Seattle's Street Railway System and the Urban Form:

Lessons from the Madison Street Cable Car

Clay H. Veka

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Professor Manish Chalana

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INTRODUCTION

Purpose

There is a strong nexus between transportation and land use. Where transportation systems are placed, land is prone to development. This relationship between transportation and land use has been evident throughout human history. The advent of motorized transportation has allowed humans to travel further, faster than ever before and has led to increased speed and intensity of land development and use over the last two centuries. Chudacoff and Smith highlight this nexus in *The Evolution of American Urban Society*.

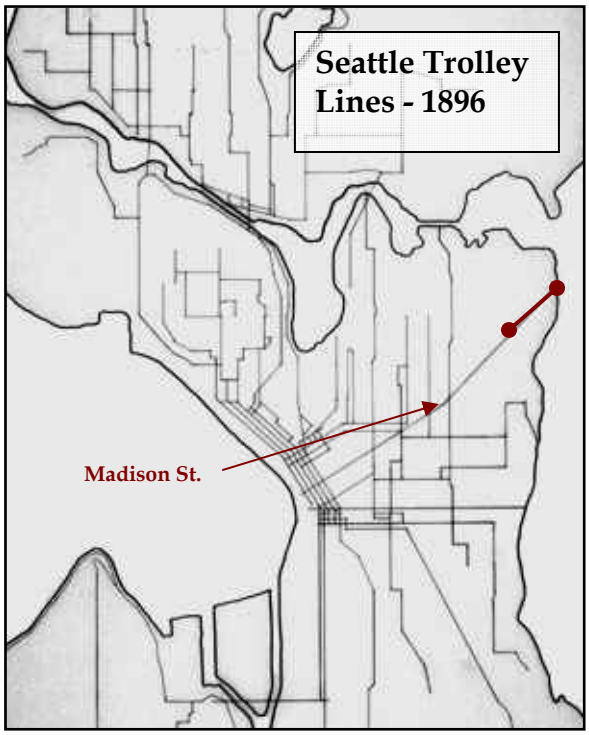


Image courtesy of Museum of History and Industry

> Mass transportation…catalyzed physical expansion…by opening vast areas of unoccupied land for residential expansion…[and] pulled settled regions outward much more distant from city centers than they were in the premodern era…. The new accessibility of peripheral land sparked real estate development and urban sprawl" (Chudacoff, p. 92).

In this paper, I attempt to understand the impact that the street railway system in Seattle had on land development and the urban form. The street railways have been credited and blamed for allowing for the first suburban development and widespread, low-density growth. Did Seattle's street railway system lead to the same outcome? Specifically, I will examine how land surrounding one line of the Seattle system, the Madison Street cable car line, was affected by the introduction

of the cable car. Along the eastern one-third of the Madison Street line, this paper will examine changes in population density and land use.

Existing Scholarship

There exists extensive and well-researched literature on the development and demise of the streetcar era in the United States. *The Evolution of American Urban Society* provides an overview of the streetcar era across the country. Sam Bass Warner, Jr.'s *Streetcar Suburbs* is a well-researched and detailed account of Boston's streetcar history.

There are also various books and articles that detail the history Seattle's street railway system. Leslie Blanchard's *The Street Railway Era in Seattle: A Chronicle of Six Decades* is an remarkably detailed account of the political, economic, and technological factors that contributed to the rise and fall of Seattle's street railway system. Many of the articles included on the *Hisorylink.org: The Online Encyclopedia of Washington State History* website provide excellent summaries of Seattle's development and streetcar era (among a vast array of other topics).

In addition, some writings have focused specifically on the Madison line of the street railway system or the development of the Madison Park neighborhood (as it is known today). Particularly Don Sherwood's 1974 *History – Madison Park* has provided valuable background on the development of the neighborhood surrounding Madison Park. Select pieces from *The Seattle Times* and *Pacific Northwest* (the Seattle Times magazine) have provided a glimpse into the past. Articles from *Historylink.org* have again provided helpful background.

While the literature has provided excellent background on the historical development and demise of the streetcar, there has been little information that ties the rise of the Seattle streetcars to specific changes in land use patterns. The

link between transportation infrastructure and real estate development is widely acknowledged, but the impact that mass transit has had on the urban form has not been closely examined. This paper will endeavor to fill a very small sliver of this missing piece in scholarship by demonstrating the degree to which the Madison cable car line encouraged suburban growth. In order to dissect this relationship, this paper will pull upon census data, historical maps, and written records.

STREET RAILWAY BACKGROUND

United States

Appearing as early as 1832 in New York City, (Chudacoff, p. 86) the horse-drawn streetcar on rails gained popularity over the next 60 years. While the horse-drawn streetcar proved an efficient means of mass transportation, there were many challenges associated with using horses for urban transportation. Some challenges included the fact that any given animal could only work so many hours on a given day, had to be housed, groomed, fed and cared for. They also produced extraordinary amounts of manure, which polluted the city streets and was expensive to dispose of.

Photo courtesy of Museum of History and Industry

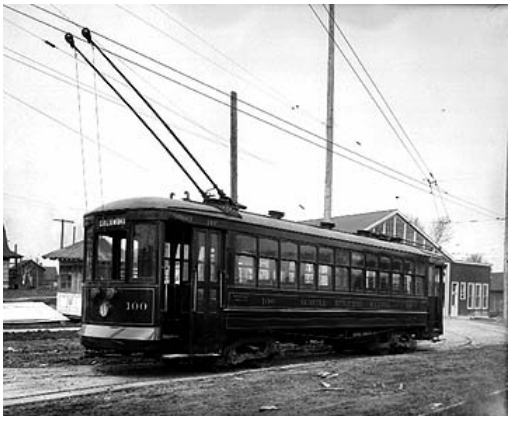
Seattle's first horse-drawn streetcar on rails - 1884

Due to these limitations, when innovators applied mechanical power to vehicles in the last quarter of the century, the technology took off (Chudacoff, p. 86). The cable car kicked off the revolution when Andrew Hallidie introduced it in San Francisco in 1873. In 1888 Frank J. Sprague introduced the first electric streetcar

that was powered by an overhead wire, a technology that rapidly spread throughout the United States. In fact,

> In 1890, when the federal government first surveyed the nation's railways, it found 5,700 miles of track for vehicles operated by animal power, 500 miles of track for cable cars, and 1,260 miles of electrified track. By 1902, the total of electrified track had swelled to 22,000 miles, while that of horse railways had dwindled to 250 miles (Chudacoff, p. 89).

Electric Cable Car



Electric Streetcar

Street railway systems across the country experienced similar fates. Initially, many individual companies founded one or a handful of rail lines in any given city. However, "as early as the 1880s shrewd businessmen consolidated independent companies under their aegis. Colorful personalities…deftly and ruthlessly established city-wide systems and huge personal fortunes" (Chudacoff, p. 91).

Over a period of several decades, starting in the 1890s and continuing after WWI, street railway systems faced increasing challenges that frequently led to a municipal take-over. With the five-cent fare mandate, companies found that they had to expand ridership to maintain profitability, but laying more track could mean overextension. The huge capitalization necessary for railway construction invited nonlocal investors, which often led to a company policy focused on maximizing profit and dividends rather than providing high-levels of

service. With poor service, aging infrastructure, and some companies engaged in graft and fraud, reformers were prompted to seek municipal ownership of mass transit early on (in New York in the early 1890s and in Chicago in 1907). During and after WWI, public ownership became the only way that many cities could sustain mass transit. But public assumption of transportation responsibilities occurred just when private automobiles and rubber wheeled buses began to replace streetcars as the major mode of conveyance (Chudacoff, pp. 91-92).

Seattle

Seattle's street railway system – including horse-drawn streetcars, electric streetcars, and electric cable cars – was developed in tandem with a rapidly growing population. Seattle entrepreneur Frank Osgood introduced the first horse-drawn streetcar into service along downtown Seattle's Second Avenue on September 23, 1884 (Crowley). The cost per ride was $0.05, a fare that was common throughout the U.S. at that time (Chaudacoff, p. 88). The streetcar was built with financial investment from some of Seattle's prominent leaders, including Arthur Denny, Thomas Burke, and George Kinnear (Crowley).

Seattle's Street Railways took off in the 1890s

Only three years after the introduction of the horse-drawn streetcar was electrification introduced to Seattle's nascent public transit system. The first cable car was constructed in 1887, and two other cable car lines followed (Crowley). Most notably, construction of the Madison Street cable car line began in 1889, the same year in which the first electric streetcar came to

Seattle.

The private street railways quickly multiplied. By 1892, Seattle claimed 48 miles of streetcar track and 22 miles of cable railway. While the economic panic of 1893 bankrupted many companies, street railway tracks doubled in the 1890s (Crowley).

In 1898 Seattle banker, Jacob Furth, on behalf of the investment firm Stone & Webster, began buying up the city's 22 independent streetcar lines. Its local Seattle Electric Railway Company won a 40-year city franchise in 1900, over the objections of reformers who feared the creation of a transit monopoly (Blanchard, p. 58).

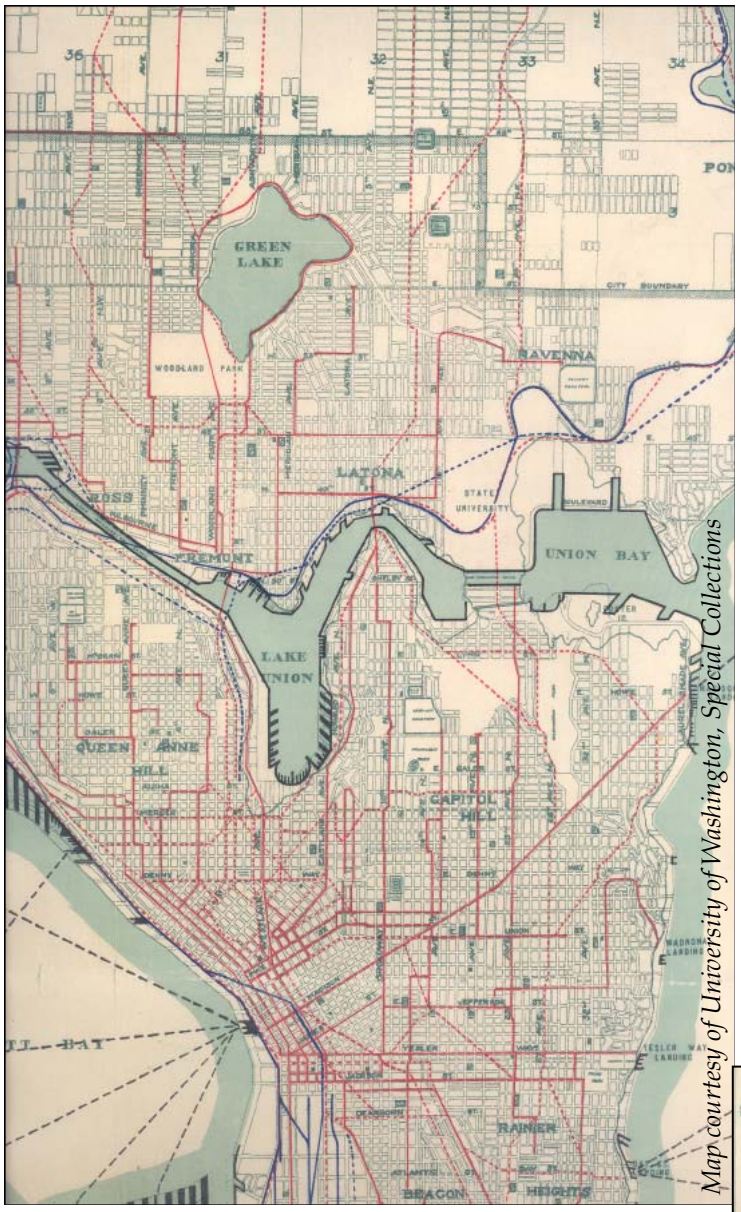
The promise of improved service was not fulfilled. In fact,

> By 1918 the transportation situation in Seattle had become quite intolerable. Service was hardly better than it had been in 1899 when Stone and Webster began taking over the independent lines – service was erratic, cars were ill maintained and often dilapidated, and roadbed maintenance on many lines had been neglected to the point where it was literally unsafe to run cars over them" (Blanchard, p. 90).

While Stone & Webster were partly to blame for the poor service, it is also important to recognize that the mandated nickel fares, numerous strikes, and growing competition from automobiles and electric buses made turning a profit very challenging.

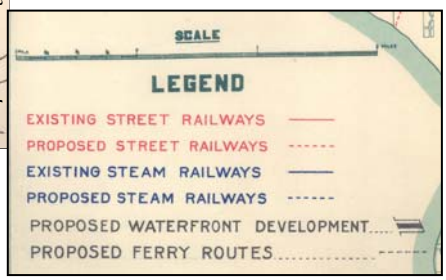
In a controversial deal, Seattle Mayor Ole Hanson agreed to buy the streetcar system for $15 million, a price that is estimated at three times the actual value of the system (Blanchard, p. 94). This high price crippled the new Municipal Street Railway with debt from the outset .

By 1936, the Municipal Street Railway operated 410 streetcars on 26 electric routes, and three cable railways (Yesler-Jackson, James Street, and Madison Street) totaling 231 miles of track, plus 60 buses on 18 other routes (Blanchard, p. 126). Despite average daily fares of $11,000, the system had run up a $4 million deficit and still owed half of the principal on its 1918 bonds (Crowley).



Seattle Railway Map - 1911

By the mid-1930s, Seattle was desperate for an escape route. In 1935 the John C. Beeler Organization proposed a solution to the City that was a combination of streetcars and buses (Beeler, 1935, p. 1), but the proposal was rejected by Seattle voters in 1937. Although the city was able to secure a $10 million loan from the federal government in 1939 to pay off the streetcar debt and implement a revised version of the Beeler Plan, the loan was not enough to save the system. The last of Seattle's streetcars closed in the spring of 1941 (Thompson).



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THE BEELER ORGANIZATION

DIRECTOR
JOHN A. BEELER

ENGINEERS AND CONSULTANTS
OPERATING–FINANCIAL–ENGINEERING
MANAGEMENT–APPRAISALS

155 EAST 44TH STREET
NEW YORK

TELEPHONE
VANDERBILT 3-1521-2

Seattle, Washington
December 10, 1935

THE HONORABLE MAYOR AND CITY COUNCIL
THE CITY OF SEATTLE, WASHINGTON

Gentlemen:

I hand you herewith our report on the Seattle Municipal Street Railway System, presenting a comprehensive plan for rehabilitating, refinancing, and improving its service and operations, as a basis for the proposed governmental assistance, by means of a National Emergency Council loan and grant of $2,000,000, and a Reconstruction Finance Corporation loan of $5,000,000, as set forth herein.

With this aid the Municipal Railway can set in motion a number of far-reaching and important moves that will result in great good to the City in general and the Railway patrons in particular. The more important accomplishments are briefly as follows:

1. Reorganization of finances, lower interest rates, and scaling down the funded debt.

2. Rehabilitation of the plant and equipment, including modernization of the better cars, track and overhead, and the substitution of modern, super-powered motor buses for the slow and inefficient cable service.

3. A rerouting of the lines where advisable in order to provide more direct and faster service, and do away with unnecessary duplication of service, especially in the congested sections.

The "Beeler Proposal" as presented to the City of Seattle – December, 1935

Madison Street

Judge John J. and Elizabeth M. McGilvra were the first EuroAmericans to purchase land in what is today's Madison Park neighborhood (Sherwood, 1974). The McGilvras moved west from Illinois and settled their 420-acre homestead property on Lake Washington in the 1860s. Judge McGilvra purchased the property for $5 per acre when sections of school land were sold to finance the University of Washington (Rochester, 2000).

Photo courtesy Bagley, History of King County

Judge John J. McGilvra

Photo courtesy of Museum of History and Industry

John J. McGilvra's Farm – 1846

Madison Street provided a direct connection between McGilvra's property on Lake Washington and downtown Seattle (today it cuts a diagonal across the later-platted east-west, north-south street grid pattern). Founder-surveyor of Seattle, Arthur Denny, named the street in 1853 after the forth president of the

United States, James Madison (Dorpat). In order to more easily travel between his property and downtown, McGilvra improved the road in 1864-5, which had earlier passed through dense forest and over a rushing salmon stream (Rochester). The rough road continued to be a popular public by-way. Wagons, horses, and hikers all tramped along it to the pristine edge of Lake Washington.

Until 1880, the McGilvras were the only residents of Madison Park, living at their *Laurel Shade* estate. Junius Rochester states, "Either loneliness or commercial prospects – perhaps both – impelled McGilvra to plat most of his property for sale…" (Rochester). Don Sherwood details the history of the real estate development in Seattle and associated commercial interests.

> All the realtors who had property so far from town had the common problem of getting prospective buyers out to the real estate and to induce them to live so far from town. Lakeshore picnic sites had become possible and popular with the glorified stage coaches rattling over the long, rutted roads. Then came a new "toy": the electric trolley car and cable car. As soon as the fears of electrocution had abated, the realtors knew they had a sales trick: build cable or trolley cars out to their subdivisions with a park at the end of the line offering inducements ranging from picnics, boating and swimming to gambling, vaudeville and zoos (Sherwood, p. 1).[1]

Judge McGilvra did just this by creating the 24-acre Madison Park and co-founding the Madison Street Cable Railway Company. His company began construction of the Madison Street cable car line in 1889 and the final extension of the cable car to Madison Park was completed during the summer of 1891. Intent on attracting cable car users and potential homebuilders, he built-up Madison Park recreational opportunities to include a boathouse, a bandstand, a beer hall, piers, a lakeside promenade, a paddle wheeled excursion steamer, baseball and football fields, a camping area, and a greenhouse for exotic plants

[1] Interestingly, McGilvra added a new scheme to his development by "limit[ing] construction to cottages and require[ing] an annual tithe for the use of the property: it was described in the Seattle Star as 'perhaps the only feudal estate in the U.S.' Nevertheless, hundreds did build cottages and it was not until the 1920's that the McGilvra Estate relinquished its hold and the lots sold" (Don Sherwood, 1974).

(Thompson). The recreational opportunities were available to all who could afford the $0.05 charge for the 3.6 mile route. Apparently many could afford it, as the cable line did excellent business in the summer weekends with a car running every two minutes (Sherwood, p. 3). In addition to providing transportation for commuters and recreationalists, the Madison Street cable car hauled freight between Elliott Bay and Lake Washington. Its dedicated freight car was labeled "Lake Washington Package Freight and Express" (Thompson, 2007).

Photo courtesy of University of Washington Special Collections

Madison Street cable car line under-construction in downtown Seattle – 1889

Photo courtesy of University of Washington

Photo courtesy of Museum of History & Industry

Madison Park & Pavilion – 1890s

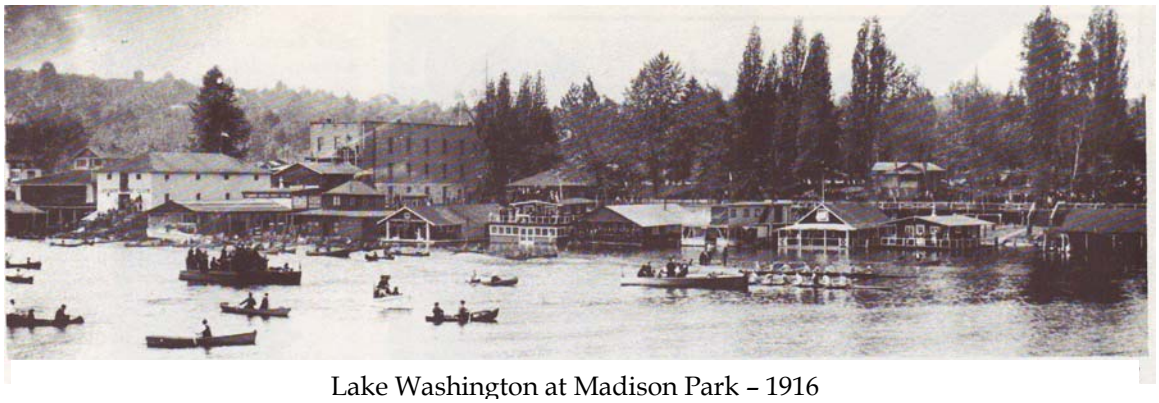

Photo courtesy of Lawton Gowey

Lake Washington at Madison Park – 1916

Photo courtesy of Museum of History & Industry

Swimmers at Madrona Beach, Madison Park – 1931

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LAKE WASHINGTON

This property will be divided up into ONE, FIVE and TEN-ACRE TRACTS, and will be sold on terms to suit any purchaser at very low prices. The property will be known as

Seattle Suburban Home Tracts

And will be the cheapest and best property on the market. Only 40 acres will be disposed of for the present.

For further information, call on or address

Seattle Post Intelligencer newspaper advertisement, June 1891

As a part of its consolidation efforts, the Seattle Electric Company acquired the Madison Street cable car line in 1900. Due to financial difficulties and aging infrastructure, the company began cutting service within the decade. By 1910 the Madison cable car only provided service from downtown as far at 21st Avenue. In 1914 service was further limited and the decline of the Madison Street cable car was well underway (Thompson).

One of the factors that precipitated this decline was the cheap and poorly laid rails selected from the outset. As real estate men, there was more incentive to provide immediate, low-cost transportation to outlying properties than there was to invest in long-term, high-quality rails and infrastructure.

The Impact of the Madison Street Cable Car on the Urban Form

The street railway system dramatically changed the face of many urban centers, but particularly the older, more crowded cities. Prior to the advent of the electric street railway, most urban dwellers were confined to the limits of the "walking city". When the electric streetcar was introduced, those working in the city center were no longer limited to living within walking distance of the work place. For those with sufficient means, they could move out to, what has become known today as, the streetcar suburbs.

Population

An example of an overcrowded and dense older city was Boston in the 1870s and 1880s. With the exception of the wealthiest 1-2% of society, urban residents were confined to living in the "walking city", a city whose boundary was no more than 2.5 miles from city hall (Warner). In 1880 there were 362,839 residents living in Boston (Gibson). With this large number of people living in such a confined area, the advent of the electric streetcar was the technological

breakthrough necessary to allow the boundaries of the city to explode and for residents with sufficient means to escape the crowded city center and settle in the rural land 2-4 miles beyond the walking city boundary.

Understanding whether or not Seattle was experiencing similar population pressures prior to the introduction of the street railway system provides insight into the degree to which the Madison Street cable car promoted residential expansion into the Madison Park neighborhood.

In 1870 and 1880, Seattle was a very different place from Boston. The first Euro-American settlers had arrived as recently at 1851. Seattle was very much a frontier town whose industries were developing around the natural resources of the surrounding landscape. While growing, the population was small with only 1,107 residents in 1870 and 3,533 in 1880. Strikingly, Seattle's population exploded between 1880 and 1890, growing 1112% to 42,837 (see Figure 1).

Table 1: Population Growth in Seattle & Boston, 1870 – 1920

Year	1870	1880	1890	1900	1910	1920
Seattle Size	1,107	3,533	42,837	80,671	237,194	315,312
% Growth		219%	1112%	88%	194%	33%
Boston Size	250,526	362,839	448,477	560,892	670,585	748,060

Table 1: US Historic Census Data

Immediately prior to the introduction of the electric street railway, Seattle and Boston had really different population dynamics that were confined to relatively similar geographic areas. This disparity suggests that Seattle and Boston likely were molded by the electric street railway in very different ways. While the street railways acted as a pressure relief valve to an overcrowded Boston, the Seattle system was introduced at the same time that the city's population was quickly growing. Rather than relieving overcrowding in Seattle, the streetcars

helped to prevent overcrowding from occurring by opening up developable land beyond Seattle's walking city boundaries.

Lacking the same level of pressure on the city boundaries as experienced by the larger urban areas, it is likely that Seattle's expansion into the streetcar suburbs was slower and had less immediate impact on the urban form. Nevertheless, the street railways still altered the urban form by allowing for residents to settle outside of the traditional walking-city boundaries. The following section will explore the degree to which this occurred along the eastern extent of the Madison Street cable car line.

Maps

Comparing historical maps is a helpful way to understand the development of a particular area. Even more useful is to draw comparisons between maps while being clear about the historical context of the time. In analyzing the maps, it is helpful to consider the following dates and associated events.

Street Railway Dates:

- 1850s – Madison Street is a rough trail leading to Lake Washington
- 1865 – McGilvra completes Madison Street improvements
- 1880s – McGilvra plats most of his 420 acres for sale
- 1884 – First horse-drawn streetcar in Seattle
- 1887 – First cable car in Seattle
- 1889 – Construction begins on Madison Street cable car line
- 1891 – Madison Street cable car line is completed

City Population:

- 1880 – Seattle population = 3,533
- 1890 – Seattle population = 42,837

PANORAMIC MAPS: From a series of panoramic maps provided by the Library of Congress Geography and Map Division, one is provided a visual sense of how the Seattle landscape changed between the late 1870s and the early 1890s.

Map P1: 1878

Map courtesy of Geography and Map Division, Library of Congress

Map P1 shows a city center that has developed along Elliott Bay, while the eastern hillsides leading down toward Lake Washington are forested and uninhabited by white settlers.

Map P2: 1884

Map courtesy of Geography and Map Division, Library of Congress

Map P2 shows the same perspective, though the forest has been cleared and the land on the eastern hillsides approaching the Lake Washington shores appears under cultivation or simply left as open space.

Map P3: 1891

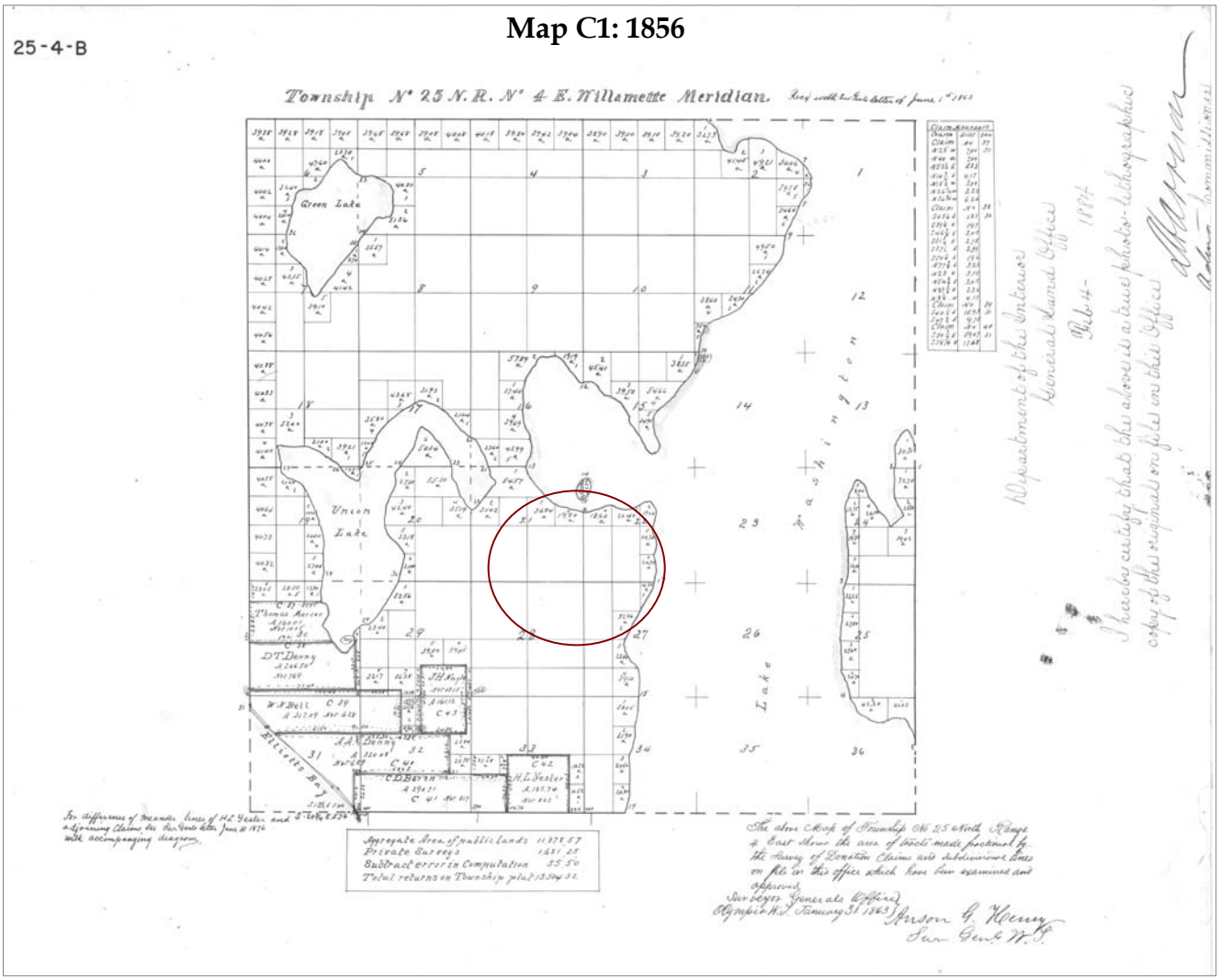
Map courtesy of Geography and Map Division, Library of Congress

Map P3 shows very much the same land uses as Map 2, however at this point, the map creator clearly deems Madison Street and Madison Park as important landmarks to include on the map.

Of course the detail included on the maps cannot be taken as accurate. The birds-eye-view drawing is an interpretation of that which the author believes he would see from above. However, detailed accuracy is not the intent of these maps, nor is it important for interpretation purposes. The value that the maps provide is an illustration of both the real and perceived change in land use between 1878 and 1891 in the Madison Park neighborhood of today.

CARTOGRAPHIC MAPS: The following series of cartographic maps begins to tell a more complete story of the land development surrounding the eastern extent of the Madison cable car line.

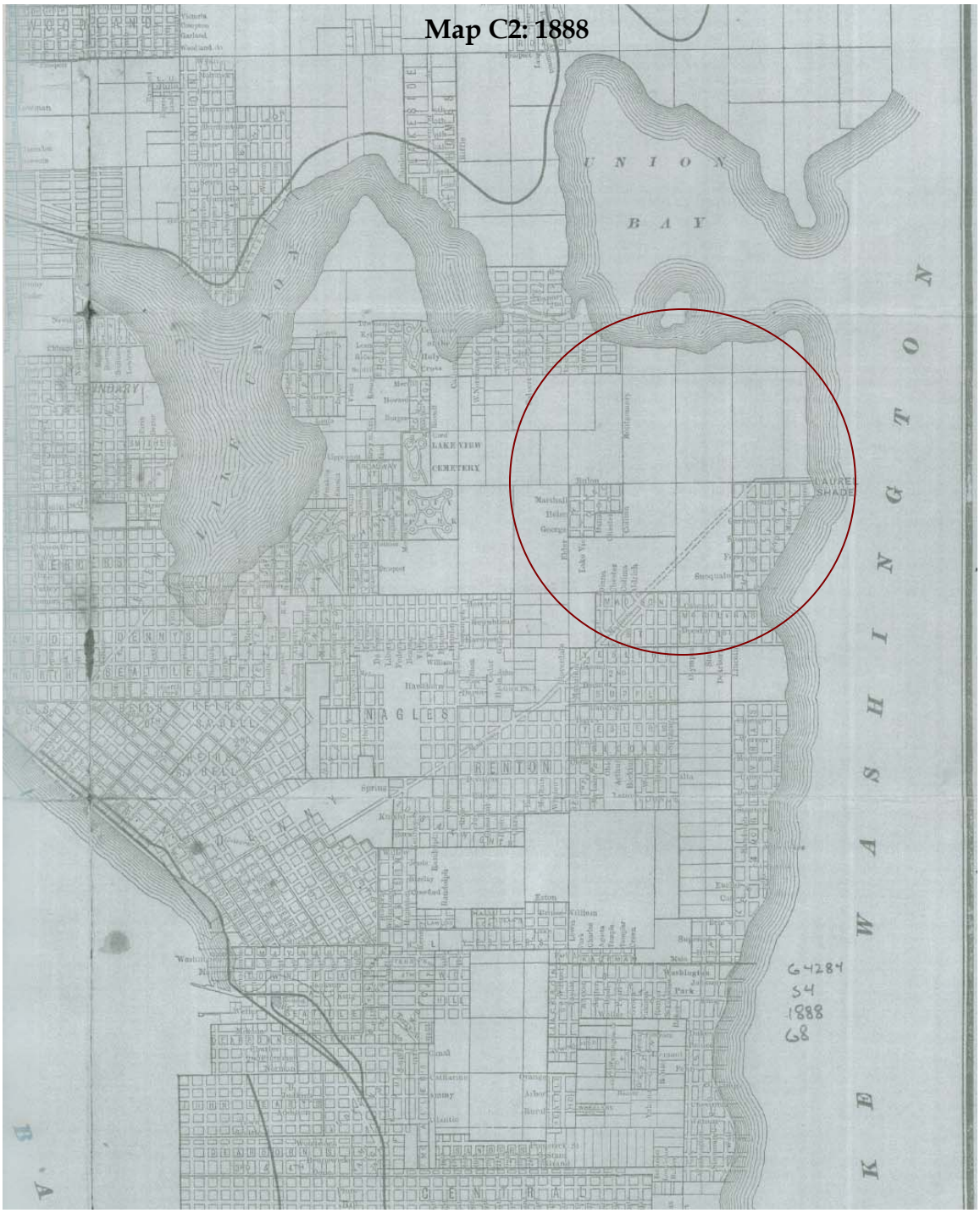
Map C1: 1856



Map courtesy of Washington Cadastral Survey

Map C1 – 1856: From this map, it is clear that the land surrounding what was to become the eastern extension of the Madison Street cable car line is wilderness in 1856 and no claims have yet been made on the land. Only the western extent of Madison Street existed at this time.

Map C2: 1888



Map courtesy of University of Washington, Special Collections

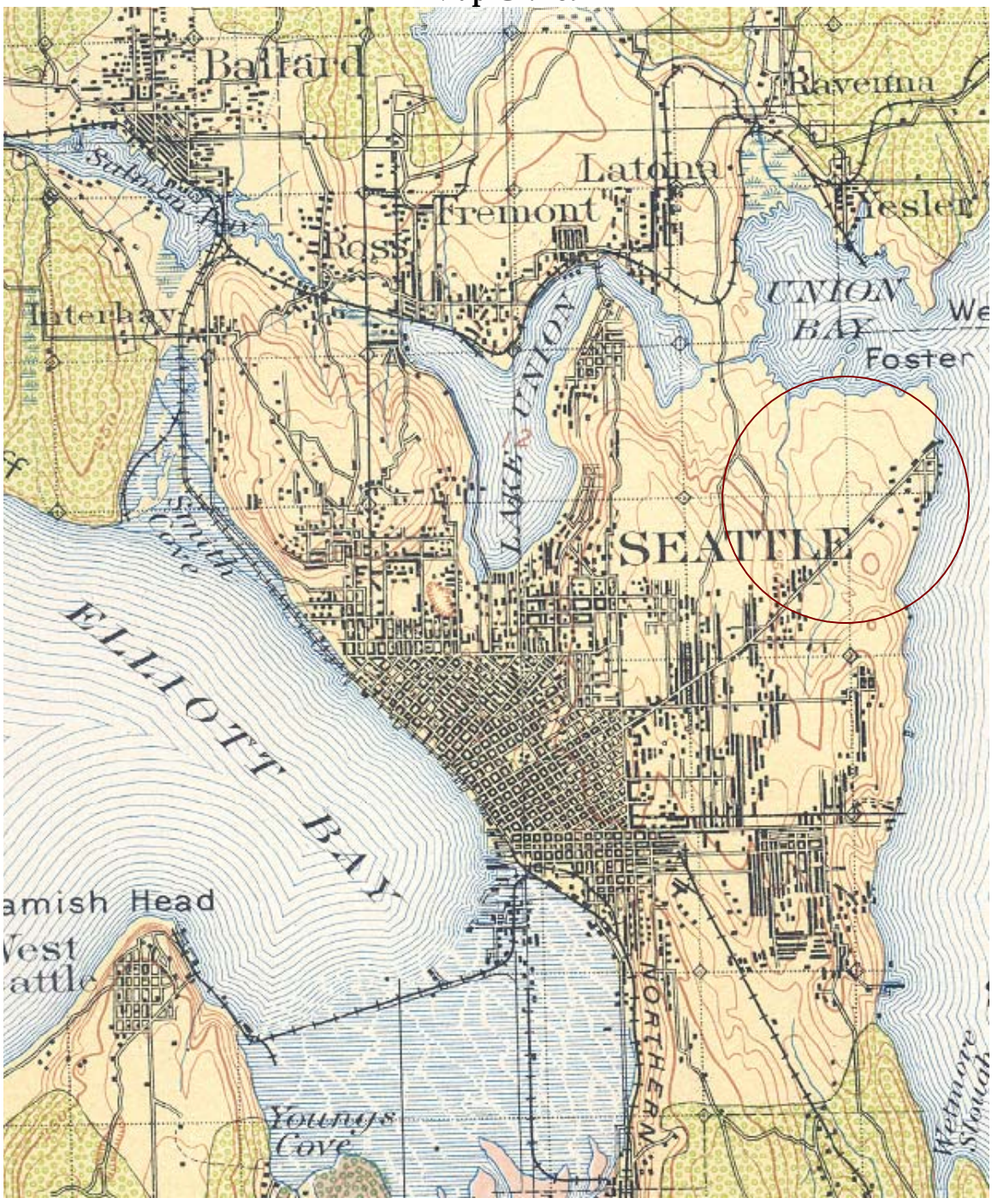
Map C2 – 1888: This map provides great insight to the pace of development along Madison Street between the 1850s and 1888. Although no cable car existed at this time, the road to Lake Washington has been an established, popular route for almost three decades. One notes the development along Madison Street.

Development reaches quite far to the east with a section of undeveloped land near Lake Washington, but the land along the water and south of Madison Street is also developed. This pattern seems to indicate that perhaps the cable car was not necessary to incite development in this direction, but rather a decent road, available land, and the attraction of the lake and park were the important components that encouraged the residential development at this time.

Map C3: 1892

Map courtesy of University of Washington, Special Collections

Map C4: 1897

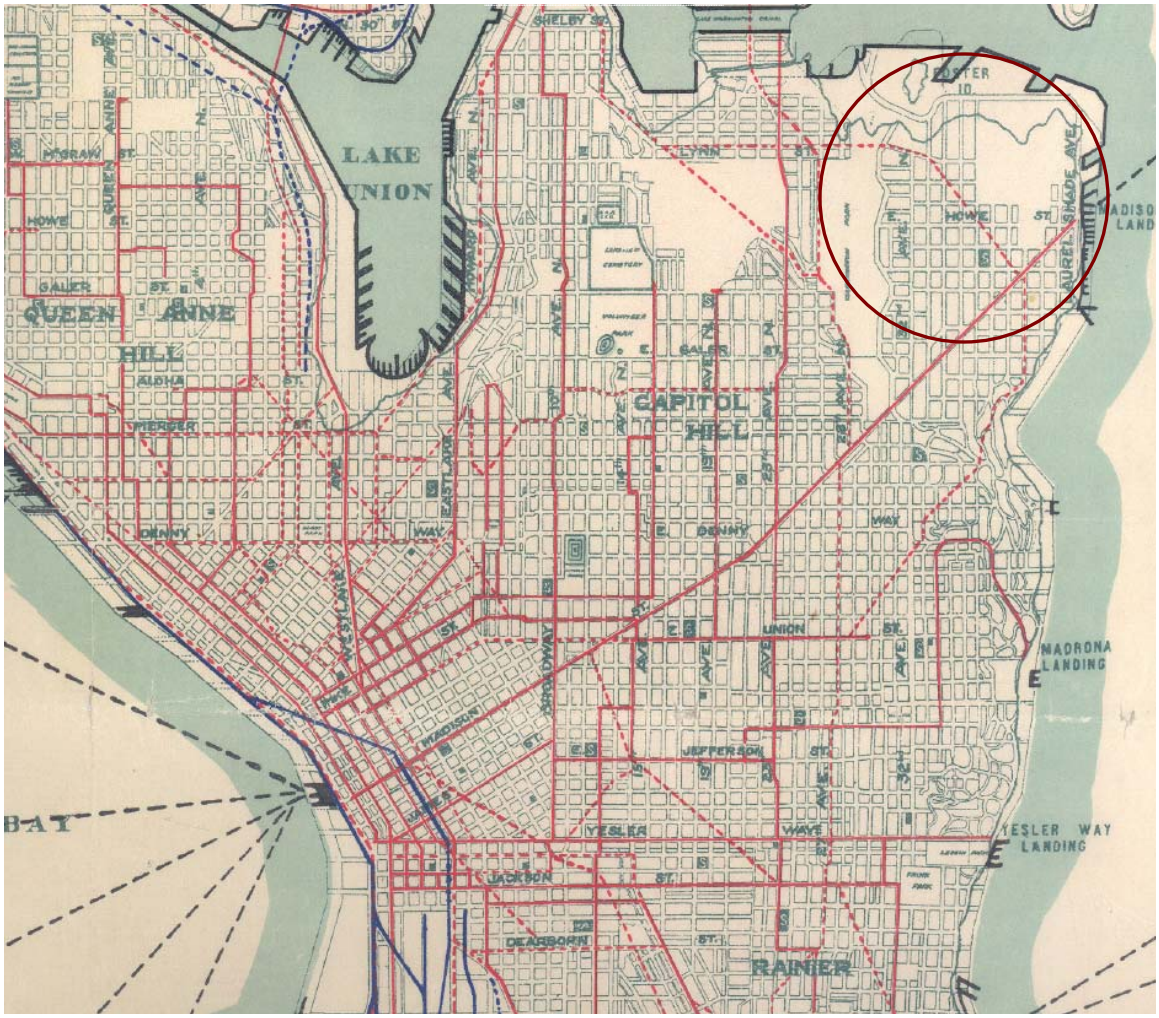


Map courtesy of University of Washington, Special Collections

Map C3 – 1892 & Map C4 – 1897: A year after the opening of the Madison Street cable car line, there is only modest residential growth from what is shown by the previous 1888 map. Even more interesting is that by 1897 the land does not

appear to be any more developed than it is five years earlier. Also of note is the legend to this map that indicates that the land surrounding the Madison cable car is "timberless area – not restocking".

Map C5: 1911



Map courtesy of University of Washington, Special Collections

Map C5 – 1911: Finally by 1911 much of the land around the eastern extension of the Madison Street cable car had begun to fill in. However, it is remarkable that the land north of its terminus still remained undeveloped. Whether the owner chose not to plat and sell the land or the demand simply did not exist to develop it, has been difficult to determine. However, the preservation of this land as

open space twenty years after the opening of the cable car indicates that there was not strong pressure to develop the area.

Written Records

Written records also contribute to our understanding of the ways in which the cable car changed the land form in the Madison Park area. For instance, Leslie Blanchard indicates that the construction of the cable railway resulted in more right-of-way clearing and the building of a large trestle through the core of Madison Valley. The valley was then a pass-through area, despite its wild salmon stream and lush growth. "Passengers enjoyed the view, but were looking forward to reaching the waters of Lake Washington" (Rochester). This account corroborates the patterns that appear in the maps above.

Also, as reported by Rochester,

> Around 1905, the Madison Street trestle over the rushing salmon stream was replaced by an earthen dam and became a permanent road. The rushing salmon stream dried up, the remaining trickle was routed through a pipe.

With the visual description provided by the maps and the written descriptions of these accounts, the process of development becomes clearer. The availability of land and the existing road drew people to the area before the cable car existed. The cable car allowed for additional development to occur, but at a slow rate. While the Seattle population was increasing at very quickly, there was enough land with sufficient access that the population explosion did not put enormous pressure on the Madison Park area. Additionally, the population of Seattle was initially so small that it is likely that much of the "walking city" was able to absorb some of the population boom of the 1880s.

CONCLUSION

Many have observed that "mass transportation…catalyzed physical…expansion by opening vast areas of unoccupied land for residential expansion" (Chudacoff, p. 92). This paper has endeavored to understand the degree to which Seattle's Madison Street cable car line encouraged residential expansion on the land surrounding its eastern terminus. Historic census data, panoramic maps, cartographic maps, and written records have been critical to this quest. In examining these historic records, it has become clear that the cable car led to only limited residential development on land in today's Madison Park neighborhood.

With a small but growing population in the 1880s, Seattle's population expanded together with the development of the street railway system. While the system certainly permitted some residents to settle outside of the traditional walking city, we have seen that other factors also led to this dispersal of residential development. Roads, available lots, the shores of Lake Washington, and the Madison Park recreational facilities seem to have played a role in attracting residents, even before the cable car line existed.

Some lessons have been learned from the rise and fall of Seattle's earlier street railway era that are being diligently applied and adhered to today. The street railway system built in Seattle at the turn of the century was developed in part to support low-density real estate endeavors outside of the Seattle walking city. As a new streetcar and light rail boom are underway today in Seattle and the surrounding region, there is a strong push to increase densities along the rail routes. As was learned in Seattle a century ago, insufficient population densities (among other deficiencies) can lead to overextension of the rail system and insufficient ridership. Perhaps the street railway system of today will help promote infill development and increased densities along its corridors.

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