"Us" and "them": the representation of minority groups in the Statistical Atlases of the United States from 1874 to 1925

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“Us” and “them”:
The representation of minority groups
in the *Statistical Atlases of the United States from 1874 to 1925*

by

*Li Li*

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

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Ames, Iowa

2014

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DEDICATION

To Professor Charles Kostelnick, who inspired me and guided me through this project.

To my parents, who have always been there when I need them.

To my husband, Jun, who has been beside me all the way.

To my son, Harry, who was born with the project and has grown with it along the way.
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ABSTRACT

The dissertation offers a critical reading of the visual representation of minority groups in the Statistical Atlases of the United States from 1874 to 1925. Beginning in 1874, six consecutive Statistical Atlases, collections of displays of census data, were published to characterize Americans and their lands. Using a variety of data displays, these atlases envisioned the emerging nation with a diversity of races and ethnicities at the high time of immigration and westward expansion. The visual constructs of the nation’s population groups in the Atlases projected a particular reading of these groups in the nation at a particular historical moment. As a powerful public act of visual rhetoric, the Atlases worked to shape Americans’ racial and ethnic identity and contributed to the forging of a national identity as a whole.

Although the graphic features and statistical innovations of the Statistical Atlases have long been acknowledged, the rhetorical effects and ideological implications of the Atlases have not received sufficient critical attention. This dissertation extends the existing scholarship on the Atlases by conducting a rhetorical analysis on the representation of minority groups in the Atlases including foreign immigrants in general, Chinese immigrants in specific, and Native Americans. My intention of the study is to shed light on the fabrications of politics and ideologies that play out behind the visual language of data displays.

In the dissertation, I argue that the Statistical Atlases performed a surveillance and disciplinary function on the population in the nation that can be termed “the other” and helped creating a public discourse that supported the state’s
policy of immigration and westward expansion in the late 19th and early 20th centuries. The construction of the minority groups not only reflected and but also reshaped the historical context.
CHAPTER ONE
INTRODUCTION

At the high time of immigration, the nineteenth century witnessed a remarkable rate of population growth, rapid settlement patterns, and major migrations in the United States. With a racially and ethnically diverse population, the nation experienced the most demographically dynamic moment in its history. At this great moment, newly developed statistical methods served as perfect tools to examine and document the emerging nation. As part of a growing belief in the power of facts and data, the census began to play a crucial role in American political and social life since first collected in 1790 (Mezey 2). Innovations in statistics, especially in data displays, gave the numbers collected in the censuses greater interpretive power. Beginning in 1874, six consecutive Statistical Atlases were published to translate census data into visual form. “Distributed to public libraries, learned societies, colleges and academies” (Walker, 1874 Atlas, “Preface”), the Atlases allowed the general public to see the demographic characteristics of the nation, which were previously buried in tables and accessed mostly by trained statisticians and politicians.

As the first series of American national atlases and the first comprehensive thematic atlases produced by any nation, the Statistical Atlases were known for their innovative use of graphic elements to translate complex statistical data into easily comprehensible visual form. The Atlases, especially the 1874 atlas, were heralded at the time as "the most valuable contribution to the comparative statistics of the United States that has ever appeared" (Anonymous, qtd. in Dahmann) and "one of
the most instructive publications ever issued by our [federal] government” (Brewer, qtd. in Dahmann). Through innovative graphic forms and a liberal use of colors the Atlases, especially the first four, were both visually and conceptually startling. As Kostelnick points out, “the statistical atlases played a key role in defining the visual language of data displays in the United States” (“Melting-pot” 239).

These Atlases were taken as scientific documents, self-evident forms of communication that were independent of interpretation (Schulten 173). However, while giving shape to demographic and geographical patterns obscured by tables of data, the Atlases also constructed a new visual perspective and a revised image of the nation. The visual constructs of the nation’s population groups in the Atlases projected a specific reading of the groups at a specific historical moment. Working in particular sets of cultural assumptions, values, and needs, the Atlases shaped the perception of the nation rather than just responded to it. For over a century, the Atlases have been housed in libraries throughout the United States, consulted as reference books, and taught and studied in classrooms. As such, these Atlases worked as a powerful public act of visual rhetoric. They shaped Americans’ racial and ethnic identity and contributed to the forging of a national identity as a whole.

Although the graphic features and statistical innovations of the Statistical Atlases have long been acknowledged (see Funkhouser, Friendly, Kostelnick), the rhetorical effects and ideological implications of the Atlases have not received sufficient critical attention. In this dissertation, I hope to build upon and extend the existing scholarship on the Atlases by conducting a focused analysis of the representation of minority population groups in the Atlases, especially foreign
immigrants with a focus on Chinese immigrants, and Native Americans. My intention is to shed light on the roles of politics and ideologies that played out behind the visual language of data displays in the Atlases.

My research questions are:

1) How were minority groups, such as foreign immigrants especially Chinese immigrants, and Native Americans, represented in the Atlases? What stories were told in the data visualization of those groups? How were the stories told through the visual language of data displays?

2) Whose interests were promoted and whose were marginalized in the data visualization? What was the dominant ideology that was embedded in the data design? How does the ideology facilitate or limit our ways of seeing?

3) How did the representation reflect and construct the history, politics and culture of the era when the Atlases were designed? How do the Atlases reveal the rhetorical nature of data displays in a larger social context?

**Background for the Creation of the Statistical Atlases**

As pointed out by Edward Tufte, “the use of abstract, non-representational pictures to show numbers is a surprisingly recent invention” (The Visual Display 3). The genre of the Statistical Atlas was created in the 19th century, a time that can be termed as the “Golden Age” of statistical graphics, with many new graphical forms of data visualization invented and extended to new areas of inquiry. With the growing cultural and political authority of professional science and its language of quantification, a variety of advancements in the 19th century contributed to the
explosive growth in statistical graphics such as the rise of statistical thinking, technologies for drawing and reproducing images, and advances in data collection, empirical observation, and recording (Friendly 1).

Before the mid-19 century almost all statistical information was presented in tabular form. However, the earliest graphic form of quantitative information can be dated back to a map on a clay tablet depicting Northern Mesopotamia at 3800 B.C. (Beniger and Robyn 1). At about 3200 B.C., Egyptian surveyors started to use the principle of coordinates similar to Cartesian system to lay out lands. In the 10th century, graphic representations resembling today’s line graphs were developed to describe the movements of heavenly bodies over space and time (1). In the 14th century, the Bishop of Liseus in France, Nicole Oresme invented a prototype bar graph to depict the logical relation between tabulating values (Friendly 4).

![Figure 1. 1 Priestley’s Chart of Biography](image)

The real foundation for the development of graphical methods was laid out in the 17th century with significant interest in data and the birth of theories of
analytical geometry and coordinate systems by Descartes and Fermat, probability theory by Pascal and Fermat, and theories of errors of measurement and estimation by Galileo (5). The rise of demographic statistics and political arithmetic – the study to understand the condition of the state such as population, agriculture or wealth – greatly fostered the growth of data graphics. The 18th century witnessed many new inventions in data visualization. Joseph Priestley used a convenient timeline chart (Figure 1.1) to show the life spans of 2000 famous people from 1200 B.C. to 1750 A.D. William Playfair, regarded by Funkhouser as the father of the graphic method in statistics, invented many of the graphical forms widely used today – including bar chart, pie chart and circle graph (Friendly 8). Playfair’s contribution to statistical graphics was remarkable. According to Funkhouser, Playfair not only created many innovative graphic methods but also “presented his graphs in so finished a form that later writers have not materially improved upon his method” (287).

With the explosive growth in statistical graphics and thematic mapping, the “Golden Age” of data visualization came in 19th century. By the mid-19th century, statistics became an established language of science and the basis for the pursuits in science, policy, and knowledge (Dalbello etc. 86). Developing with the statistical methods were remarkable graphic forms of representing quantitative information. Most of the modern forms of data display were invented such as histograms, time-series plots, scatterplots, and so on (Friendly 9). Thematic mapping also grew from single maps to comprehensive atlases depicting various topics on economics, population, health and morality etc (9). Adolphe Quetelet, a Belgian statistician regarded as the founder of modern social science, fostered the systematic
development of statistical graphics by using graphical analysis in his statistical publications on social and moral sciences. Andre-Michel Guerry, a French lawyer, made similar contributions using maps and charts to represent social and moral statistics.

The "rose diagrams" (Figure 1.2) created by Florence Nightingale were a remarkable example of data graphics used for social, political, and medical purposes. Nightingale used the rose diagrams – polar area charts – to show that more soldiers died from disease and bad sanitary conditions than on the battlefield. The diagrams greatly supported the campaign for better sanitary conditions to treat soldiers in the Crimean War. At about the same time, Dr. John Snow's celebrated dot map (see Figure 1.3) on the London cholera outbreak in 1854 brought similar remarkable impact. Through the plotting of the residences of each deceased person, he located the source of the decease – a contaminated water pump on Broad Street.

Among the most prominent figures in data graphic history was Charles Joseph
Minard, called by Funkhouser as the French Playfair. Minard contributed a variety of prodigious graphical inventions in the first half of the 19th century. His best known work was a map portraying Napoleon’s disastrous Russian campaign (see Figure 1.4) – a representation, which for some would “defy the pen of the historian by its brutal eloquence” (Funkhouser 306).

Minard’s work was claimed as “the immediate appreciation by the eyes of the proportions of the numerical results” (306).

To recognize the growing importance of statistical methods, official state statistical offices were established across Europe (Friendly 13-14). The accumulation of large data created the need for the invention of visual representations to manage the data sets. Statistical atlases, or collections of data displays that organize and disseminate official government statistics on population, trade and commerce, and social, moral and political issues were produced and published widely in Europe, including France, Germany, Hungary, Finland, Sweden, Holland, Italy, and elsewhere in Europe from about 1825 to 1870 (Friendly 16-17).
One of the most prominent state-sponsored statistical atlases was the *Albums de Statistique Graphique*, published annually by the French ministry of public works from 1879-1897. Funkhouser claimed that “the Albums present the finest specimens of French graphic work in the century and considerable pride was taken in them by French people, statisticians and laymen alike” (336). The national atlases played an important role “as a symbol of nationhood, national unity, or national pride” (Monmonier 1).

Accompanying the European development of data visualization, the first national statistical atlas of the U.S. was created under the supervision of Francis A. Walker, the superintendent of the Census Office in 1870 and 1880. Mark Monmonier summarized several factors that contributed to the production of the 1874 atlas: 1) American scientists’ interests in geographic patterns and statistical data 2) an expanded multi-functional decennial census 3) the government’s concern about the
national growth and population diversity, and 4) Francis A. Walker’s “curiosity and administrative ability” (4).

Entitled "Statistical Atlas of the United States Based on the Results of the Ninth Census 1870," the 1874 atlas was the federal government’s first attempt to use maps and charts to characterize Americans and their land (“Learn about the National Atlases”). Funded by the congress, the first atlas was intended for distribution to public libraries, learned societies, colleges and academies, with a view to promote that higher kind of political education which has hitherto been so greatly neglected in this country, but toward which the attention of the general public, as well as of instructors and students, is now being turned, with the most lively interest. (Walker, 1874 Atlas, “Preface”)

Following the 1874 Atlas, five consecutive statistical atlases were published in the late 19th and early 20th centuries. The 1874 Statistical Atlas was directed by Francis Walker. Henry Gannett, the Chief Geographer of both the Census Bureau and the U.S. Geological Survey, oversaw the compilation of the next three census atlases (1883 co-compiled with Fletcher W. Hewes, 1898 and 1903). The last two atlases were supervised by Charles S. Sloane, the Geographer of the census (1914 and 1925).

The six Atlases can be viewed as “an exquisite sampler of all the graphical methods known at the time, with significant adaptations to the problem at hand” (Friendly 18). Compiled by Francis Walker, the 1874 Atlas visualizes the composition and distribution of population as well as vital statistics of the population including mortality rates and health issues. Besides population graphs, the 1874 Atlas also presents economic and natural resources maps and graphs. The
1883 *Atlas* is the only one published by a private agency, Charles Scribner’s Sons. The 1883 *Atlas* covers more elements of the census data including manufacturing and economics. The 1898 *Atlas* contains the largest variety of graphic forms with special emphasis on the foreign population in the nation. The 1914 *Atlas* contains an even more detailed mapping of population constituents, including a description of linguistic abilities of the population elements. It also covers a greater amount of data on agriculture, manufacture, and economics. The structure and content of the 1925 *Atlas* is consistent with the 1914 *Atlas* but shrank in size and quantity of graphs. The first three atlases based on the 1870, 1880, and 1890 censuses were published in oversized folio format and printed in color. The next three atlases for the 1900, 1910, and 1920 censuses were made smaller in size, with the last two printed in black and white with some colored oversized pages.

Unfortunately, the publication of *Statistical Atlases* was stopped in the U.S. in the 1930s and did not resume until the 1970s. The resumed publication of the atlases half a century later, however, included routinized productions largely devoid of graphic imagination. The French statistical Albums and some other statistical atlases in Europe were also discontinued in late 1800s or early 1900s, ending what has been termed as the “Golden Age” of data graphics.

The first half of the 19th century was regarded by Friendly as the modern dark ages of data graphics, with few new inventions. However, data graphics became mainstream during this period. They started to be included in textbooks and the design of data graphics began being taught in colleges. Beginning in the last quarter of the 20th century, data visualization has blossomed into a new “Golden
Age” with the development of statistical software and interactive and dynamic data visualization methods and techniques. Software tools to visualize data have also become available on every desktop computer. These developments allow the visualization of complex multidimensional data and create new modes of data visualization that involves the participation of users. With the blossoming of data visualization today, it is significant to study and understand the rhetorical nature of data visualization as well as the history that shaped today’s conventions. One way to do this is to examine one of the most prominent examples of data visualization in the history – the Statistical Atlases of the United States.

**Research Methodology**

My research will focus on the six Atlases created in the late 19th and early 20th centuries, specifically the Statistical Atlases of the Ninth, Tenth, Eleventh, Twelfth, Thirteenth and Fourteenth Censuses issued in 1874, 1883, 1898, 1903, 1914, and 1925 respectively. All of the six Atlases are easily accessible by the public. Five of the Atlases, except the one for the Tenth Census, are housed in the Parks Library in the Iowa State University. A scanned copy of the Atlases of the Ninth, Tenth and Eleventh Census can be found on the website of the Library of Congress.

Each of the Atlases features a large number of maps, graphs, charts and tables as well as essays by scientists, economists, and federal officials. For example, the 1874 Atlas from the Ninth Census contains over 1200 graphs, cartograms, and statistical diagrams. The Atlases also cover a wide range of physical and human topics such as geology, agriculture, weather and population by ethnic origin, wealth, illiteracy, school attendance, religious affiliation, and so on (Friendly 17). As my
interest lies in the representation of population groups, I examine the data displays that portray the nation’s population in the *Atlases*. Since the section for population is the largest one in all six *Atlases*, the corpus of data I collected for my study contains over 1000 graphic illustrations.

In terms of methodology, I employ cultural studies analysis as a theoretical tool to examine my data, more specifically the method of articulation proposed by Stuart Hall. He defines articulation as “a linkage between the articulated discourse and the social forces with which it can, under certain historical conditions, but need not necessarily, be connected” (“On Postmodernism and Articulation” 53). Jennifer D. Slack states how articulation could be studied:

> Interrogating any articulated structure or practice requires an examination of the ways in which the ‘relatively autonomous’ social, institutional, technical, economic and political forces are organized into unities that are effective and are relatively empowering or disempowering. (126)

As an analytical tool, articulation examines forged linkage between discourse and social forces and tries to reveal what the linkage tries to cover and ignore. The method of articulation enables me to ask questions like: who is doing the articulation in the *Atlases* and who is being articulated? What is being articulated? How do the visual elements work together to encode a preferred meaning that supports an ideology? What is the ideology that underpinned the *Atlases’* designs? What is privileged or marginalized? How are we limited/facilitated in our ways of seeing because of how the data are visualized?
In my research, I explore how, through selecting, arranging and designing the information in the *Statistical Atlases*, the “other’s” interest is downplayed while the dominant group’s interest is promoted. I start with how the “other” is identified and made visible in the *Statistical Atlases* for surveillance and discipline purposes. For that purpose, I examine how the population groups are categorized in the *Atlases* and how the categories have evolved through time. Then I focus my analysis on the foreign population. I look at how “foreign” and “native” population are defined, what groups of immigrants are present or absent in the representation, and how the presence or absence reflects the social-cultural context at the time.

Next, I analyze two specific population groups represented in the *Atlases*: Chinese and Native Americans. The construction of the two groups of population represents two different ideologies of “othering.” The “othering” of Chinese immigrants originated with the Eurocentric or Orientalist dichotomies of West/East, Christian/heathen, master/slave. Although European immigrants carried their “Irish-ness” or “German-ness,” to the U.S., the “Chinese-ness” of early Chinese immigrants was especially alien for Americans. While Chinese immigrants were aliens coming from the outside, Native Americans were aliens from within the nation. The marginalization of indigenous American Indians resulted from the struggle for land and resources in the West but with a combination of concerns related to racial identity, cultural assimilation, and civilization.

Regarding the minority population groups, I examine the use of graphical forms, shapes, colors, and arrangements in the data displays and trace the design changes from late 19th century through the early 20th century in the six *Atlases*. My
analysis will be situated in the historical context of the late 19th century and early 20th century immigration and westward expansion as well as the political, social, and cultural context of the time.

**Chapter Outlines**

Chapter 1 introduces the purpose of the dissertation and offers a brief account of the historical background of the *Statistical Atlases*.

Chapter 2 reviews the literature of data visualization according to three different models of thought. In this chapter, I also explain the theoretical lens I adopt in my analysis of the *Atlases*, and I outline the methodology of my study.

Chapter 3 focuses on the analysis of the representation of foreign population and the divide created between “foreign” and “native.” I situate the analysis in the historical anti-immigration movement in the late 19th and early 20th centuries.

Chapter 4 continues the analysis of foreign population with a focus on Chinese immigrants. In this chapter, I examine how the data displays reflect the conception of immigration and Chinese immigrants in 19th-century America.

Chapter 5 examines how Native Americans are represented, especially in the thematic maps of “Progress of the Nation” and how the representation reveals the ideology of westward expansion.

Chapter 6 draws conclusions from the previous chapters and discusses the rhetorical consequences of the *Atlases*. I reflect on the rhetorical nature of data displays and the primary research questions I posed at the beginning of the dissertation.
CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

In order to best theorize my study, I draw from both visual rhetoric and critical theory. In this chapter, I review the most relevant scholarship on visual rhetoric in technical communication that focuses on data design. I will then frame my analysis of the Statistical Atlases using critical theory.

Models of Thought of Data Visualization

In reviewing the literature of data visualization, I would like to highlight three models of thought that approach data displays – the perceptual/cognitive model, the social semiotic model and the rhetorical/cultural model. The proponents of perceptual/cognitive model believe that effective data visualization should be rational, truthful, objective and perceptually efficient; the social semiotic model examines how visual perceptual composition is used to encode and decode meaning; the rhetorical/cultural model claims that data visualization is inherently rhetorical and the effectiveness of design is contingent to the rhetorical and social-cultural context. The rhetorical/cultural model also approaches visual representations as units of analysis for cultural critique that emphasizes how particular ideologies and cultural values are inscribed in the representations.

Perceptual/cognitive model

The perceptual/cognitive approach stems from data visualization’s historical association with “scientific” disciplines, which tend to be regarded as being rational and value-neutral. The approach is established in scientific and technical methodologies rooted in Cartesian-based analytical thought (Brasseur, Visualizing
4). At the heart of Cartesian thinking is the universality of reason and the belief that rationality can move us from confusion to an eternal truth. Since most data displays are generated through geometrical and mathematical methods based on Cartesian principles, our society is encouraged to view data displays as trustworthy conduits of information that truthfully represent objects and their interrelations. As Cochran, Albrecht, and Green suggested, good data displays “can transmit information accurately” while bad displays “filter, distort and hide” information (25). In general, the perceptual/cognitive model holds that data visualization objectively represents reality and all readers cognitively perceive images the same way.

The perceptual/cognitive model can be traced to what is called the “perceptual cognitive-based school of thought” (Brasseur, Visualizing 4). Perceptual principles are developed from observation and research on the relationship between how our brain functions and the perception of visual images. Perceptual factors in an image refer to those qualities that aid interpreters in apprehending communicative features. Gestalt principles, which study our perception of individual visual parts and the whole, are such kinds of principles. Based on unchanging structures of the brain, perceptual principles enable a universal ground for artistic judgment (Lupton 149). Human perception is identified as a basic interface through which information is filtered. Brasseur points out that “this kind of theory privileges the idea of a universal viewer, whose needs can best be met by designing technical visuals that respond well to the innate perceptual abilities of readers” (Visualizing 1).
Rudolph Arnheim’s conception of visual perception has influenced the field of visual communication. While many other visual theorists, such as John Berger, Roland Barthes or W.J.T. Mitchell, approach the visual from aesthetic realms, Arnheim’s visual theory bridges the humanities and the sciences. In *Visual Thinking*, Arnheim critiques the separation of “perception” and “reasoning” and argues that perception is a cognitive activity. He points out that “cognitive operations called thinking is not the privilege of mental processes above and beyond perception but the essential ingredients of perception itself” (13). He states “Visual perception... is not a passive recording of stimulus material but an active concern of the mind. The sense of sight operates selectively.” (37) Arnheim argues that perception is intelligent. This “intelligence” derives not from “cognition for cognition’s sake” but as an evolutionary tool for survival (19). Though being a rudimentary biological process, sensory perception is also a complex method of problem solving to keep us alive (Richards 11). In other words, our thinking, reasoning, or problem-solving are all based on our biological sensory perception.

Arnheim critiques Plato’s division between perception and thinking:
"Socrates speaks characteristically of blindness, of ’losing the eye of his mind’ when he warns against the danger of trusting the senses. It is a case of renouncing one kind of perception in order to save another” (7). According to the visual thinking theory, the study of perceptual abilities (e.g., gestalt psychology) is the starting point to effectively create or read graphics. Arnherm makes visuals significant by “making them scientifically explicable” (Charlton 153).
Influenced by Arnheim, many scholars advocate studying and teaching perceptual principles in order to help students create effective technical visuals. An early example of this is Jennifer Titen’s 1980 article, “Application of Rudolf Arnheim’s Visual Thinking to the Teaching of Technical Writing,” in *The Technical Writing Teacher*. In the article, Titen shows how to use Rudolf Arnheim’s theory of visual thinking in technical writing classes. Brasseur, in her article “Visual Literacy in the Computer Age: A Complex Perceptual Landscape,” also states that scientific and engineering professionals always emphasize visual thinking in their pedagogy and technical writing professionals should do the same.

Jacques Bertin also approaches visuals from a scientific rationalist point of view. Following the French academic tradition of Cartesian analysis and logic, Bertin generates a rigorous theory and precise methods in his book *The Semiology of Graphics* that could be followed to visualize information clearly, accurately, and efficiently. Based on perceptual theory, Bertin dissects visuals into small variables such as “size,” “value,” “texture,” “color,” “direction” “orientation” and “shape” and regards them as the properties of visual language. He claims that this visual language is universal and “covers the universe of diagrams, networks and topographies” (“The Matrix of Graphics,” 5).

Developed from Bertin’s theory, Colin Ware’s recent book, *Information Visualization: Perception for Design*, identifies the categories of visual features that are pre-attentively processed. Pre-attentive elements refer to visual features that can be identified through unconscious brain processes. They determine which visual objects are prioritized and brought to our attention. His study considers the retinal
properties proposed by Bertin as visual patterns defined by “position,” “shape” and “color.” For visualization to be effective, they must build on these pre-attentive features in order to maximize the noticeable differences. Based on the study of pre-attentive processing, Ware offers lists of suggestions for creating effective information visualization.

Cleveland and McGill also set out to “provide a scientific foundation for the construction area of statistical graphics” (“Graphical Perception: The Visual Decoding” 192). In their approach to data designs through human graphical perception, they first hypothesized an ordering of “elementary perceptual tasks that people perform in extracting quantitative information from graphs” and used it to “predict the relative performance of competing graphs,” and then “ran experiments to check the actual performance” (531). Through their research, they were able to develop a theory that can be applied to any data designs.

Edward Tufte, one of the most prominent figures in contemporary data visualization, also advocates the perceptual model. He points out that data design principles “are universal – like mathematics – and are not tied to unique features of a particular language or culture” (Envisioning 10). For Tufte, visuals are objective representation of “data and facts as given entities existing in the real world, rather than ... authorial fabrications and viewer reconstructions” (Barton and Barton, “Postmodernism” 266). Tufte aligns visual clarity with objectivity by claiming that “superior methods are more likely to produce truthful, credible, and precise findings” (Visual Explanations 27). He believes that any visualized data, no matter how complex it is, can be accessible to users if it is presented in clear, truthful
designs (*Envisioning* 14-33). In his words, “graphical excellence requires telling the truth” (*Visual Display* 53). For Tufte, an ethical visual display should accurately and validly represent the value of the data; otherwise, the display lies. A graph lies “if the representation of numbers, physically measured on the surface of the graphic itself,” is not “directly proportional to the numerical quantities represented” (56). He created a formula to calculate the “Lie Factor” of a visual in order to determine if the size of the data fails to match the visual representation.

To maximize the information in a graph, Tufte holds minimalist criteria for graphics: “graphic excellence is that which gives to the viewer the greatest number of ideas in the shortest time with the least ink in the smallest space” (*Visual Display* 51). He introduces the concept of “small multiples” – the use of a group of similar graphs to present detailed and complex information that a single visual cannot do. Small multiples emphasize the variations in the data rather than changes in the design, thereby promoting the uniformity of data designs. Tufte claims that uniformity can minimize anomalies that arise through graphic distortions of data that mislead audiences (*Visual Display* 47-49). A good graphic without data is of no use, according to Tufte, who refers to the charts with thin data and unnecessary decorations as “chartjunk.” To avoid it, Tufte suggests a simple pragmatic theory of data graphics that entails maximizing the data-ink ratio and erasing redundant ink.

Tufte’s emphasis on aesthetics in data graphics, however, seems to contradict his minimalist criteria for graphics. In his books, he often acclaims the beauty and elegance of well-designed displays (Kostelnick, “Visual Rhetoric,” 283). In fact, he designed his book series to embody beauty with elegantly reproduced, full-color
images. Despite of the claim of objectivity and neutrality of data graphics, Tufte’s books are visually persuasive engendering two rhetorical effects. On one hand, the aesthetic element of data displays attracts readers visually; on the other hand, it “bolsters their credibility because beauty and truth are cognate qualities” (Kostelnick, “Visual Rhetoric” 283). Tufte’s books themselves betray the rhetorical nature of data displays that has been largely ignored by Tufte.

The perceptual/cognitive model focuses on surface appearance and spatial arrangement of visible content and offers us a list of perceptual patterns and features as a starting point to analyze visuals. However, it provides a limited explanation of what occurs when an individual creates and interprets these perceptual patterns. No two individuals perceive or interpret visuals in exactly the same way. Moreover, designers do not create and readers do not interpret visuals in a vacuum because visual communication is essentially a social act. The social semiotic model provides a way to decode the semantic meaning of perceptual patterns of a visual.

**Social semiotic model**

The social semiotic approach to visuals builds upon human perception but focuses on decoding and encoding signs in visuals. Semiotics can be regarded as the contemporary science of meaning. It isolates the basic elements of a sign system and the rules that govern their combinations, which is the basic grammar of a language in linguistics. Semiotics is defined in linguistics as “a domain of investigation that explores the nature and function of signs as well as the systems and processes underlying signification, expression, representation, and communication” (Perron
Visual semiotics tries to break down the basic elements of an image such as color, line, perspective, tone, and other formal features (Kress and van Leeuwen 1-4) in an attempt to account for how these formal features can be combined into meaningful messages.

Semioticians emphasize not only the science of visual grammar but also the rhetoric of visual grammar. They examine how the combination of visual elements (lines, colors etc.) makes meaning. Because all meaning has persuasive force, it takes rhetoric to account for meaning. Roland Barthes is one of the major visual semioticians. In his article “Rhetoric of the Image,” Barthes considers images as composed of signs that can be understood semiotically and ordered semantically. He proposes two functions for the text presented with the visual message: "Anchorage" and “Relay.” The former refers to the verbal messages that guide the perception of the visual and limit the range of possible connotations of the visual. The latter refers to the text that adds meaning to the visual (e.g., text balloons in comic strips).

Barthes points out that verbal messages, visual arrangement, and visual perception are combined to form a persuasive connotation. He critiques the “naturalization” of visuals, which is the process of obscuring the cultural and historical determinants of meaning. As he states, “The denoted image naturalizes the symbolic message, it innocents the semantic artifice of connotation, which is extremely dense.” (51) Here, Barthes means that the denoted image is no more of a natural meaning than connotation, but rather a process of naturalization of connoted meanings. Furthermore, he argues that photographs should not be regarded as objective representations of reality since the selecting, framing, and
editing process to produce the photograph infuses the photograph with rich connotation.

In *Reading Images: The Grammar of Visual Design*, semioticians Gunther Kress and Theo van Leeuwen also develop a grammar of visual images that describes "the way in which depicted people, places, and things combine in visual 'statements' of greater or lesser complexity and extension" (45). While Barthes contends that verbal text and visual images work together to produce meaning, Kress and Leeuwen separate visuals from verbal text and argue that visuals may be "connected with [associated] verbal text, but in no way dependent on it" (17).

Kress and Leeuwen attempt to create a visual grammar that demonstrates both perceptual and cultural considerations. They argue that we make sense of the perceived through our cultural experiences:

Visual structures do not simply reproduce the structures of “reality.” On the contrary, they produce images of reality which are bound up with the interests of the social institutions within which the images are produced, circulated and read. (44)

They call for a social semiotics that problematizes the usual formalist semiotic accounts of meaning. They acknowledge that the “cultural, social and psychological history of the sign-maker, and [...] the specific context in which the sign is produced” (6).

Whereas the perceptual/cognitive model focus on the human perception and the organization of information on its visible surface(s), the semiotic model searches for clues within the composition of a visual that points to the deeper meaning and
connotation of the work. The semiotic model, moreover, serves to connect our biological perception to the real-life cultures and contexts. In general, it contributes to visual analysis in three major ways. First, it provides a tool to isolate formal features of a visual for the purpose of analysis. Second, it points out that the organization of visual elements has semantic significance and can be shaped by an author and interpreted by the audience. Third, it also reveals that the visual serves both social and epistemic functions. Kay Westmoreland notes in the article “A Semiotic Perspective on the Technical and Professional Assignment,” the semiotic approach can be used “as a way of uncovering different layers of meaning in any piece of technical and professional writing” and offers “an opportunity to understand the multiplicity of codes we use each day in even the simplest communication” (133).

However, the semiotic model aligns with the rationalist/perception model in the sense that both models seek to establish an overarching schema that can be applied in all communicative situations. Although Kress and Van Leeuwen point out that the grammar they developed is by no means universal insisting that "Visual language is not transparent and universally understood, but culturally specific" (3), nevertheless, they are looking for a grammar that is “universally” applicable to a certain degree. Although they claim that their grammar works only in the Western visual communication and suggest that non-Western semiotic modes might differ, they fail to acknowledge the many subcultures within “Western culture” as well as historical and social contexts that influence the meaning and practice of visuals.
Rhetorical/cultural model

The rhetorical/cultural model argues that “visual language has always been rhetorically charged” (Kostelnick, “Rhetoric of Text Design” 189). Arnheim, who contends that “our thoughts influence what we see, and vice versa” (15), implies that our perceptions are transformed by our thoughts. If perception is cognition and the data perceived is influenced by the act of perception/visual thinking, how can we trust that the visuals we see as being representative of an objective reality? The rhetorical model advocates a social/cultural approach to data displays against the traditional perception-orientated approach. As social entities, data displays are created in a particular social-cultural context and vested in the interests and ideology of designers, who decide what ideas they wish to project and how to represent them.

The rhetorical/cultural model directly challenges scientific claims of clarity and efficiency that are assumed to be the basis of graphic excellence. The concept of clarity is rooted in the modernist ideology that emphasizes “direct, unmediated communication that was objective, perceptually pure and unburdened by past conventions” (Kostelnick, “The Visual Rhetoric” 283). Modern ideology values “universality over cultural difference, physical immediacy over social mediation” (Lupton and Miller 62). Modernist design theory sees the making of visuals as “an abstract, formal activity,” which “isolates visual perception from linguistic interpretation” and “encourages indifference to cultural meaning” (62). Kostelnick criticizes the modernist concept of clarity because it “engendered a rhetorical stance” that “fosters the rhetoric of science” (“The Visual Rhetoric” 283). He argues
that different readers have different interpretive frameworks that profoundly influence what they find clear and credible in data displays. The social perspective of data displays is emphasized, as they are created in a social context and the interpretation of the displays is “a highly social act” (285). Besides, disciplinary knowledge, organizational experience, popular culture as well as technology all influence the interpretation of data designs (284-285). In the book *Shaping Information*, Kostelnick and Hassett highlight the influence of social conventions on data designs. Tracing the social development of graphic conventions in technical visuals, they assert that “We interpret design with our accumulated knowledge of conventional forms [...] and we draw on these experiences to interpret new forms” (12).

The rhetorical aspect of data displays is also highlighted by Robin Kinross. He argues that the distinction between “design for information” and “design for persuasion” cannot be a clear one (134). By analyzing an example of “pure” information—a railroad timetable, Kinross challenges the neutrality of data design. He finds that the designers of railroad timetables sought to create documents that were not just informative but persuasive through the conscious choice of color and Monotype’s new Gill Sans typeface. The belief that information design is neutral, Kinross explains, can be traced to “the period of heroic modernism” (137). The spread of Modernism in design was fostered by a belief that “an ideology free or ideologically neutral world can be made possible by advances in technology, by an abundance of material goods, by the spread of democracy, the eclipse of rival political systems and by mass education” (139) in the 1950s and 1960s in the
United States and western Europe. He contends that “ideological vacuums do not exist” and “we need to keep awake, applying our critical intelligence outside, as well as inside, the black box: questioning and resisting” (143).

Kinross’s argument is shared by Lee Brasseur, who argues that data displays are often used as persuasive rhetorical devices. She demonstrates the rhetorical perspective of data displays through the analysis of the “Rose diagrams” of Florence Nightingale. The “Rose diagrams” displayed a remarkable understanding of audience and situation and successfully influenced a policy change in the Crimean war. Nightingale’s diagrams extended beyond the technical aspects, such as clarity and efficiency, to the rhetorical aspects of data displays, such as persuasiveness.

The persuasiveness of data graphics was further examined by Miles Kimball through the study of the rhetorical power of London poverty maps. Kimball points out that the desire for simple transparency in information graphics grew from a broad visual culture. An information graphic, such as Booth’s London poverty map, is seen as “convincingly transparent or penetrative to empirical reality” not only because of its scientific validity but also they “built upon a visual rhetoric well known in Victorian culture.” Invoking this broad visual culture, the poverty map assumes the rhetorical power to convince readers that the problem of poverty is a fact and motivate readers to action.

Kimball goes on to critique Tufte’s claim of eliminating “chartjunk” by saying that “The difficulty is figuring out which details are ‘junk’ and which details ‘clarify’ – and from whose cultural viewpoint” (377). Kimball warns us of the desire in ourselves and our audiences for information graphics to give us a reality and
beyond. He highlights that information graphics are “inherently rhetorical,” because they inherently privilege the viewpoints of the powerful; they are used from a position of strength, representing corporations, agencies, classes and institutions who are trying to forward agendas, prove points, and solve problems (379).

The acclaimed “transparency” of data visualization was also critiqued by Sam Dragga and Dan Voss in their article “Cruel Pies: The Inhumanity of Technical Illustration.” They found that the scholarship on the ethics of technical illustrations focuses “almost exclusively on accuracy and honesty versus misrepresentation and deception” (266). The tendency of the field is to view data displays as objective representations of reality. Dragga and Voss point out that the method of transparency and objectivity in data displays about human tragedies deprive people of humanity. They argue that ethically conscious data displays should be re-humanized, for example, by including drawings or photographs of human subjects in data displays showing human fatalities.

Barton and Barton further illuminate how power functions in the construction of data displays, pointing out that neutrality of visuals is a delusion. They argue that visual communication is always carefully designed for specific groups of people to promote specific ideas. They emphasize that ideology operates in mapmaking under the “rules of inclusion” and “rules of exclusion” whereby certain interests are privileged in a map while others are marginalized through the inclusion and exclusion of information. Barton and Barton suggest that map
designers must consider what to include, what to exclude, and how to display it. The “rules of inclusion,” as claimed by Barton and Barton, “determine whether something is mapped, what aspects of a thing are mapped, and what representational strategies and devices are used to map those aspects” (Barton and Barton, “Ideology and the Map” 54). They note, for example, that city promotional maps usually feature what is “positive and desirable.” The “rules of inclusion” also determine the strategies and formal devices used to displace the information. For example, certain elements are privileged through centering and top placement. Finally, “privileging is also effected through ordering, where the first and to a lesser extent the last, elements gain distinction” (56). The rules of inclusion and exclusion marginalize the “other’s” or non-dominant interests. Barton and Barton define the “other” as things or people not commonly portrayed on maps or in visuals in general because of their “unappealing” nature, a qualitative judgment that is determined by the mapmaker (60).

Barton and Barton also contend that the ideological component of design discourse is occulted or “naturalized,” resulting in the prevalent viewpoint that data designs are innately truthful and trustworthy. They argue that designers should create for the postmodern era and embrace complexity and allow for multiple points of view (“Postmodernism” 208-210). They propose that we should “denaturalize” the “natural” by examining the rhetorical context of mapping practice and revealing the hidden data.

Barton and Barton’s critique of the ideology of map echoes a body of scholarship in critical cartography. Rising in 1980s, critical cartography “challenges
academic cartography by linking geographic knowledge with power, and thus is political” (Crampton and Krygier 12). John Brian Harley, one of the most influential critical cartographers, has challenged the seemingly neutrality of scientific mapping in many articles. He asserts that

Cartography has never been an autonomous and hermetic mode of knowledge, nor is it ever above the politics of knowledge. My key metaphor is that we should begin to deconstruct the map by challenging its assumed autonomy as a mode of representation. (“Deconstructing,” 1992, 232)

Here he argues that maps are social constructions. According to Harley, we have to accept that maps are rhetorical devices and dismantle the “arbitrary dualism” of propaganda vs. true maps or scientific vs. artistic maps (“Deconstructing,” 1989, 11). The issue is not that some maps are rhetorical or more rhetorical than others, but that “rhetoric is a universal aspect of all cartographic text” (11). He points out that “all maps strive to frame their message in the context of an audience” and “all maps state an argument about the world” (11). He emphasizes the social and political dimension of maps and claims that “maps work in society as a form of power-knowledge” (12). Drawing from Foucault, Harley contends that maps facilitate surveillance and control. Ordered by the government, maps “extend and reinforce the legal statues, territorial imperatives, and values stemming from the exercise of political power” (12).

Harley sketches out an approach to challenge maps in relation to power and rhetoric. Harley’s critique draws heavily from Michel Foucault’s power and knowledge as well as Jacques Derrida’s rhetoricity of all texts. He reads maps as
socially constructed texts that can be interpreted in multiple ways. Two kinds of power work through cartographic discourse. One is “external power” exercised by map patrons such as the state, monarchs, or ministers; the other is “internal power” exercised by cartographers themselves and “embedded in the text.”

Harley critiques “the silence on maps,” a concept similar to Barton and Barton’s “rules of exclusion.” He claims that maps “exert a social influence through their omissions as much as by the features they depict and emphasize” (“Maps” 136). For example, Harley points out, through the filtering of local information, European colonial maps “gave a one-sided view of ethnic encounters and supported Europe’s God-given right to territorial appropriation” (138). These maps promoted “an Eurocentric, imperialist vision” and “sharpened Europeans’ perception of their cultural superiority in the world system” (138).

Rhetorical/cultural Critique of the Statistical Atlases

Harley as well as Barton and Barton offer not only a way to read maps but also to read other technical graphics and data displays. Scholars taking the rhetorical/cultural approach challenge the assumed neutrality, universality, and objectivity of data displays. They set out to reveal the power and ideology that play out in the discourse of data design. In order to do that, they work to contextualize the visuals in historical circumstances, technical processes, authorial intent, and discursive text. The art of rhetoric determines that we look at the context in order to understand how meaning is made.

The rhetorical/cultural approach is the one I will take for my reading of the data displays in the Statistical Atlases. I will situate the design of the data in the
social and cultural context of the late 19th and early 20th centuries and examine what role power and ideology played in the creation of the Atlases. The “exact knowledge” offered in the Statistical Atlases is embedded in social and historical contexts and demonstrates the values and beliefs of the creators.

In order to look at the situatedness of a visual, like Harley and others, my critique of the Statistical Atlases draws from cultural/critical theory. I argue that the Atlases are socially constructed and politically powered. Constructivism believes that reality is unknowable apart from society or language (Thralls and Blyler 3). The reality, knowledge, and meaning are constructed by individuals and groups through language and ideology. As Thralls and Blyler point out in the essay “The Social Perspective and Professional Communication: Diversity and Directions in Research,”

Communications are invested with meaning only through the interactions of writers and readers in specific social groups. In short, socially mediated meaning – or, to use an alternate term, interpretation – is central to the social perspective (4).

Constructivists like Thomas Kuhn and Bruno La Tour argue that even scientific “facts” are socially constructed. For LaTour, “everything that is generated is intimately connected to others” (Brasseur, Visualizing 32). Instead of seeing the use of data displays as “a purely perceptual act,” LaTour views it as “a socialized contrition of facts and beliefs” (Brasseur, Visualizing 32). Thus, cultural context and experience play a role as important as perceptual abilities in the design and reading of a data display.
My study is further informed by cultural studies of images. As pointed out by O’Donnell, “cultural studies analysis allows us to reflect on the ideals and contradictions of our culture, to examine issues of power in and among groups of people, and to realize how very complex responses to images are” (537). According to Stuart Hall, images are always associated with power because they determine who is and is not represented and what issues are or are not important. Hall questions representation as a reflection of the real. He claims that there’s no one thing that is single and fixed and will be always represented in a certain way. He also points out that images have different meanings depending on the encoder of the message and decoder of the message (O’Donnell 524).

As discussed in Chapter 1, Stuart Hall’s theory of articulation is used to frame my methodology of the analysis of the Atlases. Hall defines that an articulation is a linkage between social forces, ideologies and discourses, “which is not necessary, determined, absolute and essential for all time” (“On Postmodernism and Articulation” 53). Lawrence Grossberg further explains

Articulation is the production of identity on top of differences, of unities out of fragments, of structures across practices. Articulation links this practice to that effect, this text to that meaning, this meaning to that reality, this experience to those politics. And these links are themselves articulated into larger structures, etc. (54).

The significance of the theory of articulation lies in its power to enable us to understand “how ideological elements come, under certain conditions, to cohere together within a discourse, and a way of asking how they do or do not become
articulated, at specific conjunctures, to certain political subjects” (Hall, “On Postmodernism and Articulation” 53). Using articulation theory as a methodology, I examine the Atlases as a visual discourse and the contingent linkage between ideology, social powers and the Atlases.

In order to examine the power of visuals in the Atlases, I draw from Michel Foucault and James Scott. My critique of the Atlases, as defined by Foucault, is “the movement by which the subject gives himself the right to question truth on its effects of power and question power on its discourses of truth” (Foucault, History 32). I start my analysis from the examination of the rhetoric of objectivity in the Statistical Atlases. As pointed out by Harley, my study of the Atlases is not to “privilege rhetoric over science, but to dissolve the illusory distinction between the two” (“Deconstructing” 1989, 11).

**The Atlases and the Rhetoric of Objectivity**

The “Golden Age” of data graphics grew out of the modernist faith that scientific and statistical methods can reveal an objective reality. With the founding of the American Statistical Association and the Federal Bureau of Statistics in the 1800s, statistics had been established as a field of science. By the time the first Atlas was produced, statistical data was naturalized as a form of political knowledge. Besides, the early practitioners of data displays were almost exclusively trained as scientists, statisticians and engineers. For example, William Playfair was a political economists and Charles Minard was a civil engineer. The three major compilers of the six Statistical Atlases of the United States also came from a statistical or geographical background. Francis Walker, the compiler of the first two atlases, was the president
of the American Statistics Bureau and a professor of political economy at Yale College and later the President of the Massachusetts Institution of Technology. Both Henry Gannett and Charles Sloane were prominent geographers. Henry Gannett, the president of the National Geographic Society, was regarded as the “Father of American mapmaking.” Produced by scientists and statisticians, data displays presented in the *Statistical Atlases* were believed to provide true knowledge of the rapidly changing nation.

The objectivity of data displays is repeatedly emphasized in the *Statistical Atlases* by the compliers. The cover page of the 1874 *Atlas* (see Figure 2.1) highlights well the objectivity, authority, and credibility of the work. The *Atlas* is objective with a strong scholarly foundation and broad Federal support, as it is created “with contributions from many eminent men of science and several departments of the government.” The *Atlas* is authoritative, as it is “under the authority of the congress.” The *Atlas* is creditable, as it is compiled by “Francis A. Walker, M.A.,” who was the “superintendent of the 9th Census, professor of political economy and history, Sheffield Scientific School of Yale College.” Through these words, the cover page establishes a strong credible ethos for the *Atlas*. The purpose is clear: as the 1874 *Atlas* was the first of its type, the audience needed to be convinced of its credibility.
STATISTICAL ATLAS
OF THE
UNITED STATES
BASED ON THE RESULTS OF THE
NINTH CENSUS 1870
WITH CONTRIBUTIONS FROM MANY EMINENT MEN OF SCIENCE
AND SEVERAL DEPARTMENTS OF THE GOVERNMENT.
COMPILED UNDER AUTHORITY OF CONGRESS
BY
FRANCIS A. WALKER, M.A.
SUPERINTENDENT OF THE 9TH CENSUS,
PROFESSOR OF POLITICAL ECONOMY AND HISTORY,
SHEFFIELD SCIENTIFIC SCHOOL OF YALE COLLEGE.

New York:
JULIUS WHEAT, Printer.
1872.

Figure 2.1. Cover Page of the 1874 Atlas
As the 1874 *Atlas* gradually gained a world-wide reputation along with the trust of the audience, the cover pages of later atlases were much simpler (see Figure 2.2) including minimum information about the compiler and organization.

Figure 2.2 Cover Page of the 1898 Atlas
The objectivity of the *Atlases* is further emphasized by means of the verbal introductions. In the “Preface” to the 1874 *Atlas*, Walker cites the Secretary of the Interior who stated that the *Atlas* presented unmediated “exact knowledge of our country” in order to promote “the higher kind of political education which has hitherto been so greatly neglected in this country.” The empirically gathered data presented in the *Atlas* offers a “true explanation of a vast number of phenomena seeming most strange and even contradictory of recognized causes in the political and moral constitution” (Walker, 1874 *Atlas*, “Preface” 5). However, Walker does not claim that the *Atlases* are free of errors. Instead, he points out that “the compiler can detect many blemishes, and could lightly promise to make it much better, were it to be done over again” (5). His self-criticisms is not so much an attack on the truthfulness of his work but rather a reinforcement of the objectiveness and scientific spirit that the *Atlases* were built upon. Walker also highlights the self-evident meaning of the data displays and states that geographical illustrations, in general, require no verbal description and explanation, beyond what is given on their face. It is not the Compiler’s intention to preach from them, as a text; nor does he assume that attention needs to be directed to their more obvious or their more recondite suggestions.

(4)

Gannett also insists that the illustrations are simple and transparent enough to bring census “results within the comprehension of the least skilled and the least learned” (1898 Atlas, “Preface”). Walker was even awarded a “First Class Medal” by
Figure 2.3 Chart Showing the Principal Constituent Elements of the Population of Each State (Walker, 1874 Atlas, Plate XX)
the International Geographical Congress for making “the results of the 9th Census... clear to the eye even of the ignorant” (qtd. in Munroe). However, the lengthy preface that Walker prepared for his readers to guide “the eye uneducated in this special direction” (1874 Atlas, “Preface”) clearly betrays the self-evidentness of his illustrations. For example, he explains in the preface on how to read a graph (see figure 2.3) (Walker Plate XX) as follows:

Such being the principle upon which these figures are constructed, some of the most important facts relating to the population of each state may be seen at a glance. Observe the width of the Foreign rectangle in some States and of the Colored rectangle in others. Observe how largely the Native White population of Kansas and Arkansas, of Iowa and Texas, and other States Northwest and Southwest, is made up of persons born outside of the States in which they now live [...] Observe how differently the Colored populations of the States are made up in this respect; compare Louisiana, Texas[...] (1874 Atlas, “Preface” 5)

Here, Walker not only educates the readers on how to read an unfamiliar graphic type (a mosaic graph), but also highlights the message conveyed by the graph. He guides readers’ eyes to the information that should be examined -- “Foreign” and “Colored” population. He groups them together and contrasts them with “Native White.” With his specific instructions, readers may be led to see that foreign population congregates in states where colored population does not. He also asks readers to perform certain kind of comparison between states. Although he does not intend to “preach,” his verbal explanation of the graph definitely directs readers’ eyes to particular messages he tries to get across.
Nevertheless, Walker’s rhetoric reinforces the enduring view that data graphics are scientific documents and independent of interpretation. It suggests that visualizing data is simply translating facts into graphic form. The rhetoric that the *Atlases* are faithful representations of facts establishes a close relationship between the data graphics, the original census data, and the social reality they appear to exhibit. In this way, the particular method by which the *Atlases* represent the nation is legitimated.

The claimed relation between the *Atlases* and reality serves to present the *Atlases* as being politically neutral and draws attention away from its rhetorical nature. However, the social and rhetorical nature of data displays has been emphasized by a growing number of scholars (as seen in the previous section). My reading of the *Statistical Atlases* in this essay is informed by and builds upon the critical scholarship of data displays. To “denaturalize” the information presented in the *Statistical Atlases*, I first situate the design of the data in the social and cultural context of the late 19th and early 20th centuries and examine what role power and ideology played in the creation of the *Atlases*.

**The Politics of Statistics and Surveillance**

Despite Walker’s claim, the “exact knowledge” offers in the *Atlases* is embedded in social and historical contexts and constructed for a political purpose. As the visualization of census statistics, the *Atlases* speak the language of statistics. Statistics became established as a language of objective science by the mid-19th century. The definition of statistics (“state-istics”) implies the context of state affairs and emphasizes the role of statistics in decision-making and uncertainty avoidance.
Censuses have always served as highly effective ways of turning knowledge into power (see Anderson etc., Scott, Hannah). In his book *Seeing Like a State*, James Scott argues that in the course of modernizing, government "seemed similarly devoted to rationalizing and standardizing" (3). Scott points out that "simplification" and "legibility" are two key concepts of modern governmentality. In order to rationalize and standardize statecraft, the government uses state simplification techniques such as "maps, censuses, cadastral lists and standard units of measurement" to grasp the complex reality of the nation (77). The desire for "legibility" is not the only drive behind statistical collection and evaluation. "Appropriation, control, and manipulation (in the nonpejorative sense)" (77), Scott emphasizes, are the political motives behind the techniques that enhance the legibility of the society. Scotts states that

The aspiration to such uniformity and order alerts us to the fact often glossed, as it is in imperial rhetoric, as a "civilizing mission." The builders of the modern nation-state do not merely describe, observe, and map; they strive to shape a people and landscape that will fit their techniques of observation. (82)

In short, Scotts argues that “seeing” like a state requires a series of regularization and simplification procedures, such as taking censuses and mapping, be applied to governed objects to make them more visible and legible to leaders and bureaucrats. The translation of “illegible” knowledge of the population into a consolidated, easy-to-administer system of “seeing” is a means to impose order and control. The
Statistical Atlases are exactly such method to pose a governmental “gaze” on the nation for the purpose of managing and controlling the population.

However, Scott also suggests that observation techniques are not intrinsically pernicious; in fact, most often they are well-intentioned to promote human well-being. Scott’s perception of observation techniques is built upon Foucault’s theorization of modern forms of disciplinary power. According to Michel Foucault, the search for truth is not an objective neutral activity, but was related to the “will to power” of the truth-seeker. Therefore, knowledge is a form of power disguised by its neutrality (Poster 17). In Discipline and Punish, Foucault indicates "it [power] cannot be analyzed in its intentions; but on the contrary where it is in direct relationship with its targets, where it moves, where, at its extremities, power goes beyond the Law, where the techniques and tactics of domination can be analyzed" (22).

As a new form of power different from those based on violence or law, this disciplinary power emerged during the 18th and 19th centuries in Europe. Foucault argues that with the birth of modern institutions of medicine, education, and law enforcement, the methods used by these institutions to produce knowledge, such as observation and examination, are simultaneously disciplinary techniques utilized to exercise power and control (Twigg 23). Discipline techniques enact and produce relations of power but at the same time draw our attention away from power relations. Power is not often exercised through violence or physical force but through disciplining of individuals within certain structures of school, political, or healthcare systems. Foucault contends that discipline is a way of regulating the
movement and operations of the body, as well as the space and time in which the body moves. As a result, humans as disciplined subjects are located and managed.

The disciplinary power is rooted in visibility and surveillance, and excised through minute regulation and normalization of “abnormal” individual behavior (Hannah 18). According to Foucault, by the end of the 19th century the techniques of surveillance were deployed in all facets of life in order to discipline and thereby control the body as a site of opposition. For Foucault, the “Panopticon,” a model proposed by the English social reformer Jeremy Bentham, is an ideal model of disciplinary power. In the Panopticon, prison cells are arranged circularly around a central guard tower, where a guard is able to monitor any prisoner in any cell at any time. The prisoner can always see the tower but never knows from where and when he is being observed. As a result, prisoners learn to monitor their own behaviors and perform self-disciplining. Foucault articulates that the major effect of the Panopticon is “to induce in the inmate a state of conscious and permanent visibility that assures the automatic functioning of power” (201). It is through these mechanisms of self-surveillance and self-disciplining that the panoptic model turns an autonomous individual into a disciplined and “rational” object. The act of observing constructs the observer as subject and the observed as object (Twigg 23). The observer assumes the active position while the observed is silenced. Foucault indicates that the observed is “seen, but he does not see; he is the object of information, never a subject in communication” (200).

It is during the 19th century when a disciplinary society was formed, according to Foucault (193), the *Statistical Atlases* were created. Based on census data, the
Statistical Atlases were one kind of cultural apparatuses that aided in the process of creating self-disciplining subjects by performing surveillance. The collection of census data is a method used by the state power to perform observation and examination over the whole nation. The compiler of the Statistical Atlases, the governmental census office, assumed the position as observers who surveyed and documented human behavior. By distributing the data to a large audience through the Statistical Atlases, it was made clear to the observed that they were objects of surveillance surveyed by invisible observers. Presented as neutral objective categories of “knowledge,” the Atlases legitimated and perpetuated a constructed, normalized image of the nation. The data presented in the Atlases not only strived to observe, describe, and map the transformation of the nation but also to shape people’s conception of the nation and their own common identity. Through presenting the data in carefully constructed ways to the targeted audience, the Statistical Atlases functioned as an exercise of state disciplinary power and social control over citizens and non-citizens, especially the undesirable and unproductive “others.”

In the following chapters, I will show how, through including and excluding information in the Statistical Atlases, the “other’s” interest is downplayed while the powerful groups’ interest is promoted.
CHAPTER THREE

THE GAZE ON “THE OTHER”:

THE REPRESENTATION OF FOREIGN POPULATION

IN THE STATISTICAL ATLASES

Visualizing the changes of national population especially, the progress of immigration, is a central theme of the *Statistical Atlases*. The vast numbers of immigrants in the late 1800s and early 1900s altered American society in fundamental and dramatic ways. The major tidal wave of immigration coincided with the development of a strong and prosperous nation. However, the heroic story of immigration was also intertwined with the story of the revival of nativism and the sufferings and struggles of “undesirable” new immigrants. The fear of the nativists was best presented in the 1892 poem “The Unguarded Gates” written by Thomas Bailey Aldrich, a well-known magazine editor of the day:

Wide open and unguarded stand our gates
And through them presses a wild motley throng –
Men from the Volga and the Tartar slopes,
Featurelessly figures from the Hoang-Ho,
Malayan, Scythian, Teuton, Kelt, and Slav,
Flying the Old Worlds’ poverty and scorn;
These bringing with them unknown gods and rites,
Those, tiger passions, here to stretch their claws... (57)

As Aldrich notes, the newcomers, some groups worse than others, were to be feared and guarded against. They were the “others.” How they were examined, classified and represented in the *Atlases* reflected the political sentiment of that time and exemplified the rhetorical power of data displays. In this chapter, I examine how the foreign population, especially Eastern and Southern Europeans are represented in
the *Atlases*. I will first introduce the historical context of immigration in the United States in the late 19th century to early 20th centuries. Next, I will show how foreign population are classified and visualized in the *Atlases*.

**Tidal Waves of Immigrants and Reasons for Immigration**

The biggest tidal wave of immigrants rushed into the United States in the mid 19th century. Before 1820, all statistics about the number of immigrants and their origins were only educated guesses, as the government of the United States did not begin to keep records of arrivals of immigrants until that year (Purcell 22). In the 1820s, about 152,000 immigrants arrived in America. During the 1830s, the number became 600,000. But the number jumped to more than 1.7 million in the 1840s, then to 2.6 million before the Civil War (22). Between 1815 and 1860, 5 million new immigrants came to the United States and the population grew nearly 10 times the number at the time of the American Revolution (22-23). The total number of immigrants from 1820 to 1924 reached about 36 million and the total population of the nation went over 100 million (Daniels, *Coming* 124). Therefore, it is worth devoting some space to the discussion on the factors that encouraged immigration.

The classic explanation of immigration is what E.G. Ravenstein, a British social scientist, called “Laws of Migration” (16). According to Ravenstein, the major factors in migration can be described as “push-pull.” “Push” refers to the factors in the land of origin that force or “push” immigrants to leave home; “pull” refers to the factors in the new land that attract or “pull” immigrants to the new place (17). Both of these factors worked in the decades from 1820 to 1920 to draw millions of immigrants,
most of them from Europe, to the United States. The major “push-pull” forces that attracted European immigrants can be summarized as the following (Purcell 23-29).

First, Europe and the British Isles experienced a population explosion in the late 18th century. As it was believed that excessive population threatened the prosperity of a nation, countries like Great Britain, Germany, Holland and Sweden made a major shift in policies to encourage emigration.

Second, the industrialization, especially scientific farming, of Britain and western Europe forced tens to hundreds of thousands of small farmers to give up their land and leave. The vast land of America became one of the European farmers’ best choices. For those who wanted to live rural lives but could not find land in their home countries, the United States with the entire continent of available land was an irresistible place. Many American states also actively recruited in Europe through advertising, literature or other promotional services. Besides, thousands of “American letters,” glorified accounts of the new life written and sent by previous immigrants, motivated the relatives and friends of these immigrants to seek a new life in the United States.

Third, the comparatively long period of peace in Europe allowed safe migration. As the destructive wars of the French Revolution and the Napoleonic Era came to an end, Europe had remained relatively a peaceful land, despite small-scale Crimean wars, until World War I. There was no large-scale violence that had “pinned people in place” from late 1800s to early 1900s (Purcell 25). It was convenient for people to move from inland Europe to a seaport and to the American land. Moreover, the development in transportation made the trip to America cheaper and simpler.
Anti-immigration Movements

The massive arrival of immigrants were glorified and welcomed by the nation at the beginning, as most Americans believed that it was necessary to fill up the country. For most of the 19th century and before, immigration to the United States was free, open and unrestricted by the government (Daniels, Coming 265). In 1886, the erection of the Statue of Liberty proudly announced the United States as a haven for the world’s restless and oppressed (Purcell 72). However, gradually the nation seemed to be overwhelmed by the incoming immigrants. Older immigrant groups felt threatened or even frightened by the arrival of millions of newcomers. Nativism and prejudice against groups perceived to be the “other” became a new sentiment of the nation. Lower-class laborers were afraid of losing jobs to new comers, while the social elites were worried that the flooding immigrants would threaten the unity of American life. Immigration was no longer a pride of the nation but a problem to be solved and regulated by laws. Only a few years after the dedication of the Statue of Liberty, the “golden door” was slammed shut with the establishment of a series of restrictive laws in the 1920s (Purcell 72).

In general, there were three anti-immigrant phases: anti-Catholic, anti-Asian and finally anti-all immigrants (Daniels, Coming 265). The first, anti-Catholic, lasting from the late 1830s to the mid-1850s, was aimed at Irish and German Catholic immigrants. Large numbers of Irish and German Catholic immigrants, many of whom were desperately poor, arrived at the United States in the 1820s and 1830s. They were regarded as a religious threat to republican principles as well as an economic burden. Public protests of Protestants against Roman Catholics were
conducted in the 1830s and 1840s in big cities. Some of these protests ended up with mob riots resulting in burned-down convents, destroyed houses, and deaths. In the 1850s, a nativist political party was founded and named the “Know-Nothings,” as the members of the party swore to reply that they “knew nothing” when asked about the organization. Know-Nothings fought against Catholic immigrants specifically and all immigrants in general. The party had political victories in many states and had some restrictive laws passed at the state level, such as a law restricting state office holders to the native born in Massachusetts. However, as the Civil War started, the attention of the nation turned away from incoming Catholics, and the anti-Catholic movement paused for the time being.

The second phase, anti-Asian, targeted mostly Chinese immigrants. This phase flourished in the late 1800s around the Chinese Exclusion Act of 1882. One of the most important nativist views came from the fear that newcomers would never assimilate and would change America in unknown ways. With this fear, Chinese immigrants were made scapegoats out of the minority immigrants whose culture was alien and incomprehensible to the nativists. In 1882, the Chinese Exclusion Act was passed to deny naturalization to Chinese in the United States and to refuse the entry of returning Chinese immigrants who temporarily left the country. This Act was extended in 1892 and made “permanent” in 1902. As the representation of Chinese immigrants is a central focus of chapter four, I will elaborate on this phase later in the next chapter.

The third phase, anti-all immigrants, began in the mid-1880s and gained its final success in the Immigration Act of 1924. Although the 1924 Act seemed to impact all
new immigrants indiscriminately, eastern Europeans and Mediterraneans were the most affected. In 1860 about 84% of the foreign born were either British (53.1%) or German (30.8%) (Daniels, *Coming 25*). But the sources of immigration shifted away gradually from western Europe (e.g., Ireland, Germany and Scandinavia) to southern and eastern Europe (e.g., Italy, Greece and Slavs). By 1890, the percentage of British and German immigrants shrank to 63.9%. In 1920, the two groups made up only 25% of the total foreign-born while the eastern European immigrants grew to over twice the population of the Britons.

The “old” immigrants, predominately from northern and western Europe, drew a line between themselves and the “new” immigrants, mostly from southern and eastern Europe. The “old” viewed the “new” as a threat to the current standard of American life. The “new” were thought to be mostly the poor or unskilled laborers. They were accused of being economic parasites, who avoided farming and flocked into industrial cities crowding ethnic communities characterized as “the degraded kind of slum” (Purcell 45). However, most of these accusations were not actually true. According to historical records, roughly the same percentage of the “new” immigrants was skilled laborers compared with the “old” ones (45). The “new” immigrants did not intend to avoid farming; but as the land had become more expensive and the nation was urbanizing, looking for a living in the cities had become their best choice.

In 1906, Congress created the Dillingham Commission to examine the consequences of immigration in order to formulate immigration legislation. The Commission published its results in 1911 concluding that restriction of immigration
was necessary. The Dillingham report contributed directly to the passage of the Dillingham bill in 1921. Before the Dillingham bill, the federal government added more and more requirements on immigration in the late 1800s and early 1900s. The federal reception center was set up at Ellis Island in 1892 to evaluate and regulate incoming immigrants. Certain categories of immigrants were excluded automatically such as idiots, lunatics, prostitutes, criminals, persons charged with “moral turpitude,” persons with contagious diseases, paupers, or anyone who might become a public charge. Polygamists were also excluded, aiming at foreign Mormons. The Foran Act in 1885 denied the importation of contract labor. The 1903 Act prohibited anarchists from entering, as it was believed that some eastern European immigrants were dangerous political radicals. However, all these restrictive policies had little effect on the total number of incoming immigrants, since most of those laws were hard to enforce. For example, rarely would immigrants declare themselves as prostitutes. The one law that actually worked was the Literacy Test law. The advocates of literacy tests argued that it was a method to improve the quality of immigrants. However, the real purpose of the literacy test might have been to restrict the number of immigrants without having to give specific reasons. The literacy test bill failed to pass several times (1898, 1902, 1906, 1913, 1915) before its final success in 1917. According to the literacy test law, all newcomers who were not able to read a test passage in English or some other language would be excluded. But in terms of family immigration, the wife did not need to be literate if the husband was.
The Dillingham bill passed in 1921 was the first restriction law that directly controlled the number of incoming immigrants and remained in effect until mid-1960s. The bill, which placed a limit on the total number of immigrants that could be allowed into the U.S. any one year, operated on a national quota system. The quota of new immigrants for each nationality was based on “the percentage of the nationality in the existing American population” (83) of a chosen period – the 1910 census. Since new immigrants could not exceed 3% of foreign-born population of 1910, only 350,000 new immigrants would be allowed each year. The bill did not seem to favor any particular group of immigrants; however, it achieved the same effect by freezing the population composition. Based on the 1910 census, western and northern Europeans had the largest quota of incoming immigrants.

The quota system was further enhanced when the Dillingham bill was extended to Johnson-Reed Act in 1924. The total number of immigrants each year was reduced to about 150,000 per year. The new law replaced the 1910 census with the 1890 census as the standard to assign immigration quotas. This bill was a clear attempt to maintain the ethnic composition before the greatest wave of eastern and southern Europeans came in the early 1900s. This Act assigned the largest quotas to Great Britain (about half of the total admissions), Germany, and Scandinavia, while Italians (fewer than 6,000 seats), Greeks, Slavs, and Jews got only a very small share (Purcell 84). Of course, all immigration from Asia was still excluded except for a very small number of Japanese and Filipinos. Interestingly, the Western Hemisphere (e.g., Canada, Mexico, etc.) was completely ignored by the Act. The quota system was not applicable to immigrants from Canada or Latin America.
Nevertheless, the 1924 Immigration Act announced the final victory of the anti-immigration movement. While the restrictive laws reduced the “pull” force of the United States, the devastation of World War I and the end of population growth in Europe exhausted the “push” force. As a result, the overall number of immigrants to the United States dropped significantly by the end of the 1920s, ending the golden age of immigration.

**The Demarcation between “Us” and “Them”**

Created at the high time of the anti-immigration movement of the late 1800s to the early 1900s, the six volumes of *Statistical Atlases* reflected this political sentiment faithfully. First of all, I start with how “new” immigrants as the “other” group is identified and made visible in the *Atlases*. Next, I discuss how the representation of the population creates a pan-ethnic identity for native whites but hardens the division between the old and new immigrants. Then, I discuss how the “foreign” population is racialized in the visual representations. Lastly, I explore what and how exactly the “foreign” population is examined and surveyed in the *Atlases*, and the rhetorical consequence of the data representation.

According to Foucault, observation performs disciplining by situating the viewing subject in a relation of power with the objectified “other.” The observer is the insider; the observed is the outsider, the “other.” The *Statistical Atlases* positioned the U.S. government and educated Americans as the observers. As indicated by Walker, the *Atlas* was funded by the U.S. congress and was intended to be distributed to libraries, colleges and academies. In general, the major audiences of the *Atlases* were educated Americans, most of whom were middle-class native
whites. I argue that the 

*Statistical Atlases* posed a “gaze”
of the state power over the
undesirable other half of the
population of non-whites and
foreigners.

The demarcation between
“us” and “them” is clearly
displayed in the *Atlases*. The
total population of the nation is
classified into polarized groups
in all six *Atlases*. As can be seen
in Figure 3.1 (Walker, 1874
*Atlas*, Plate 14), pie charts are

used to show the constituent elements of the total population from 1790 to 1890 in the 1894 *Statistical Atlas*. From 1790 to 1840, the population is classified into two contrasted groups: “the white” and “the colored.” The category “foreign white” is added to the charts of 1850 and 1860. Another category, “native of foreign parents,” is added to charts after 1860. Four colors are used to distinguish the four categories from each other. Darker colors (dark gray and deep green) are used to identify the colored and foreign population, while lighter colors (pink and yellow) are used for the native white. The use of dark and light color combination reminds the audience of the distinctive difference of skin colors between the white and the colored, which

![Figure 3.1 The Total Population and Elements from 1790 to 1890 (Walker, 1874 Atlas, Plate 14)](image-url)
is the basis of the classification and primary explanation for their class differences. Throughout the *Atlases*, a variety of colors is used to represent white population of different national origins. However, black is the only color assigned to the colored population demonstrating a physically fixed, immutable feature for the population in almost all *Atlases*. Visualizing racial differences through colors naturalizes the classification, as we take the colored distinction between the two groups to be natural and unquestionable. Although it is hard to discern the exact size of each category in the total population, the contrastive colors make visible the clear line that is drawn between the white and the colored, the native and the foreign. The same classification is used in all six *Atlases*, while identical pie charts are used in four *Atlases* (1898, 1903, 1914 and 1925), though only black and white are used for the charts in the 1914 and 1925 *Atlases*, as can be seen in Figure 3.2 (Sloane, 1914 Plate 142).

The polarized classification in the pie charts defines who the insiders – the dominant class – are and who the outsiders – the “others” – are. The “others” are made visible by setting them apart from the native white: first the colored, second foreigners and then those with foreign parents.

![Figure 3.2 The Total Population and Its Elements at Each Census: 1850-1910(Sloane, 1914 Atlas Plate 142)](image)
The classification demonstrates the changing concerns of the dominant class, the native whites. In the years before the Civil War, the major concern was focused on the colored population, the African Americans. However, in the second half of the 19th century, millions of immigrants from all over the world arrived in the United States. Their settlements brought great impact on all areas of people’s lives in the nation. As elaborated in the previous section, the anti-immigration sentiment gained momentum in the mid-1800s. Since then, the control and discipline of the immigrants became a big concern of the nation. It was in this historical and political context that the category “foreign white” was added to the pie chart in the 1898 Atlas. With the “foreign white” identified and surveyed, the Statistical Atlases marked the beginning of a disciplinary act.

Creating a Pan-ethnic Identity

This classification of the population also creates pan-ethnic groups by minimizing ethnic differences in the group. As European immigrants are grouped together as “white” and set apart from “colored,” the differences and conflicts within European immigrants are ignored. For example, the hostility and prejudice held by the Protestants against the Catholics are largely unseen in this view. Labeling all European immigrants as “white” constructs a common racial identity, a shared community, and a sense of belonging. Although the anti-Catholic protests, riots, burnt-downs, and deaths were still fresh memories then, the inclusive racial label of “white” made the hostility more acceptable and therefore fostered assimilation of immigrants into the dominant or majority group. The pan-ethnic grouping also
Figure 3.3 Growth of the Elements of the Population: 1790 to 1890
(Gannett, 1898 Atlas Plate 22. 65)
establishes a kind of national unity and creates a national identity. Obviously, “we” are the group labeled “native white.” By pointing out who the “others” are, the “native white” reinforces their American identity of “us.” The “native white” constitutes the official representation of the American nation, while non-whites and non-Europeans are erased from the conception of the American identity.

The meaning of the American identity is well revealed in Figure 3.3 (Gannett Plate 22). In the beautifully designed graph “Growth of the Elements of the Population 1790-1890” in the 1898 atlas, the population is divided into three major groups: “foreign stock,” “native stock” and “colored.” The “foreign stock” is further divided into major European nativities and the “others.” Pink is used to for the “native stock,” green is used for the “foreign stock,” and again black is used for the “colored.” With a striking visual effect, the graph shows the rapid growth of the population on a timeline in the past century. The population of the nation has grown from a tiny “stream” to a giant “river” rushing down from 1790 to 1890. The increase of the “foreign stock” is especially prominent growing from nothing to a size comparable to the “native stock.”

However, the most interesting thing about the graph is how the “native” is defined. The “native stock” – the one that represents American nativity – is not defined as persons who were born in the United States, but as persons who were descended from whites who came before 1790. The “native stock” excludes “colored” and “foreign stock,” the newer immigrants who came after the 1830s and their descendants. The representation of the “native stock” constructs an American identity of being white and being western European. This definition of the American
identity became the foundation of the immigration quota system established by the 1924 Immigration Act. The Act stipulated:

Inhabitants in continental United States [the native stock] in 1920’ does not include 1) immigrants from the [Western Hemisphere] or their descendants, 2) aliens ineligible to citizenship or their descendants 3) the descendants of slave immigrants, or 4) the descendants of the American aborigines. (qtd. in Ngai 142).

This definition of American nationality excludes all Mexicans (“immigrants from the [Western Hemisphere] or their descendants,” all Chinese and Japanese (“aliens ineligible to citizenship or their descendants”), all Blacks (“the descendants of slave immigrants”), and Native Americans (“the descendants of the American aborigines”). Based on this description of American nationality, the Act assigned quotas. Obviously, immigration quotas went almost exclusively to white Europeans, especially northern and western Europeans. Under the quota system, the pattern of the national population had been frozen for a very long period of time. Therefore, the American identity, with non-whites and non-Europeans excluded from the definition, was legalized and maintained.

**Hardening the Division between Old and New Immigrants**

Besides constructing a pan-ethnic identity for native whites, a hardened division is created between old immigrants and new immigrants through the classification of the population in the *Atlases*. This is done by separating “foreign white” from “native white,” and “native white with foreign parents” from “native with native parents.” The “foreign white” and “native white with foreign parents” are apparently recent
immigrants whose “American roots” are still shallow and green. The contrastive grouping of “native” versus “foreign,” or more accurately, old immigrants versus new immigrants, magnifies the ethnic differences between old immigrants who came from western and northern Europe and new ones who were from southern and eastern Europe. The year 1870, when “native white with foreign parents” was made visible in the pie chart, is the time when the first major wave of southern and eastern Europeans arrived in the United States. The arrival of the new immigrants brought a threat not only to the labor market and the economy, but also to the cultural and ethnic identity of the old immigrants. The Italians, Greeks and Slavs dressed and behaved in new ways and even looked physically different from the older British, Irish, Germans, or Scandinavians. When the newcomers were classified as a different category and labeled as “foreign” in the national population, these national differences were racialized. One hundred and twenty years later, these assumed differences between the “old” and “new” are understood as merely illusions. Today, the “new” immigrants are no longer outsiders but rather part of the American mainstream. Some of these groups have even become advocates of immigration restrictions against “newer” immigrants from Latin America or Asia in the 20th century (Ngai 46). However, during the late 1900s, when eastern and southern European immigrants were new to the country, they were once a major target of the nativist-restrictionists.
Racializing the “Foreign” Population

In the *Atlases*, the “foreign” population is constructed as being a different race distinctive from the “native” population. The “foreign” population is compared and contrasted with the “native” population in many ways. For example, Walker was trying to establish a scientific association of specific diseases with the foreign population in the line chart (see Figure 3.4) showing the causes of deaths according to race and nationality. In the chart, zigzag lines go across the page connecting a variety of diseases to the “native” or “foreign” population. In order to emphasize his point, Walker goes to great length to explain the graph in the accompanying article: “The Relations of Race and Nationality to Mortality in the United States.”

In the article, he first critiques that it is a “considerable omission” that the “foreign” element of the population was not adequately considered in the statistics of mortality before. The article he wrote is mainly devoted to make this correction. He points to the abnormal features of the foreign population demonstrated on the extreme right of the graph where “the abruptness with which the lines representing the foreign elements here rise and almost run out at the top of the figure” (n. page). To account for “the excessive disproportion between the number of adults and children within our foreign portion,” he suggests considering the correlation between the increase of “the proportion of deaths under ten” for a certain disease and “the increase of the share of the foreign population in the whole body of deaths from that cause.”
Figure 3.4 Mortality by Race and Nationality for the United States (Walker, 1874 Atlas PL. XLIV. 3)
Through examining this correlation, he concludes that the foreign population has a “decided liability” to some diseases such as Bright’s disease, cancers, bronchitis, small-pox, diarrhea etc. and also is comparably immune from paralysis, rheumatism, and hydrothorax. Combining hard statistics, graphical representation and verbal interpretation, Walker’s argument is strong. The “very distinct predisposition” of the foreign population to certain forms of disease racializes national differences into inherited and immutable biological differences.

In the same article, Walker also highlights a “fact” about the colored population and the foreign population: “speaking broadly, where the Blacks are found in the United States, the foreigners are not.” He points to earlier graphs Pl. XXI and XXV (see Figure 3.5 and Figure 3.6) in which Blacks and foreigners are “in a high degree complemental in their location” (Preface 5), with Blacks concentrating in the south and foreigners clustering in the north. The exquisite shades of color in the graphs illustrate Walker’s point well. Blacks’ attachment to hot weather and certain latitude of location had been a popular racial assumption about Blacks in that time period.

Walker states in his article “The Colored Race in the United States” in 1891 that Blacks “represented a race bred under tropical conditions, and could move up the mountainside or go northward only at a large sacrifice of vitality and force” (501). As a complementary element of Blacks, foreigners are bonded to the northern states and liable to specific diseases that the Blacks are not. Paralleling foreign immigrants with Blacks further fosters the view that “foreigners” constitute a race.
Figure 3.5 Map Showing Five Degrees of Density the Distribution of the Colored Population with the Territory of the United States East of the 100 Median. 1870. (Walker, 1874 Atlas PL.XXI)

Figure 3.6 Map Showing Five Degrees of Density the Distribution of the Foreign Population with the Territory of the United States East of the 100 Median. 1870. (Walker, 1874 Atlas PL.XXV)
Takaki explains the racism behind this kind of parallelism: “What whites did to one racial group had direct consequences for others, and whites did not artificially view each group in a vacuum: rather in their minds, they lumped the different groups together or counterpointed them against each other” (*Iron Cages* xiv).

The immobility of a race is also a symbol of less productivity. Bonded to specific latitudes, foreigners and Blacks are constructed as being inferior races. In contrast with the two immobile races, native whites are represented as being perfectly mobile and productive. Walker states that native whites “represented a race bred in the northern latitudes, and was hence thoroughly at home on the mountain side or table-land; while yet, by the privilege of his strain he could, without danger or great inconvenience, move southward if his interests required.” (qtd. in Hannah, *Governmentality* 179). Here, Walker not only emphasizes the superior nature of the native whites but also “naturalized the spread of ‘native Americans’ over the whole continent.” (Hannah, *Governmentality* 179)

**Surveying the “Other”**

The newcomers – the foreign population – are racialized and made visible for the purpose of better surveillance and control. The foreign population is further surveyed in a series of graphs in the *Atlases*. In fact, graphs examining the conditions of the foreign population make up the major part of population graphs in all six *Atlases*. The growth, age, sex, nationality, illiteracy, linguistic capabilities, geographic distribution, and occupations of the foreign population are represented in various forms of charts. Through these graphs, the newcomers are rendered visible for public inspection and regulation.
Figure 3.7 Defective, Dependent and Delinquent Classes in the 1883 Atlas (Gannett & Hewes Plate 39)
Moreover, these graphs not only allow for public examination of the foreign population but also highlight specific problems of the group as a result of the examination. As can been seen in the graph for “Defective, Dependent and Delinquent classes” in the 1883 atlas (see Figure 3.7, Gannett & Hewes, 1883 Atlas Plate 39), the rates of “deaf mutes,” “paupers,” and “prisoners” in the population groups of “colored” and “white,” “foreign” and “native,” and “male” and “female” are compared and contrasted. It is easily seen in the graphs that the rate of paupers and prisoners in the colored and foreign population is much larger than that of the white and native population. The graphs provide a strong support for the popular assumption already widespread in the nation that newcomers, like the colored population, were a degraded group of people who were paupers and criminals.

The argument is presented rhetorically through the clever use of visual language. The choice of bar charts presents the difference effectively. The visual difference in the lengths of the bars is easily perceivable and striking. For example, it is not hard to conclude that the pauper rate of the foreign population is over three times that of the native population. However, the gap is not that impressive if real numbers are compared. The pauper rate of the native population is 0.1%, while that of the foreign population is 0.34% with a difference of only 0.24%. If a pie chart were used to present the data, the difference would be hardly noticeable. If absolute numbers were used instead of percentages, the number of native paupers might be strikingly larger than that of foreign paupers, as the total native population was much bigger. I am not trying to argue that a pie chart or absolute numbers should be used to present the data. What I am saying here is that the “fact” presented in data
displays is always a framed fact. The rhetorical process of selecting, framing, and editing data is usually unseen by the readers.

Moreover, the graphs visualizing the illiteracy rate of the foreign population echoed the call for a literacy test in the 1917 Immigration Act. The illiteracy rate of the population is represented in all six *Atlases*, but the focus of the graphs shifts from the first atlas. In the 1874 *Atlas*, only the illiteracy rate of the nation in general and the illiteracy rate of white males in particular are presented. The illiteracy rate of the foreign-born population is added to the 1883 *Atlas*, but only one small map is assigned to the group. The focus of the data displays is on the contrast of the illiteracy rate of the white and the colored population. However, since the 1890 *Atlas*, considerable attention is given to the foreign-born population by comparing and contrasting the illiteracy rates of the native whites, colored, and foreign in various ways. The distribution of the illiterates of the groups is visualized in maps as well as bar charts, as can be seen in the graphs of 1914 (Figure 3.8, Sloane plate 223-2 and 224-1). The contrast is impressive between the dark shaded map in the graph for the illiteracy rate of the foreign-born population and the largely clear and clean map for the native white population. The dark shades in the former present the illiteracy rate of the foreign-born whites as a noticeable problem.

The representation of illiteracy rate in the *Atlases* provided powerful support for the suggestion generated by the Dillingham Commission in 1890s that a literacy test was the best way to improve the quality of incoming immigrants.
Figure 3.8 Percent of Illiterates in the Population 10 Years of Age and Over, by States 1910: Native Whites of Native Parentage and Foreign Born Whites (Sloane, 1914 Atlas Plate 223. 2 and 224.1).
As showed in the previous section, the campaign of the literacy test was a 22-year crusade. It was first introduced in Congress in 1895 but was not passed until 1917. The bill was vetoed by three presidents: Grover Cleveland, William Howard Taft, and Woodrow Wilson. According to these presidents, the bill was “illiberal, narrow, and un-American” (Daniels, *Coming 277*). President Cleveland critiqued the literacy test as “a radical departure” from established policy and the “stupendous growth” of the nation had been “largely due to the assimilation and thrift of millions of sturdy and patriotic adopted citizens.” President Taft pointed out that “illiteracy resulted more from a lack of opportunity than from lack of ability.” Wilson also argued that immigrants came here seeking opportunities and the bill should not reject immigrants for not being provided the opportunity to learn to read and write (Daniels, *Coming 277*).

Of course, these arguments are unseen in the two data graphs. Instead, another argument is well illustrated by the illiteracy graphs if they are read with other graphs in the atlas, as Francis Walker suggests:

> but the highest use of these Maps and Charts is when they are COMPARED WITH EACH OTHER [emphasis is original], so far as their subjects are cognate in any degree, for the discovery of relations and proportions which can not be made appear on any one map. The greater the number of maps, which can thus brought into comparison, the larger the result. (*1874 Atlas “Preface”* 5)

If the illiteracy graphs were read together with the graphs for “Defective, Dependent and Delinquent classes,” it might be concluded that the high rate of paupers and prisoners in the foreign-born population is related to their high rate of illiteracy.
The public therefore might be encouraged to lean towards the use of literacy tests as a restrictive method so as to avoid poverty and crime. In fact, the public anti-immigration sentiment in 1917 was so strong that President Wilson’s veto was overridden by the House. As a result, the first significant restriction Act of immigration was passed.

In sum, the contrastive representation of the native white and the foreign colored makes the “other” visible for surveillance. The graphs surveying the foreign population highlight particular problems of the group and provide a strong support for government immigration policies. The constructed demarcation between “us” and “them” also shapes the respective identity of the two groups of people. Presented as “exact knowledge,” the Atlases construct the classification as objective and naturalized categories of population upon which the reader may not doubt or reflect. The population categories are ranked in a hierarchy of desirability with the “native white with native parents” as the most desirable, “native white with foreign parents” as the second, “foreign white” as the third, and “foreign colored” at the bottom. Reading the Atlases, a person can only identify him/herself with one of the mutually-exclusive categories, either white or colored, either native or foreign. The two sets of opposite classification construct a double identity for European immigrants. On one hand, all European descendants assume a “white” racial identity that set them apart from the “colored” race. On the other hand, they assume a nationality-based identity that is ranked and labeled either as “foreign” or “native,” differentiating newcomers from the old. Observing the life of the “other” through the population graphs, the target audiences of the Atlases situate themselves in a
relation of power with the observed “other” and therefore reinforce their self-identity of being the “native white.”

The disciplinary gaze of the “other” projected by the *Statistical Atlases* can be further illustrated by tracing the representation of one ethnic group – Chinese immigrants in the next chapter.
CHAPTER FOUR

THE DISCIPLINARY GAZE:

THE REPRESENTATION OF CHINESE IMMIGRANTS

IN THE STATISTICAL ATLASES

As foreign and colored, Chinese immigrants nicely fit into the category of the “other.” A close analysis of the representation of Chinese population in the Atlases may offer an insight on how the disciplinary mechanism works on the “other.”

The Chinese population began to be counted in 1870 census and was represented in all six Atlases. Only one graph in the 1874 Atlas concerns Chinese immigrants, but more and more graphs in the later Atlases are included featuring all aspects of Chinese population. The 1903 Atlas contains the largest number of graphs on Chinese population. However, the number of graphs on Chinese decreases in the 1914 Atlas and the 1925 Atlas, showing that the governmental “gaze” was shifting away from this population group.

In the Atlases featuring Chinese, Chinese immigrants stand out prominently. As can be seen in the bar chart “Population of Selected Classes” (see Figure 4.1) in the 1883 Atlas, “Chinese” is represented as a significant population category, standing
side by side with major population classes such as native, foreign, colored, native white, males and females. Standing alone at the very top of the bar chart apart from the regular classes, “Chinese” immediately catches readers’ eyes. Why was “Chinese” selected and represented as a class different from the familiar classification of native, foreign, colored, or even males and females? As seen in this bar chart, the number of Chinese immigrants was not significant enough to cause alarm. However, there’s something about this group of people that made them distinct from other groups. Indeed, the inclusion of Chinese in the Statistical Atlases can be seen as responding to a number of historical events during the 19th century.

Brief History of Chinese Immigrants in the United States

The first group of Chinese immigrants arrived in the United States as early as 1785, but significant immigration of Chinese did not begin until the California gold rush of 1849 (Daniels, Asian America 9). The relative increase of Chinese immigrants between 1850 and 1880 was dramatic. In 1850, the number of Chinese recorded was 758. The number soared to 35,565 in 1860 and almost doubled itself by 1870 (Mezey 11). The reason for the rapid increase of Chinese immigrants is two-fold. In the mid-19th century, the once mighty Chinese empire was approaching its final collapse under the threat of western imperialists. The first Opium War (1839-1842) with Britain led to a series of unfair and exploitative treaties. All trade in the country was controlled by foreigners. In addition, the country’s economy had been deteriorating. The Chinese government had to collect high taxes from citizens. Besides, the population of China increased significantly from 275 million to 430 million from 1779 to 1850 (Tyner 25). The crumbling government, constant wars
with the western powers, a downturn in the economy, increasing population, and
deterioration of the standard of living all combined to “push” emigration from the
country (Daniels, Asian America 12). At the same time, along the west coast of the
United States, especially in the state of California, the discovery of gold in 1848
brought a spectacular economic boom creating a tremendous labor shortage and
attracting millions of gold-rushers from inside and outside the nation. It was the
Gold Rush that first “pulled” Chinese to the United States, especially to California
and the surrounding states. In the Chinese language, California was named “Jin
Shan,” which means “gold mountains.”

Chinese immigrants quickly became a vital part of the labor force in California.
Between 1860 and 1880, Chinese were more than 8% of California’s population and
were 25% of the labor force of the state (Daniels, Asian America 15). A large number
of Chinese was involved in the mining industry. But as the construction of the
Central Pacific railroad between California and Utah started in 1862, more Chinese
were drawn to work on the railroad. Up to 10,000 Chinese were employed in the
building of the road constituting 90% of the railroad workers (Mezey 11). Besides
mining and construction, Chinese were also involved in other occupations. Chinese
owned or worked on farms. They played a crucial role in California agriculture by
introducing new crops and initiating distribution systems. Another large portion of
Chinese was involved in service sectors such as stores, restaurants, and especially
laundries. Chinese laundries were commonly seen in cities as early as the 1850s.

However, the number of Chinese laborers alone should not call for native
residents’ attention. Compared with European immigrants at the same time, the
number of Chinese immigrees was not significant. Between 1840 and 1870, over six and a half million European immigrants arrived in the United States, while only 60,000 Chinese in total arrived (Mezey 10). In 1882 when the Chinese Exclusion Act was issued, Chinese immigrants constituted a mere 0.2% of the United States population (Takaki, *A Different Mirror* 206), most of whom were gathered in the western part of the nation. However, in spite of relatively small number of immigrants and their concentrated distribution, the Chinese became a source of deep anxiety for native whites.

Chinese workers soon gained the reputation among employers of being efficient and hardworking, especially of being dependable and not prone to strike (Daniels, *Asian America* 19). Most importantly, they worked for cheaper pay than white laborers did. The employment of Chinese instead of white workers saved the Central Pacific Railroad approximately $5.5 million in the years 1866-1869. The Chinese workers were paid $31 a month. However, if white workers were used, they were paid the same amount plus board and lodging (Takaki, *A Different Mirror* 197). As a result, Chinese workers started to be regarded as a threat to native white laborers in the job market. The economic depression of 1870s fostered anxieties about Chinese workers. In California, the idea gained momentum that it was cheap Chinese labor that dried up jobs and pushed “good Americans” aside (Purcell 41). The fact that the Chinese amounted to only 8% of the state’s population had little effect on the nativists’ hostility (Purcell 41).

The critics charged that Chinese laborers were really “coolies,” a synonym for “slaves.” The “coolie” labor system were “illegal arrangements used in South
America and the Caribbean to import Chinese workers under conditions of near slavery” (Purcell 40). “Coolies” was first used for only a specific group of Chinese workers but soon expanded to include all Chinese regardless of occupation or economic status. However, there was no evidence that any coolies had ever been brought to the United States (Daniels, *Coming* 240). In 1862, the “cooler trade” was completely banned by the Congress through the issuing of the Anti-cooler law. The notion that most of Chinese workers were “coolies” was fictional, as most Chinese immigrants were free individuals. The range of Chinese employments, moreover, was actually broad and most Chinese immigrants were quite mobile in the country (Daniels, *Asian America* 20). Many Chinese came to the United States through an underground finance system allowing them to get transportation loans at high rates. Somehow, this arrangement was skewed by anti-Chinese nativists as a system that threatened the American free labor market (Purcell 40). In fact, far from being “cooler slaves,” Chinese workers did not always passively accept what their employers offered them. Chinese railroad workers went on strike for higher payment and better treatment in 1867, although the strike was forced to end in only a week. In 1880, fruit pickers in Santa Clara County also struck for higher wages (Takaki, *A Different Mirror* 197-200). Upon the abolition of slavery in the mid 19th century, the anti-Chinese rhetoric of “coolies” was powerful. Chinese laborers were constructed as a dangerous force that fostered a new system of slavery, drove down wages, and undermined worker’s rights (Wong 4).

Moreover, the labor anxiety generated by Chinese immigrants intensified as it was closely intertwined with racial and cultural anxiety they engendered. Although
European immigrants carried their “Irish-ness” or “German-ness,” the “Chinese-ness” of Chinese immigrants was especially alien for the native white. Their appearance, dress, long braids of hair, and the way they spoke and lived were exotic and incomprehensible. Chinese immigrants were cast as perpetual foreigners impossible to be assimilated. They were accused of clustering in city enclaves known as Chinatowns, and never reaching out for assimilation. Most Chinese in the cities lived in Chinatowns including both rich and poor. However, this clustering was rather forced than willing. The racism of the surrounding natives made the migration out of the Chinatown almost impossible, even if individual Chinese advanced economically (Purcell 41). They were also accused for being sojourns not planning to have families and settle down in the United States. This accusation was also unfounded. It was true that the Chinese community was largely a bachelor society. Over 98% of the Chinese population in 1855 were men, mostly married men with wives living in China. However, this immigration pattern resulted from the gender-based labor recruitment systems in the labor market (Tyner 28). Like many other immigrant groups in American, 90% of the initial comers were males. Patriarchal cultural values and financial considerations prevented Chinese women from coming with their husbands to the United States. With the issuing of anti-Chinese laws, many Chinese women who stayed behind were never able to reunite with their husband. Single Chinese immigrants were also prohibited from marrying white Americans by law since 1880. As “family formation was major vehicle of acculturation and Americanization” (Daniels, Coming 247), the unfortunate male-
dominated population pattern was used against Chinese and in support of the Exclusion Act.

Anxieties against Chinese immigrants over labor and culture contributed to the belief that Chinese immigrants’ presence in the United States threatened American institutions and civilization (Wong 4). A series of discriminatory laws were passed by the state of California forcing Chinese into second class status before the Exclusion Act (Purcell 40). Chinese neighborhoods and individual Chinese were constantly attacked by organized white nativists. Some of the attacks escalated into full-scale riots in California and other places. In 1870 the Federal Naturalization Act limited naturalization to some groups of immigrants but barred only Chinese from gaining citizenship completely. The United States government also used diplomatic pressure on the Chinese government to limit immigration to America in the late 1870s. The anti-Chinese movement reached a new height when the “Chinese Exclusion Act” was issued by the U.S. congress in 1882. The act suspended the immigration of Chinese laborers for 20 years and barred all Chinese immigrants from naturalized citizenship. Without citizenship, Chinese could not re-enter the United States if they left to visit China. This act marked the first action taken by the government to limit immigration. The act was repeatedly extended and strengthened in 1888, 1892, 1894, 1898, 1902, and 1904 (Wong 6). It was finally abolished in the 1940s.
The Rhetorical Inclusion and Exclusion of Chinese Immigrants

Created at the height of the anti-Chinese movement, the previously discussed bar chart (see Figure 4.1) in 1883 atlas clearly demonstrates the anxiety of native whites towards Chinese immigrants. By identifying Chinese as a major category of the population, Chinese immigrants are immediately placed under the spotlight for inspection. Quantifying the Chinese population and presenting the data in easy-to-read charts is an effective means to manage and control the “social threat” posed by Chinese immigrants.

In the data representation of the foreign-born population, Chinese immigrants are made especially eye-catching. The chart entitled “The Composition of the Foreign Born Population: 1890” (Figure 4.2 Gannett, 1898 Atlas plate 16) is a good example. In this chart, the foreign population is classified into 15 groups, 12 of which are of European origin, one of Canada, one of China and one with origins from other countries. The first 13 groups are largely foreign-born whites. Chinese are singled out as the only colored group. Did Chinese immigrants prominently outnumber other colored groups such as Indians, Mexicans or Africans in 1890? Reading from the pie charts of Florida, New Mexico and Arizona, we can see that the population with origins of “other countries” occupies a predominate percentage of the state population, much larger than that of the Chinese. Most of the foreign population in the three states is likely Mexicans.
Figure 4.2 The Composition of the Foreign Born Population: 1890
(Gannett, 1898 Atlas Plate 16)
As can be seen in a later chart entitled “Foreign-Born Population of the United States, By Country of Birth,” included in the 1925 atlas (Figure 4.3, Sloane Plate 201), immigrants of Mexican origin have one of the top ten largest populations among all foreign-born and far outnumbered Chinese immigrants. Though the data was collected 30 years later, the Mexican population was probably not significantly smaller than Chinese immigrants in 1890. Why are the “Chinese” rather than “Mexicans” an identified category in the charts?

Figure 4.3 Foreign Born Population of the United States, by Country of Birth: 1920 (Sloane, 1925 Atlas Plate 201)
Figure 4.4 Foreign Born Population, by States and Territories: 1890 (Gannett, 1898 Atlas 20)
The exclusion of Mexican population might be result of the Mexican War several decades earlier. The exclusion of the Mexicans in the category of “other countries” might be intended to avoid animosity towards Mexicans from the audience.

The graphic representation of the Chinese population in this chart generates an effective argument for the lately reissued “Chinese Exclusion Act.” Chinese immigrants occupy a large percentage in at least three territories: California, Arizona and Nevada in 1898. The use of pie charts of similar sizes makes the difference between the sizes of population of the states impossible to discern. For example, the total population of Nevada is much smaller than that of New York, although they are pictured as two pies of identical sizes. As can be seen in a different chart in the same atlas (Figure 4.4 Gannett, 1898 Atlas, 20), the ranking of the foreign-born population of each state is listed. The states with the most Chinese population have a relatively small foreign population, especially Arizona and Nevada. However, the use of identical pie charts makes the number of Chinese immigrants appear to be larger than it actually was. Although Chinese immigrants were in fact much smaller in number than that of European immigrants at the time, the size of Chinese immigrants shown in this list of charts would definitely catch readers’ eyes. Given oversized representation of Chinese immigrants, the viewer may recognize it as a potential problem. Therefore, the viewer’s attitude toward Chinese immigrants may be influenced favorably toward the “Chinese Exclusion Act.”

The list of pie charts resembles “small multiples” highly acclaimed by Tufte. Small multiples are “a series of graphics, showing the same combination of
variables, indexed by changes in another variable” (Visual Display 170). According to Tuftet, “small multiples” are the best kind of data design that are “inevitably comparative, deftly multivariate, shrunken, high-density graphics, usually based on a large data matrix, drawn almost entirely with data-ink” and “efficient in interpretation” (175). But most importantly, “small multiples” are “often narrative in content, showing shifts in the relationship between variables as the index variable changes (thereby revealing interaction or multiplicative effects)” (175).

These pie charts do assume the qualities described by Tuftet. It is efficient in presenting a great amount of data and telling a sophisticated story about Chinese immigrants: where they are, how many they are, and what problems they have.

As shown in the Atlases, Chinese immigrants are picked out for inspection in all areas: gender composition, occupation, population distribution in states and big cities, naturalization rate, and so on. In these graphs, the compilers make sure that Chinese are placed under the spotlight. The only chart in the 1874 Atlas (Walker PL. XXXVIII) (See Figure 4.5) on Chinese population highlights the dramatically imbalanced gender distribution. This plate is another well-designed “small multiples.” A list of polar charts, an invention of Francis Walker, presents several layers of data: the size of population of each class, the distribution of age and the comparison of gender. Chinese is again listed with major population categories: native, foreign, colored, white, native white, and civilized Indians. Walker explains the graph as follow:

The males are on the left of the perpendicular base line, and the females on the right. The lowest horizontal line represents the number in the first decade of
life, i.e., under ten years of age and the highest number over eighty years. The
sex which is preponderate is shaded. (Plate XXXVIII)

The graph for Chinese easily stands out from the crowd. Compared with
other population categories, the Chinese’s graph is highly twisted. The Chinese
population has a high concentration in the 20-30 age group and is significantly male
dominated. Among the group of well-aligned stable “pyramids,” the abnormally left
protruding graph for Chinese is a distinctive element. It is obvious that Chinese is a
group different from all other major population groups and may be treated
differently accordingly. This graph visualizes the “unassimilable” nature of Chinese,
effectively supporting the differentiating government policy on Chinese immigrants.
To address the public concern on the effect of the “Chinese Exclusion Act,” the changing status of Chinese immigrants was represented in the Atlases. As can be seen in Figure 4.6 (Sloane 1903, Plate 74), the chart shows the proportion of aliens to total foreign-born males of voting age in each specified nativity in 1900. The number of Chinese aliens is displayed along with 20 other nationalities. The length of the bars represents the size of the population. Chinese ranks the first with nearly 90% of the population being aliens. The chart makes a convincing visual argument that the “Chinese Exclusion Act” is successful by demonstrating that most of the
Chinese in the United States were not able to gain citizenship. In the introductory
text of the “Population” section for the 1903 atlas, the verbal explanation for this chart guides readers’ eyes effectively to this argument:

The Chinese had the largest proportion of Aliens, as they are prohibited by law from becoming citizens of the United States; the Japanese were second, and the Hungarians, Italians, Portuguese, and Austrians followed in order; the Welsh had the lowest percentage of aliens of the nativities shown on the diagram. (51)

Working with the textual explanation, the chart not only highlights the situation of the Chinese but also emphasizes the hierarchy of national origins. Chinese is the least desirable group and Japanese is no better. Then there come southern and central Europeans. Lastly, the Welsh is THE favorable immigrant group. In this order, the higher ranked has the least chance to gain citizenship. The statement made by the chart assures its readers that the undesirable “other” is effectively disciplined and contained. The number of graphs featuring Chinese decreases in the 1925 atlas also shows that the national anxiety was well managed by the time the atlas was produced.
Figure 4.7 Constituents of the Population of States and Territories: 1900 (Gannett, 1903 Atlas Plate 43)
The Racialization of Chinese Immigrants

In the *Atlases*, Chinese are made visible as a racial category, differentiating from Whites rather than as a regular nationality. Chinese are always visualized side by side with Indians and Blacks. The racialization of Chinese can be seen in a chart in the 1903 atlas. In the bar chart “Constituents of the Population of States and Territories: 1900” (Figure 4.7) (Gannett, *1903 Atlas* Plate 43), the distribution of the six constituents of the total population in the states is represented. The six-category classification of the population is a developed version of the four-category classification discussed previously. The category of “the colored” is further divided into three smaller categories – “Indians,” “Chinese and Japanese” and “Negro.” Placed side by side with Indians and Negroes, “Chinese and Japanese” is constructed as a racial category rather than a category of nationality. Chinese immigrants are, therefore, not seen as people from a different nation like Germans or Irish but are considered as a different race. Defining Chinese as a race instead of a nationality magnifies the difference between the Chinese and the native white. The inability of Chinese to assimilate and civilize can be attributed to their inherent biological characteristics. The primary biological difference between the races is emphatically represented through the use of colors in the chart. Brown is assigned to “Indians,” black to “Negro” and yellow to “Chinese and Japanese.” Like the Indians and Negroes, Chinese are labeled by their skin color and set apart from the white. Color differences construct racial differences as a naturalized hierarchy, generating and justifying hostility toward cultural differences. The chart therefore helps to assign and institutionalize a racial identity for Chinese as both Chinese and non-white. The
racialization of Chinese immigrants further argues for the exclusion of Chinese from the United States.

The visual racialization of Chinese in the *Atlases* echoed and reinforced the political and media rhetoric of the late 1800s. In the media, Chinese were often compared with Blacks and Indians. The degraded racial qualities previously assigned to Blacks were used to describe Chinese characteristics. Chinese immigrants were considered unclean, immoral, heathen, savage, childlike, lustful, as biologically inferior as Blacks, and “incapable of attaining the state of civilization as the Caucasian” (Wong 5). The *San Francisco Alta* claimed in 1853: “Every reason that exists against the toleration of free Blacks in Illinois may be argued against that of the Chinese here” (n.page). As pointed out by Takaki: “Chinese were subjected to what historian Dan Caldwell has described as a process of “Negroization” in which they were equated with (stereotypical views of) African Americans.” (qtd. in Metric-Chen, 146). Chinese were even worse than the Blacks as they were less assimilable because of their once advanced civilization, to which they clung (Wong 5). Chinese were also likened to Indians. Policies used to solve Indian problems were considered as a way to solve the “Chinese problem.” Former New York governor Horatio Seymour stated in *New York Times* in 1870 that “We do not let the Indian stand in the way of civilization, so why let the Chinese barbarian?” (n.page).

It is also worth mentioning that the inclusion of “Japanese” in the chart together with “Chinese” is more rhetorical than accidental. With the exclusion of Chinese workers beginning in 1882, Japanese immigrants increasingly filled the gap of cheap labor shortage. As large scale Japanese immigration began in the
1890s, an awareness of Japanese immigration started to develop among educated Americans. The exclusion of Chinese further promoted hostility towards all Asian immigrants. However, as Japan had grown into one of the major military powers in the world in the late 19th century to early 20th century, the US government did not want to offend the nation by excluding its immigrants. Nevertheless, public anti-Japanese prejudice continued to grow. Headlines in a San Francisco newspaper, the Bulletin, in the 1890s, demonstrated the public sentiment during the period of time: “Undesirables;” “Another Phase in the Immigration From Asia;” “Japanese Taking the Place of the Chinese” (Daniels, Asian America 111). The rising tide of anti-Japanese movement was so strong that the US government had to create a law to bar all Japanese from the country in 1924. The rhetoric of the media was repeated and reinforced by the design of the bar chart (Figure 4.7). By classifying Japanese and Chinese in the same category, the Japanese is constructed as the same undesirable element as the Chinese that deserves further examination and discipline.

To sum up, the Atlases made the “alien” population of the late 19th and early 20th centuries visible and transformed them into manageable administrative entities. The rhetorical inclusion of Chinese in the Atlases argued for the exclusion of Chinese workers from the nation because of economical and cultural concerns. The Statistical Atlases worked as a disciplinary mechanism that participated in national politics and the shaping of ethnic identity in the nation at the high time of immigration. Through the process of observation, the Atlases created the very category of population they sought to identify. The Atlases helped to create and
solidify Chinese as a different race and the undesirable “Other.” They also confirmed and reinforced the identity of the native white as the dominant class in the nation.

**The Atlases as Part of the Intellectual Nativist Movement**

Through the analysis of the visualization of immigrants in the *Atlases*, I argue that the *Atlases* can be seen as part of a larger intellectual struggle in the late 19th and early 20th centuries to transform nationalist anxiety into a manageable system of signification. The most powerful source of nativism in the late 1800s came from the group of intellectual and educational elite in the northeast. Unlike the working class who “feared Catholics and therefore all foreigners,” the intellectuals “feared and loathed the influence of cultures and foreign ethnic groups that might accelerate changes taking place in American society” (Purcell 76-77). These nativists, many of whom were prominent university professors of that time, developed supposedly scientific theories to explain and objectify racial and cultural differences between “good” immigrants, such as northern and western Europeans, and “bad” immigrants, such as southern and eastern Europeans, Chinese, and Japanese, in order to support and justify restrictive immigration policies. The most popular theory was generated by a group of New England intellectuals. They argued that Anglo Saxons were the source of American virtues, including the devotion to democracy and freedom, while other immigrant groups were biologically and culturally incapable of meeting the American standard and unfit for American life (Purcell 77). Some of the intellectuals went one step further by supporting the theory of “eugenics” that all the good and bad characteristics of ethnic groups were biologically inherited and immutable.
They fought against interracial/interethnic marriage and claimed that the “good” stock would be contaminated by marrying to a member of the “bad” stock.

In 1894, an influential group of New England intellectuals formed the Immigration Restriction League of Boston to openly protest against immigration. This group was the strongest force that ensured the pass of immigration restriction laws in the next few decades. Involved in this League were some of the nation’s leading scholars including Senator Henry Cabot Lodge, David Star Jordan, president of the Stanford University; and Francis A. Walker, the compiler of the first national atlas and President of Massachusetts of Technology (Purcell 77).

Walker wrote a series of articles and books on the restriction of immigration. Like many other northeastern elites, Walker embraced what Livingstone calls “social Lamarckism” that the long inherited basic characteristics of an ethnic group are impossible to change too much (Hannah, Governmentality 177). “Restriction of Immigration,” an article in the June Atlantic Monthly in 1896, Walker condemns the “worsening character of immigrants” and warns that new immigrants threatened “Americans’ peace and safety.” He also points out that earlier immigrants coming “almost exclusively from western and northern Europe” were “among the most enterprising, thrifty, alert, adventurous and courageous of the community from which he came.” However, the newer immigrants from “southern Italy, Hungary, Austria, and Russia” had “none of the inherited instincts and tendencies which made it comparatively easy to deal with the immigration of the olden time [...] They have none of the ideas and aptitudes which fit men to take up readily and easily the problem of self-care and self-government” (90-92). His most important argument,
the one associated with his name, is that immigration is a “replacement of native by foreign elements” (84). He claims that the native population shrank while the foreign population increased. Immigration inevitably led to the diminishing fertility of the native population. He reasons: “They [native whites] became increasingly unwilling to bring forth sons and daughters who should be obliged to compete in the market for labor and in the walks of life with those whom they did not recognize as of their own grade and condition” (86). Walker states that this cause-effect relation was so obvious as recognized by “every student of statistics and economics” (86). Therefore, he argues for restricting immigration at large, since “American institutions, the American rate of wages, the American standard of living, are brought into serious peril” (94).

However, Walker’s theory of native fertility decline was questioned by many later scholars. Walker’s failure to conduct appropriate statistical analysis undermines the theory’s validity. Dennis Hodgson argues that Walker’s discovery was a “coincidence of statistics.” He points out that “Walker’s theory corresponded poorly with known fertility patterns,” as “the white birth rate had declined since 1790 including the decades when immigration was insignificant” (34). Walker also failed to consider other reasons for birth rate decline, such as the process of industrialization and the increase of working women. The fertility decline, a common process in all industrializing societies, had actually been spreading throughout Europe and the United States during the 19th century. The native fertility decline was not necessarily related to immigration at all. Walker’s theory was guided by native racism rather than scientific evidences.
Despite its flaws, Walker’s theory was quickly and uncritically accepted. It was so influential that it laid foundation for the restrictionalist claim that immigration harmed the nation. As the superintendent of the 1870 and 1880 census and the president of the Census Bureau, Walker was highly regarded at the time and left a strong mark on later scholars. Joseph Hill, the president of the Census Bureau after Walker’s death in 1897, held many of the same views as Walker. Hill continued Walker’s study and provided further empirical evidence for Walker’s theory through the examination of the fecundity between the foreign-born, the native-born of foreign-born parents, and the native-born of native parents. His study contributed to the Dillingham Commission’s study of immigration, which directly led to the 1924 Immigration Act (Ngai, “Immigration”146-148).

Claiming that the Atlases were objective and neutral, Walker nevertheless brought his political views and values into the selecting, arranging and presenting information in the atlas. He provided a lens through which the readers see the nation. Through data selection and visual techniques, he guided the vision to the “foreign” population and specific aspects of this group. By focusing the lens on a particular group, he not only identified the group but “created” the group. The “foreign” population was racialized and their “foreignness” was institutionalized. Through the arrangement of graphs, he encouraged speculations on the relationship between immigration and social problems. The juxtaposition of different graphs posed questions such as: is poverty and crime related to races and nativity? Do we have too many foreigners in the nation? How does the nation affected by immigration? However, other questions are mused such as: Do native whites all
share the same characteristics? What are the social-economic classes in the nation?
Are Chinese all coolies?

As the first compiler of the national atlas and an authority on statistics, Walker exemplified and laid a foundation for later compilers. The same political values continued to be conveyed in future Atlases. That is not to say that Walker’s and later compilers’ work were not scientific or professional. Rather, I would like to argue that their serious professionalism gave power and legitimacy to the representation of data in the Atlases. As claimed by historian Nancy Stepan, “scientific racism’s power lay, in large part, in its adherence to scientific methodology and disciplinary standards. If race science was merely pseudoscience, it would have had far less currency” (qtd. in Ngai 148).

In conclusion, the representation of immigration groups, particularly Chinese immigrants, in the Statistical Atlases shows that the Atlases are “artificial constructs that project a reading of the nation at a specific historical moment, and in that sense those constructs are highly rhetorical, even argumentative” (Kostelnick, “Melting-Pot” 227). As the official representation of census data, the Atlases contributed legitimacy to the intellectual nativist movement and added significantly to the rising alarm about immigration.
CHAPTER FIVE
THE REDIRECTED GAZE:
THE REPRESENTATION OF NATIVE AMERICANS
IN THE STATISTICAL ATLASES

The major wave of immigration and dramatic population increase in the 19th century were accompanied with another significant historical movement: the westward expansion. After the 1848 Treaty of Guadalupe Hidalgo, the United States acquired the land stretching from the Mississippi River to the Pacific Ocean. Massive eastern settlers marched westward for abundant natural resources, agricultural paradise, and commercial opportunities in the West. This brought the western Indian tribes into increasing contact with settlers who were determined to move westward into the new region. The American exploration and gradual occupation of tribal homelands would change the country and its people forever. The competition and conflicts between the Native Americans and the pioneers and the U.S. government were a major theme in most of the 19th century. As Cronon, Miles and Gitlin pointed out, “the history of ‘the West’ was in fact the history of the entire nation” (9). Frederick Jackson Turner also claimed, as early as in 1893, that “up to our own day, American history has been in a large degree the history of the colonization of the Great West” (3).

How the Atlases represented Native Americans and their land reflected and shaped the public view toward the westward expansion and Native Americans. Native Americans were once regarded as the “barbarians” in a civilized society and internal “aliens” on the American land. The visualization of Native Americans in the
Atlases represented an image of this peculiar “other” different from that of the foreign immigrants. In this chapter, I focus my analysis on Native Americans and their representation in the Atlases. First, to situate the analysis in its historical context, I elaborate on the history of the Great West in the late 19th century to the early 20th century. Second, I show how the Great West was constructed in the Atlases as a free, empty land full of opportunities. Third, I focus on the “Progress of the Nation” maps in the Atlases and analyze how the Indian population was first effaced but made seen again in the picture of the westward expansion. Fourth, I discuss the social and political sentiments that enabled the enumeration of Indians and shaped the changing representation of the Indian population in the Atlases.

The Struggles of the West

As pointed out by Robert W. Venables, Indian affairs were shaped by four major factors. The first two were economical: trade and land. The other two were political: coexistence and domination. (85). By the 19th century, Indian cultures had been flourishing on the American land, standing “at the height of their social, military, and economic powers” (Nichols 125). Most of the tribes possessed weaponry and horses, which were needed to protect themselves against their enemies. With the seizure of new lands from Mexico and the Gold Rush, Americans poured into the “wild west” in the 19th century – first explorers, then miners and farmers. The population of the American West grew from about 1 million in 1815 to 15 million by 1860 (Hixson 114). According to Lyman Beecher, the population of the West “is assembled from all the States of the Union and from all the nations of Europe, and is rushing in like the waters of the flood, demanding for its moral
preservation the immediate and universal action of those institutions which
discipline the mind and arm the conscience and the heart” (qtd. in Turner 26). These
westward settlers demanded territorial government and later statehood, which
changed the Indians’ circumstances almost overnight. The settlers were frequently
involved in often violent contact with the tribes living in the region. Large tribes of
the plains such as Lakota Sioux, Cheyenne, Arapaho, Pawnee Comanche, and Kiowa
were taken as major obstacles that stood between the westward advancing whites
and the resources and wealth they sought (Nichols 126).

Treaties and allotments were two major methods used to drive away Indians
and take their Indian lands “legally.” In 1830, the Congress passed the Indian
Removal Act to remove the Indians from their homelands. Through unequal treaties,
the removal forced most of the Indian tribes to leave their homelands and move to
assigned reservations. The well-known Cherokee’s “trail of tears” was one of the
tragic stories of the forced removal of Indians to the west. The removal often
involved tactics associated with war. In the 19th century raids, retaliation, and flight
were a major part of life for both Indians and whites in the West. Warfare reduced
the Indian tribal population from about 150,000 in 1848 to only 30,000 by 1861.
The 1864 “Sand Creek Massacre” was one tragic event among many others. The
massacre ordered by Colonel Chivington in southeastern Colorado killed seventy
Indian villagers, most of whom were women and children. The coming whites
brought not only wars but also disastrous diseases that greatly weakened many
Indian tribes. In the 19th century, smallpox and other diseases carried by eastern
traders repeatedly swept across the West killing tens of thousands of Indians. Most
of the remaining Indians were forced into the Indian Territory, the present-day Oklahoma, or north into Dakota by the end of the 19th century.

The Indian experience, President Jackson however claimed, was the result of advance of civilization (Takaki, *A Different Mirror* 86). He insisted on the justice and morality of Indian wars, arguing that the deaths of Indians represented progress and expansion of civilization. In a message to Congress, he explains that

> Humanity has often wept over the fate of the aborigines of this country, and philanthropy has been long busily employed in devising means to avert it, but its progress has never for a moment been arrested, and one by one have many powerful tribes disappeared from the earth. To follow to the tomb the last of his race and tread on the graves of extinct nations excite melancholy reflections.... But philanthropy could not wish to see this continent restored to the condition in which it was found by our fore fathers. (Jackson 520-522)

With great support from politicians like Jackson, the construction of the transcontinental railway accelerated the westward migration. Every railway station became a center of settlement. Coming with the railway were corporate interests that desired white settlement and the expansion of markets (Takaki, *A Different Mirror* 102). Railroad companies pushed the government to secure their right-of-way through Indian territories. In 1871, the newly passed Indian Appropriation Act declared that “hereafter no Indian nation or tribe within the territory of the United States shall be acknowledged or recognized as an independent nation, tribe, or power, with whom the United States may contract by treaty.” (qtd. in Takaki, *A Different Mirror* 102) With the issue of the Indian Appropriation Act, the political
existence of the Indian tribes was destroyed and new settlement was opened to white settlers in the West.

A change of government policies regarding Indians took place in the second half of the 19th century. In 1849, the Congress moved the Office of Indian Affairs from the War Department to the newly created Department of the Interior. As Commissioner of Indian Affairs during the 1870s, Francis Walker advocated a “Peace Policy” toward Indians, specifically, to buy off and feed the Indians instead of using armed forces. With the effort of reformers like Walker, the Indians faced reservation life and pressured acculturation. Relinquishing their culture to look, act and speak like Americans was constructed as the only way to prevent the race from extinction. The government officials demanded all of the Indian tribes abandon their traditions and assimilate into the white American mainstream. Indians were not allowed to be Indians. Confronting new surroundings, language, and clothing etc., the Indians that relocated to the reservations shared the same kind of traumatic experience with immigrants moving to a new continent. Missionaries were sent to work among the tribal people. Government agents sent to facilitate acculturation tried to force Indians to become sedentary farmers and used the church and school to destroy the tribal cultures. They forced Indian children into boarding schools trying to cut cultural ties between them and their parents. The agents also tried to replace the “communism of the tribe” with individualism. By the early 1870s, a few agents began recruiting Indian men to serve as Indian police and judges. In order to get and keep their jobs, these Indian policemen and judges had to serve as models of acculturation.
To further enforce the assimilation of the Indians, a major effort was taken by the government – the General Allotment or Dawes Act issued in 1887. Senator Henry Dawes explained that the tribal system had to be abandoned as it was perpetuating “habits of nomadic barbarism” and “savagery” (qtd. in Takaki, A Different Mirror 221). The allotment policy met the desires of eastern settlers to obtain tribal lands and resources. The reservations were divided into “small family farms with allotments or land parcels of 160 acres for heads of families, 80 acres for single adults, and smaller portions for minor children” (Nicholes 165). The lands would be ineligible for sale for 25 years. As families gave up tribalism and became farmers, they could become American citizens. The “surplus” lands, unassigned acreage of a reservation, were then offered by the government for sale to whites. Although the policy was intended to turn Indians into farmers, the land assigned to Indians was often poorly suited to agriculture. In 1891, Congress issued a further policy to allow Indians to lease the land to nearby whites. Many Indians were forced or swindled to give up their land. In 1902, another act issued by the Congress stipulated that all allotted lands be sold at public auctions by their heirs upon the death of the owners (Takaki, A Different Mirror 223). In the next four decades, the 138 million acres allotted to the tribal people shrunk to a mere third of that size. In 1924, Congress granted American citizenship to any Indians who had not possessed it. After the allotment policy was practiced, many considered the “Indian problem” was solved.
Construction of the Great West and Westward Expansion in the *Atlases*

The construction of the Great West and westward expansion was significant for the understanding of the representation of the Indian population in the *Atlases*. The westward expansion was glorified as being a symbol of American character in the late 19th century. Frederick Jackson Turner’s famous 1893 essay “The Significance of the Frontier in American History” was a classical expression of the heroism of westward expansion. As Turner claims, “the existence of an area of free land, its continuous recession, and the advance of the American settlement westward, explain American development” (3). What captured the popular imagination was Turner’s celebrated “free” western land and abundant economical opportunities in the West. According to Turner,

> American social development has been continually beginning over again on the frontier. This perennial rebirth, this fluidity of American life, this expansion westward with its new opportunities, its continuous touch with the simplicity of primitive society, furnish the forces dominating American character. The true point of view in the history of this nation is not the Atlantic coast, it is the Great West. (4)

Regarded as a great triumph, westward expansion defined American character. The West was a place where easterners and Europeans returned to a primitive condition and experienced a second evolution of civilization from hunter to trader to farmer to modern town. During the process of re-evolution, the unique American character was forged; a people were transformed; Americans’ commitment to democracy was rebuilt and a continent was overrun. Turner argues that with the disappearance of
the frontier and the change of migration pattern, a new foundation for American life must somehow be established.

Turner’s frontier thesis became a model of American history extolled by politicians and taught in schools. His narrative of the westward expansion has dominated the public narrative of the West until today. Turner’s view on the West being a so-called “free land” full of opportunities was prefigured in the Atlases. In fact, his frontier thesis was generated directly from the maps in the 1874 and 1883 atlases. In the two Atlases, the physical and climatic features of the nation are depicted in a series of thematic maps including the distribution of rainfall, forestry, mines, hypsometric sketch of the territory, and so on. These geological maps feature an interesting divide between the East and the West. As can be seen in the woodland map (Figure 5.1), the rainfall map (Figure 5.2), and the map for storm centers in the 1874 Atlas, the hundredth meridian divides the national territory into two halves. The eastern half is covered with green forests, abundant rainfalls, and frequent storms, while the western half features large plains, dry weather, and few storms. The use of color contrast in the maps illustrates a sharp difference between the East and West. This geological contrast coincides with the political contrast between the East and West of the frontier line described by Turner. As Turner states, “the frontier is the outer edge of the wave the meeting point between savagery and civilization” (4). He also points out that “the most significant thing about the American frontier is, that it lies at the hither edge of free land” (4). Free and settled, savagery and civilization mark the two sides of frontier line respectively. The Great West is represented as a land different from the East, a primitive land that awaited
Figure 5.1 Map of Woodland in the United States in 1874 *Atlas* (Walker Plate IV)

Figure 5.2 Rain Chart of the United States in 1874 *Atlas* (Walker Plate. V)
exploration. The geological differences between the East and the West visualized in the 1874 *Atlas* reinforce the differences between the two parts of the nation legitimating the different political policies the government implemented on respective sides of the frontier line.

The abundance of natural resources in the nation, especially in the West, is also made visible. The important role mineral deposits played in the progress of the nation is addressed in an article included in the 1874 *Atlas* entitled “Gold and Silver Mines of the West” by U.S. commissioner of Mining Statistics Prof. Rossiter W. Raymond. Raymond describes in detail the vast geological distribution of gold and silver as well as iron, tin, coal and other mines in the West. According to Raymond, “The rim of the basin [base of the Rocky Mountains] is filled with exhaustless stores of iron ore of every variety, and of the best quality” (n. page). He points out proudly:

> Upon these vast treasures the world may draw for its supply for centuries to come, and with these the inquirer may rest contented, without further question – for all the coal of the rest of the world might be deposited within this iron rim, and its square miles would not occupy one-quarter of the coal area of the United States. (n. page)

Instead of a neutral description of the condition of natural resources in the nation, Raymond’s article displays passion and excitement about the resources (Kinnahan 411). He makes a strong connection between natural resources and national development. The article highlights the significance of the discovery of gold in the West: “The most important event in the history of mining in the united states was the discovery of gold in California, which led to the rapid development, not only of a
new industry, but of a new empire” (n. page). Raymond elaborates on the discovery of gold and silver in the West and the progress of the nation brought by the mining industry, including population growth and settlements in the area. Raymond’s vision is confirmed in the essays describing the progress of the nation accompanying the later Atlases. For example, the compiler of the 1903 Atlas states: “Settlements in the West, beyond the frontier line...to this region settlement was first attracted in 1859 and 1860 by the discovery of mineral deposits, and had been retained by the richness of the soil and by the abundance of water for irrigation which served to promote the agricultural industry” (Gannett, 1903 Atlas 33).

Raymond contends that mineral deposits are the driving forces of the nation and the present civilization. He states:

These are prime elements of our universe of industry. Take them away and our present civilization is annihilated. Put them together in the hand of an intelligent and mighty nation, and that nation could recall the world from the chaos of barbarism. (n. page)

In the concluding paragraph of the article cited below, Raymond forges natural resources in the West with the political and economical future of the nation:

Thus East and West bear witness of our great inheritance of natural wealth. Every period of geological change has been laid under contribution to endow with rich legacies some portion of our land. Our territory epitomizes the processes of all time, and their useful results to man. Divided, yet in a stronger sense united, by mountain chains and mighty rivers, our diversified mineral resources may figuratively represent, as I firmly believe they will literally help
to secure and maintain, our characteristic national life – a vast community of communities, incapable alike of dissolution and of centralization; one, by mutual needs and affections, as the Continent is one; many, by multiform industries and forms of life, as the members of the Continent are many. (n. page)

As Raymond's argument goes, the West is a great basin of mineral treasures; these treasures are the driving forces of the nation and our civilization; therefore, our current westward expansion is a great and inevitable movement of the nation. Associating nature with national development, Raymond's rhetoric naturalizes the political movement of westward expansion. (n. page)

A series of maps entitled “the Progress of the Nation” further constructs the westward expansion as the “progress” of the nation. Beginning with the 1874 Atlas, the series of maps showing “the Progress of the Nation” are consistently featured in the six Atlases. These maps present the growth of national population and its march westward at each census. As explained by Walker, “The series of maps numbered 15 to 19 inclusive, is intended to exhibit the growth of the United States in population, from the date of the first census, 1790, through eight decades, to 1870.” The later Atlases continue the 1874 "Progress of the Nation," with statistical updates, expanded analysis, and further developed maps. In the 1874 Atlas, an article "Progress of the Nation" by Francis Walker is included to contextualize and analyze the maps. In 1883 Atlas, the article accompanying the maps is also entitled "Progress.” Presenting the “progress” of the nation, the series of maps is a central piece in the Atlases. With full color large-scale, two-page maps, the visual quality of
these maps is stunning. Initiated by Walker, a number of graphic innovations were made to picture the growing population and expanding settlement. The landscape was broken into units smaller than previously used measurement – counties – providing a higher resolution image of demographics (Kinnahan 415). Five scales of color are used to describe the density of the population in the maps. Newly developed color printing technology also allowed great details and increased depth of information (415).

Figure 5.3, Figure 5.4, and Figure 5.5 feature a selection of the series of maps in the 1898 Atlas. This series of maps is exactly the ones, which inspired Turner to write his well-known essay “the Significance of the Frontier in American History.” Eleven maps are used to track the distribution of the population density at decade intervals from 1790 to 1890. Five levels of depth of red are used to visualize density of population. Reading the eleven maps chronologically, we see an almost animated image of population spreading from the East to the West like a flood in the past century. The frontier line advances steadily west with the center of population moves westward along the nation’s middle altitude. The calculation of a population center is another innovation made by Walker. It is a hypothetical and theoretical center representing the equilibrium of the entire population of the nation (Conk 90). In the 1898, 1903, 1914, and 1925 Atlases, the movement of the center of population featured as stars is also represented in separate maps (an example see Figure 5.6). Tracing the literal “star of the empire” moving westward from Maryland in 1790 to Indiana in 1890, the compiler celebrate the fantastic progress of the nation.
Figure 5.3 Population of the United States (Excluding Indians Not Taxed): 1790, 1800, 1850 and 1860 (Gannett, 1898 Atlas Plate 3 and Plate 4)
Figure 5.4 Distribution of the Population of the United States (Excluding Indians Not Taxed): 1870 (Gannett, 1898)
Figure 5.5 Distribution of the Population of the United States (Excluding Indians Not Taxed); 1890 (Gannett, 1898 Atlas Pl.6)
Figure 5.6 Map Showing the Position of the Center of Population at the Close of Each Decade from 1790 to 1900 and the Location of the Median Point in 1880, 1890 and 1900 (Gannett, 1903 Atlas pl. 16)
Accompanying the visualization, the progress of the nation is highlighted by the 1898 census complier as follows:

This census completes the history of a century; a century of progress and achievement unequaled in the world’s history. A hundred years ago there were groups of feeble settlements sparsely covering an area of 239,935 square miles, and numbering less than 4,000,000. The century has witnessed our development into a great and powerful nation; it has witnessed the spread of settlement across the continent until not less than 1,947,280 square miles have been redeemed from the wilderness and brought into the service of man...(Gannett n.page)

With information-rich and graphically sophisticated maps, the *Atlases* construct a steadily and forcefully westward advancing nation. Westward expansion was naturally initiated by the abundant resources in the West and politically inevitable because of the overly dense population in the East. In the original article "Progress of the Nation" in the 1874 *Atlas*, Walker invented the statistical concept of the frontier line to trace national settlement history. The famous term “the frontier line” later borrowed by Turner was from the 1898 *Atlas*, which states that

Up to and including 1880 the country had a frontier of settlement, but at present the unsettled land has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent and its westward movement it cannot, therefore, any longer have a place in the census reports. (Gannett, *1898 Atlas* 9)
This narrative is well illustrated in the Progress Maps of the *Atlas*. As can be seen in the maps, until 1860, the “flood” of population has moved uniformly and uninterruptedly into frontier areas. This pattern continues until much of the nation east of the Great Plains is occupied. After 1860, the settlement stream leaps into particular isolated locations forming scattered patches or pools of water. But the stream goes on to advance westward until it reaches the west coast.

The strong visual rhetoric of the Progress Maps constructs the westward expansion as an inevitable heroic event of the nation. They also illustrate a changing pattern of settlements, signify a closing of the frontier, and predict a possible shift of government policies at the turn of the century. Cited and discussed in Turner’s essay, the Progress Maps were definitely instrumental in supporting Turner’s argument, and in turn, changing Americans’ perception of the frontier.

**The Invisible Indians in the Progress of the Nation**

In the grand picture of westward expansion constructed by the *Atlases*, American Indians, who stand conspicuously in 19th century history, are surprisingly unseen in the maps before 1870. As we know, the “expansion” of western settlements was in fact the “recession” of American Indians. Indian wars, Indian removals and tribal migrations were closely accompanying westward expansion. However, contrasting sharply with the colorful, heroic drama of western settlement that marked the Progress Maps, the story of Indians is vaguely presented in the *Atlases*.

The Great West is constructed in the *Atlases* largely as an empty, free land awaiting settlements. While celebrating the natural resources of the West and the
exciting future it could bring, Raymond never mentions the condition of local Indians and their settlements in the area. In Walker's narrative of the “Progress of the Nation” in the past century, the trace of Indians is also hardly seen. The few brief mentions of Indians emphasize the removal of the population. As Walker observes about the 1820 southern unsettlement, “Most of this is occupied by Indians, for whose removal negotiations are already in progress” (n.page). Indians were in the way of the westward expansion, but they would be gone soon.

The same neglect of Indians’ existence is visualized in the “Progress of the Nation” maps before 1870. In the maps from 1790 to 1860, the names of Indian tribes are written on the landscape. Compared with the highlighted westward moving settlements, these names recede into the background and are hardly noticeable. As the boundaries of the tribal territories are vaguely defined, Indians’ claims of sovereignty in the frontier areas are not acknowledged. However, as elaborated on previously, before the Indian Appropriation Act denounced the Indian nation’s independence in 1871, Indian tribes were treated legally as separate, autonomous political entities, which had legal claim to their lands. Acknowledging the independence of Indian nations, the federal government could legitimately gain title to Indian lands through treaties. These treaties also promised to guarantee the sovereignty of the Indian nation and honor the integrity of Indian territories. However, the design of these maps does not seem to honor the Indian sovereignty.
Figure 5.7 Accessions of Territory (Gannet, 1898 Atlas Pl.1)
This lack of recognition of Indian sovereignty is best illustrated in another series of maps representing the acquisition history of territory and its distribution. As can be seen in the 1894 *Atlas*, the map entitled “Accessions of Territory” presents the territory acquisition history of the nation (See Figure 5.7). Except for the newly established Indian reservation in Oklahoma, no lands are marked as acquired from Indians in the map despite of the fact that large areas of lands were obtained from Indian tribes through treaties with Indian nations. The 13 states east of the Mississippi river are marked as “original territory.” With the “origin” not specified, readers’ eyes are directed away from the violent conquest of Indians – the original owners of the “original territory.”

As the wave of settlements flushes west, the tribal names gradually disappear in the Progress Maps. The vanishing of the Indian tribes from the maps is made without commentary. As William W. Quinn Jr. notes in his article “Federal Acknowledgment of Indian Tribes,” Indian tribes were “washed into the backwaters of the Euroamerican milieu and forgotten, their autonomy and sovereignty – the recognition of them dissipated by poverty, despair, and the relentless pressures of acculturation and assimilation” (337). The advance of the white settlements is prominently staged, while the forced migration of the Indians, the “trail of the tears,” is hidden from view.

**Redirecting the Gaze to Native Americans**

While the existence of Indians was downplayed in the Progress Maps before 1870 in the *Atlases*, beginning with the 1870 map the visualization of Indian territories in the Progress Maps have been slightly different (see Figure 5.5 and
Figure 5.6). Unlike vaguely defined names in the previous maps, Indian territories are clearly framed and marked out using bright red color in maps for 1870, 1880 and 1890. The marking of the Indian tribes coincides with the changing status of the westward expansion. As discussed previously, the westward settlements shifted from consistent unified streaming to scattered patches of water since 1860. West of the 100th meridian in the map (see Figure 5.5), the scattered white settlements seem to compete with the hard framed Indian territories. It is hard not to associate the changing pattern of westward settlements with the existence of Indian territories. The Indian territories are therefore featured as obstacles standing in the way of westward expansion. Walker notes that the western settlement style made pioneers more vulnerable to Indian attack in his book *The Indian Question*:

> Instead of exposing to Indian contact, as heretofore, a clearly defined frontier line, upon two or three faces, our settlements have penetrated the Western country in every direction, and from every direction creeping along the course of every stream, seeking out every habitable valley, following up every indication of gold among ravines and mountains, clinging around the reservations of the most formidable tribes, and even making lodgment at a hundred points on lands secured by treaty to the Indians . . . It is upon men thus exposed, without hope of escape or chance of resistance, that the first wrath of a general Indian war would break. No note of recall would avert their doom. (38-39)

Walker indicates that a shifting emphasis on Indian affairs was necessary, as the Indian wars ended and settlement patterns changed. In *The Indian Question*, he
named two major issues: 1) “what shall be done with the Indian as an obstacle to the national progress?” (17) 2) “what shall be done with him when, and so far as, he ceases to oppose or obstruct the railways and the settlements?” (17) Walker’s answer to the first question is to move the less aggressive tribes onto reservations by “slowly wasting away of their means of subsistence” (26), avoiding a general Indian war, but using force when required. His answer to the second question is seclusion of Indians on one or two “grand reservations” with whites forbidden to enter and Indians forbidden to leave except with special permission.

Walker argues that the Indians’ situation had been changed with the closing of the frontier line and the completion of the transnational railroad. He also contends that Indians faced a grim future. As there was no longer a West, Indians as a race and Indian culture as a way of life were doomed. According to Walker, how to ensure the survival of the Plains Indians becomes the urgent “Indian Question.” He suggests that the government scientifically manage the welfare of Indians by placing tribes onto one or two big reservations and subjecting them to “a rigid reformatory discipline” (“Annual Report” 11). Walker argues that the ultimate goal was the assimilation of Indians, who would be required to learn industrial skills and farming in order to enter the civilized society (Takaki, *A Different Mirror* 220). Walker states that the reservation system would help Indians to follow “the white man’s road” (qtd. in Takaki, *A Different Mirror* 233).

What should be noted is that in Walker’s *Indian Question*, an explicit racism runs through most of the writing. Indians are described as a savage beaten race
whose inherited instincts and tendencies determine their extinction. Walker compares Indians with wild beasts:

> There can be no question of national dignity involved in the treatment of savages by a civilized power. The proudest Anglo-Saxon will climb a tree with a bear behind him, and deem not his honor, but his safety, compromised by the situation. With wild men, as with wild beasts, the question whether to fight, coax, or run, is a question merely of what is easiest or safest in the situation given. Points of dignity only arise between those who are, or assume to be, equals. (The Indian Question 34-35).

This social Darwinian perspective in which Walker holds towards Indians resembles his view regarding foreign immigrants who represent the “worst failures” in the struggle for existence. As Takaki points out, Walker “believed in social engineering: government should scientifically manage the affairs and welfare of Indians” (A Different Mirror 232). This social engineering was needed because Indians were “unused to manual labor,” accustomed to “the habits of the chase,” and lacked “forethought,” “intellectual tastes,” and self-discipline (Walker, qtd in Takaki 233).

In order to force Indians onto the “white men’s road,” the Indian population should be closely examined and managed. Walker’s vision about Indian affairs was brought into the visualization of the Atlases. He deems it important that the existence of Indian territories was marked out in the 1870 Progress Maps to identify it as a problem to be solved in the process of westward expansion. His idea was continued in the following Atlases. In the 1880 map in the 1898 atlas, we can see that the Indian territories disappear gradually and the previously marked Indian
territories are all gone in the 1890 map (Figure 5.5), except for the stand alone Indian reservation in Oklahoma. The Oklahoma reservation in the 1890 map is not marked in red as are the previous maps, but in a pale white color showing the low density of population. The change of color de-emphasizes the existence of the territory. As the number of Indians was reduced and pushed into one “grand reservation,” Walker’s strategy of Indian affairs was achieved. As Turner declares, the frontier was now officially closed with white settlements covering most of the Great West. The Great West therefore, was conquered. The Progress Maps not only exhibit the progress of the nation and but also visualize Walker’s answers to the Indian question.

**The Enumeration of the Indians**

Visualizing Indian tribes in the Progress Maps was only one way Walker brought Native Americans to public attention. He also initiated the enumeration of Indians in censuses and the representation of Indian population in the *Atlases*. Although Indian tribal names were marked out in the Progress Maps, the “Indian not taxed” population had not been examined in the *Atlases* until 1894. In fact, the Indian population had not officially been covered in the census until 1890. The enumeration of Indians, the supposedly “objective” data collection process of the *Atlases*, was in fact “highly subjective and sensitive to political considerations” (Jobe 77).

As Alterman notes, “Until 1860 there were no reference to the Indians in any census... The report of the 1850 census includes an estimate of the number of Indians in various parts of the country. But these are the estimates of one man, not
the results of any enumeration” (qtd. in Seltzer). Some small-scale enumeration of Indians was conducted for treaty making or military purposes, but full-scale census-taking on the Indians was not carried out. Beginning with the 1860 census, some information on the taxed Indian population was included in the census. “Indians not taxed,” who were “Indians maintaining their tribal relations and living upon government reservations,” were excluded from the total population (Walker “Annual Report” Xii). They were not recognized as citizens of the United States for taxation and representation purposes (Jobe 69). Indians were able to become citizens through a variety of means especially after the Dawes Act issued in 1887. But it was not until the Indian Citizenship Act in 1924 that all Indians born within the territory limits of the United States were made citizens (69). By the 1940s, all American Indians were considered to be taxed.

As non-citizens, “Indians not taxed” had been excluded by the census for over a century. However, as non-citizens, foreign immigrants were closely examined by the census in the same period of history. Exclusion from the census means unrecognized by and invisible to the state. The condition of the Indian population was, therefore, hidden from the public view for over a century. The exact reason why Indians were not covered in the census has never been explicitly stated. However, the enumeration of the Indians was clearly politically related. As Seltzer points out, three small-scale enumeration of Indians (the Choctaw census of 1830, the Creek census of 1833 and the Eastern Cherokee census of 1835) “were directly related to the forced expulsion of Native American population from their lands east of the Mississippi river pursuant to the Indian Removal Act of 1830” (13).
Getting a full-scale accurate account of the Indian population was first initiated by Francis Walker as the Commissioner of Indian Affairs in 1871. Although he had to work under the 1850 census law, he added an additional coded response category, “I” for Indian, to the decennial census form for the first time. He also asked the assistant marshals to enumerate Indians not taxed on the basis of inquiries (Selzer 8). He articulates his rationale for including all American Indians in the population census in his report to the Secretary of the Interior as Superintendent of the Ninth Census:

Now the fact that the Constitution excludes from the basis of representation “Indians not taxed” affords no possible reason why, in a census which is on its face taken with equal reference to statistical as to political interest, such persons should be excluded from the population of the country... The fact that he sustains a vague political relation is no reason why he should not be recognized as a human being in a census which counts even the cattle and the horses of the country. (qtd. in Seltzer 7)

As Walker argues here, his intention to include Native Americans in the census was to treat them as part of the common family of humanity. But his argument should be understood in the context of the explicit racism he expressed in his other writings (Seltzer 7). I would read Walker’s enumeration of Indians as a political means for managing the Indian population rather than an act of humanity. To formulate and implement his Indian disciplinary policy, acquiring an accurate account of the Indian population was important.
In order to facilitate his political idea, Walker continued his enumeration of Indians in the next census. The Tenth Census in 1880, also carried out under Walker’s direction, further strengthened the procedures used to count both taxed and untaxed Indians. Finally, in 1890 a comprehensive report on Indians taxed and not taxed was included officially in the census (Seltzer 9).

The evolution of decennial census practices on the enumeration of Native Americans shows how statistics have been used in serving political purposes. The visualization of Native Americans in the Atlases after 1890 served the same purpose. With the closure of the frontier in the late 19th century, the frontier took on a new meaning in the public view. As Native Americans ceased to be an immediate threat, the need to eradicate them and their culture ended. The government was committed to the assimilation campaign of the Indians. The laws after 1880s tended to “define a new permanent relationship between Native Americans and the United States” (Hoxie 85). The Land Allotment Act, Indian education program, and citizenship policies helped Indians to walk on the “White man’s road” (Hoxie 85). In this context, “a positive view of the natives was crucial to the implementation of the reformer’s agenda” (85). In the late 19th century, a focus on Indians and their culture, which used to be largely ignored by to the public, took place in public events. For example, at the turn of the century, a detailed presentation of Indian life was included in every American World Fair exhibited in the United States. The representation of the Indian population in the Atlases was one of these attempts to bring Indians and their life to the public view.
Figure 5.8. Constituents of the Population of States and Territories: 1900 (Gannett 1903, Plate 43)
The distribution of the Indian population, age and sex, occupations, and so on is represented in the last three Atlases. The Indian population is often grouped with “Negroes” and “Chinese” as one of the colored population in the nation (See Figure 5.8). As a colored population, Indians are treated as one of the “others” opposed to the “native white.” However, the Indian population is also distinguished from other minority groups. The number of charts visualizing Indians in the Atlases is smaller than those for African Americans or foreign immigrants such as Chinese. For example, in the 1903 Atlas, 5 charts feature the Indian population while 12 charts feature the Chinese population. The same scrutiny the Atlases give to other minority groups do not seem to be given to Native Americans. No peculiar features are identified in the Native Americans either. Unlike the abnormally represented Chinese, Native Americans are shown as being normalized and disciplined.

Compared with Chinese immigrants of the period, Native Americans were regarded as less alien and less threatening. As Chinese immigrants were banned by the Exclusion Act in the 1880s, Native Americans were incorporated into the white society by gaining citizenship through the Dawes Act. The incorporation of Indians seemed to run counter to the national sentiment of racial animosity and white essentialism. However, if compared with other minority groups, Native Americans posed the smallest threat to the white society. Historian Frederick Hoxie observes that “The new law was made possible by the belief that Indians did not have the ‘deficiencies’ of other groups: they were fewer in number, the beneficiaries of a public sympathy and pity and capable of advancement” (77). Little public attention was paid to Indians once the Indian wars were over and Indians were removed to
the reservations. Senator Henry Dawes, the initiator of the Dawes Act, wrote that "It is true that we have not yet assimilated the Indians, but it is also true that we have already absorbed the Indians... The rest is the work of time and contact, of individual effort and social force, of education and religion" (qtd. in Hoxie 34). Furthermore, Hoxie argues that the assimilation of the Indians "was not a blending of Indians and white societies but Anglo conformity: the alteration of native culture to fit a 'civilized' model" (33). Indians would finally be assimilated like other ethnic minorities. The major difference was that the assimilation of Indians was a forced one initiated and carried out by the federal government. The successful civilization of the Indians would offer a positive proof that “American was an open society, where obedience and accommodation to the wishes of the majority would be rewarded with social equality” (34).

Created in such a historical context, the Atlases represented the Indian population as one of the “others” that stood outside the majority culture but also a group standing the closest to the majority. The inclusion of the Indian population in the Atlases was necessary but a spot-light focus might NOT be necessary.

Conclusion

In the late 19th century, the government shifted its policy of Indian affairs from military defeat to peaceful assimilation. The changing attitude towards Indians was well illustrated in the Atlases. With the closing of the frontier, Indians turned into “an internal American minority group” (Hoxie X). The public perception of Native Americans was subtly changing. Although they were regarded as savages that blocked the great westward expansion and as deviant “others" from the national
norm, the public held a sympathetic or nostalgic view towards Indians and their sufferings. As stated by Hoxie, “Journals that vilified the Chinese ‘rat-eaters,’ denounced the new immigrants as the ‘off-scouring of European prisons,’ condemned the ‘Roman church,’ or warned of the imminent arrival of ‘Negro paupers’ in the north did not find it difficult to express sympathy for Indians.” (14)

The representation of Native Americans in the Atlases responded to historical developments and both reflected and shaped the shifting public perception of Indians. The Great West was constructed as a free, empty, and resourceful land full of opportunities. The Progress Maps represented a dramatic and exciting westward expansion, which was forceful and inevitable. In this great picture of westward expansion, Native Americans were first effaced from view. Before 1870, the public gaze was directed to the grand progress of the nation rather than to the disappearance of Indian tribes and the suffering migration of the Indians. However, as the Indian assimilation movement began in the late 19th century, the gaze was redirected to Indians for managing and disciplinary purposes. Francis Walker played an important role in the enumeration of Indians in the census. Equipped with statistical methods, he answered the “Indian question” through social and scientific engineering of the Indian population. The Indian population was visualized as an assimilatable “other.” Nevertheless, the Atlases achieved what Walker intended to do – “promote[d] that higher kind of political education which has hitherto been so greatly neglected in this country” (1874 Atlas, “Preface”).
CHAPTER SIX

CONCLUSION: THE RHETORICAL POWER OF THE STATISTICAL ATLASES

Created in the Golden Age of data visualization, the six volumes of Statistical Atlases embodied the era’s enthusiasm for statistics and visualization of statistical knowledge. They were a rigorous piece of scientific work, a marvelous aesthetic artifact, and a great instrument of rhetorical power. In my study of the Atlases as a powerful artifact of visual rhetoric in the historical and social context of the late 19th century to early 20th century, I posed three research questions:

1) How were minority groups, such as foreign immigrants especially Chinese immigrants, and Native Americans, represented in the Atlases? What stories were told in the data visualization of those groups? How were the stories told through the visual language of data displays?

2) Whose interests were promoted and whose were marginalized in the data visualization? What was the dominant ideology that was embedded in the data design? How does the ideology facilitate or limit our ways of seeing?

3) How did the representation reflect and construct the history, politics and culture of the era when the Atlases were designed? How do the Atlases reveal the rhetorical nature of data displays in a larger social context?
In concluding my dissertation, I first summarize the key findings according to the research questions. Then, I discuss the implications of this study and suggest future research studies.

**Question 1: The Stories Told by the Statistical Atlases**

The Atlases told a story about “us” and “them.” “We” are “native” and “white.” “They” are “foreign” and “colored.” A clear demarcation was constructed between “us” and “them” through polarized classification of the population. The population categories were hierarchically ranked with the “native white with native parents” as the most desirable, “native white with foreign parents” as the second, “foreign white” as the third, and “foreign colored” at the bottom. The new foreign stock, the southern and eastern Europeans, was forced out from the old stock of immigrants, the northern and western Europeans.

Foreign immigrants and the colored population were identified, compared, and scrutinized in a variety of aspects. The graphs representing the “other” population highlighted certain issues and downplay others. Compared and read with each other, the data graphs created a “foreign population” that was increasing at an alarming rate, and struggling with poverty, crimes and illiteracy. The foreign population was constructed as a significant racial category, biologically different from the native population. The Atlases not only “represented” but also “created” the population it intended to represent.

The representation of the foreign colored and the native whites shaped and reinforced the respective identity of the two groups. A pan-ethnic identity was created for native whites and foreign colored respectively. The classification of the
“native” defined an American identity of being white and being western European. Readers were encouraged to identify themselves with one of the mutually-exclusive categories, either white or colored, either native or foreign. The pan-ethnic grouping shaped the conception of national identity and consolidated the national unity.

The most threatening element of the “other,” the Chinese, was identified from the foreign colored and placed under the spotlight for further examination. The Chinese population grabs the reader’s attention as a significant category side by side with major population classes such as native, foreign, and colored. Placed with the Indians and Negroes, Chinese was conceptualized as a racial category rather than a category of nationality. Despite the small size of the Chinese population, the Chinese was represented as a problematic, undesirable, and disagreeable element of the nation. The “inclusion” of Chinese in the Atlas argued for the “exclusion” of Chinese from the nation.

The Native Americans, as the “internal aliens” of the nation, was another identified “other” in the Atlases. The story of Native Americans should be understood in the picture depicting the Great West and the westward expansion in the Atlases. The Great West was represented as a vast land rich in natural resources and abundant in economical and agricultural opportunities. This land was free and empty with little traces of the original owners— the Native Americans. The marching of the westward settlements was shown as being the exciting, heroic, and inevitable progress of the century. To facilitate the westward expansion, any obstacles, such as the local inhabitants, should be removed from the way.
The story of Native Americans entered a different chapter after 1870. Before 1870, they were almost invisible in the picture of the westward expansion. Wars, deaths and forced migration of the Indians were effaced from the scene. After 1870, they were brought back into the public view to facilitate the implementation of a new Indian policy. Enumerated in the 1890 census, Native Americans were later counted and inspected in the Atlases as a colored group like African Americans and Chinese. However, they were also treated differently from Chinese and other minorities. Native Americans, unlike the Chinese, were regarded as capable of assimilation. While the Chinese population was represented as an abnormal element of the population, Native Americans were depicted as a normalized and disciplined group. The recognition of Chinese aimed at the erasure or exclusion of the Chinese rather than assimilation. The naming of Native Americans, however, enabled the acceptance and incorporation of them into the white society. But of course, this incorporation might be understood as another way of erasing the people and the culture.

In order to tell the story about “us” and “them,” a variety of rhetorical strategies was used. The rhetoric of the Atlases worked all through the process of design: the collection of data (the enumeration of a population in the census), the selection of topics, the inclusion/exclusion of information, the arrangement and organization of graphs, the choice of graphic forms, the use of colors, shapes and sizes, and so on. The essays accompanying the graphs in the Atlases also contextualized the visuals and framed the understanding of them. Altogether with these strategies, the data graphs and maps in the Atlases established hierarchy,
emphasis, and structure, suggested causality and relationship, and finally created an intended national image.

I emphasize two rhetorical strategies here. The “rules of inclusion” and “rules of exclusion” defined by Barton and Barton worked effectively in privileging and marginalizing political interests. As discussed previously, the exclusion and inclusion of Native Americans in the Atlases reflected and reinforced the shift of Indian policy from war to assimilation. The use of colors was another strong rhetorical strategy adopted in the data visualization of the Atlases. For example, the use of skin colors to visualize racial differences naturalized the population classification and hardened the difference between groups. With scientifically credible data and innovative visual strategies, the Atlases told a compelling story about the nation that had never been told before: its progress and its problems.

**Question 2: The Ideology of the Statistical Atlases**

The Atlases offered a lens for us to see the nation, through which we make judgments about the nation and its people. Mandated by Congress, the vision provided by the Atlases was created from the point of view of the state. Through the Atlases, the state directed a “gaze” on the nation, especially on the undesirable elements, for the purpose of management and control. To borrow a phrase from J. Scott, seeing like the state, “we” “gazed” upon the foreign immigrants, especially Chinese. Seeing like the state, “we” directed our “gaze” away from the Native Americans but turned back on the population at the turn of the 19th century. Seeing like the state, “we” saw the progress of the nation instead of the retreat of the Native
Americans. In this sense, the *Atlases* functioned as a political and cultural mechanism employed by the state in the service of facilitating government policies.

The vision provided by the *Atlases* was not only framed by the government but also influenced by the values of the compilers. As pointed out by Harley, two kinds of power work through cartographic discourse: the “external power” exercised by the patron of the *Atlases* – the state, and the “internal power” exercised by the compilers themselves. Francis A. Walker, the initiator of the first *Atlas* and the superintendent of 1870 and 1880 census, played an important role in the construction of the “vision” of the *Atlases*. His political vision of immigration restriction and Indian assimilation guided the selecting, arranging, and presenting of information in the *Atlases*. He exemplified for later compilers and his political ideas had been conveyed throughout the *Atlases*. As a social scientist, Walker promoted the ideology of Malthusianism, Darwinism and racism that prevailed in the community of intellectual elites of the time.

In general, the *Atlases* described, constructed, and perpetuated a particular image of the nation that served particular political and cultural purposes in a particular historical context.

*Question 3: The Rhetorical Power of the Statistical Atlases*

The power of the image created by the *Atlases* lays in its claimed objectivity and neutrality. Based on census data and compiled by reputable scholars, the *Atlases* were regarded as an authoritative and official reading of the nation that few people doubted. The assumed objectivity established a faithful connection between the *Atlases*, the original census data, and the social reality they claimed to represent. My
analysis of the *Atlases* shows that the *Atlases* and the graphs and maps in them are social constructions. The *Atlases*, as Harley states, “strive to frame their message in the context of an audience” and “work in society as a form of power-knowledge” (11-12). The *Atlases* were a powerful form of political knowledge that argued for the restriction of immigration and for westward expansion.

The argument made by the *Atlases* was shaped by the political and social context but also shaped the social and political reality in the late 19th and early 20th centuries. Reflecting and reinforcing the anti-immigration sentiment, the *Atlases* worked as part of the intellectual nativist movement that developed supposedly scientific theories to support and justify the immigration restriction policies. As the primary source of Turner’s “frontier thesis,” the *Atlases* participated in the influential narrative of westward expansion and national progress. Distributed to “public libraries, learned societies, colleges and academies,” (Walker, 1874 Atlas “Preface”), the *Atlases* have worked as basic reference books for over a century. The visual images they produced were influential not only in their own age but are powerful in the understanding and recreation of the historical situations today.

**Implications of the Study**

In this dissertation, I conducted a rhetorical/cultural critique of the representation of minority groups in the Statistical *Atlases*, focusing on foreign immigrants and Native Americans. I consider data graphs and maps as a means of creating perceptions of power. As Benedict Anderson points out that the nation is an imagined political community, I argue that as a power tool, the *Atlases* offered a particular way to imagine the nation.
Built upon critical scholarship of visual communication, a significant implication of the study is the inquiry into data displays as a form of rhetorical power. I contend that insufficient attention has been devoted to reading data displays as rhetorical and cultural text. Most scholarship and handbooks of data visualization still approach data displays or information graphics from the perceptual-cognitive perspective. These scholarships tend to limit their discussions on the perceptual-cognitive effectiveness of data graphics but leave the consideration of social and contextual factors on the periphery (Brasseur 3). Rhetorical goals of data graphics might have been considered in these scholarships but data graphics are still regarded as being inherently objective and neutral. The complex power relationship and ideologies that work in the creation and interpretation of data graphics are largely ignored.

I hope that contextualized studies like my dissertation add to the growing body of scholarship that challenges the neutrality and objectivity of data graphics. Situated in historical contexts, my study exemplifies how historical circumstances, political sentiments, cultural concerns, and authorial intent worked together to shape the design of data displays, and in turn, how the representation of data displays played a role in those contexts. By foregrounding the hidden power agenda behind the creation of data graphics, my research joins in the scholarships that question the dominant ideology, privileged interests, and marginalized groups.

Another implication of the study lies in the significance of historical studies of data displays. As a site of political and cultural authority, the Atlases created and sustained a reading of a historical period for over a century. An analysis of the
Atlases enables a rereading of the history and offers alternative ways of understanding and presenting that history. Exploring the past use of data displays also provides us with an opportunity to understand their present use and consider their future potential. The purpose of my study accords with the definition of new historicism withheld by W. Tracy Dillon’s, who states, “what is old about historicism is the belief that one can understand the past by analyzing its artifacts and the behaviors of its players. The new historicism seeks instead to understand the present and in doing so to foreground the self-constituting nature of any act of textual historical analysis” (65). This dissertation, I hope, may contribute to the understanding of the present through the analysis of the past.

**Challenges of the Study and Directions for Future Research**

In concluding this dissertation, I would like to discuss challenges and deficiencies of the study and suggest future research. One of the concerns of the study is, perhaps, the lack of a systematic methodology or the lack of a well-defined flow of my analytical method. This lack of structure stems largely from my decision to approach this study with a cultural analysis methodology: the method of articulation. A cultural analysis approach emphasizes reflection and open, selective coding. However, it is also inherently contingent and messy. In future research, a comparatively rigorous and systematic method of reading data graphics could be developed. It might be especially useful to develop a well-structured method for reading visual artifacts in general, for example, a visual analysis methodology that combines the perceptual model, the semiotics model, and the rhetorical/cultural model.
I would also like to acknowledge the possible bias of my reading of the Atlases. Although I contextualize my analysis in the knowledge and practice specific to the historical period, as a foreign immigrant myself, I nevertheless bring my own background and assumptions into the reading of the Atlases. Undoubtedly, a visual artifact may engender infinite readings. My reading is only one of them. However, it might be a “weakness” of any visual analysis. I argue that the same problem exists in the interpretation of verbal or any form of text. What I intend to do is to challenge a political and cultural authoritative text and offer an alternative reading. I also hope that my study could bring the voice of the minorities that has been silenced in the “objective” and “neutral” data graphics to be heard by the public.

The six volumes of Atlases with thousands of graphs are a very rich text. My dissertation touched upon only a fraction of it. With limited time, I could only complete the analysis of the representation of three major minority groups. In future studies, other population groups could be examined. For example, the analysis of the Mexican population may show a kind of “othering” different from that of southern and eastern Europeans, Chinese or Native Americans. The “othering” of Mexican immigrants may be rooted in the “occidentalizing” of the Mexicans as a result of US-Mexican war in the mid-19th century, which had a tremendous impact politically and culturally on both countries. The desire of Mexican land may motivate a portrayal of Mexicans as different from, inferior to, and unworthy of possessing the land. Besides the population graphs, the Atlases contain a large variety of data displays on economics, manufactures and agriculture.
Future studies could explore data displays in these fields and see what and how a comprehensive image of the nation was created by the *Atlases*.

As my dissertation focuses on the *Atlases* and their reading of the nation in the late 19th century and early 20th century, my future research could also consider how the *Atlases* have evolved through time and explore how the population groups are represented in today's statistical atlases, especially in forms other than the print medium, and examine if the perception of the minority groups have changed or not changed over time and for what rhetorical purposes.

It is my hope that my dissertation could gain insight of the past, make meaning for today, and inform the future. It is also my hope that my dissertation could inspire further critical studies in the reading of data graphics as powerful rhetorical and cultural texts, so as to open new ways to understand how we create and use data graphics, and are influenced by them.
WORKS CITED


